PN-ABY-476

Industry Profiles

Catalog of Investment Information and Opportunities

Volume VIII

Office of Development Finance and Private Enterprise
Agency for International Development
Washington, DC 20523

Catalog of Investment Information and Opportunities
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INDUSTRY PROFILES

PN ABY-476

CANNED CAULIFLOWER

I. P. No. 67351
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED CAULIFLOWER

I.P. No. 67351
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned cauliflower, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned cauliflower normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors, should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $120,000.
The total fixed investment, plus working capital, is estimated at $138,300.
The annual gross profit, before taxes, is estimated at $6,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.0%.
(A gross profit on sales, before taxes, of 5.0%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 4.4%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $128,000.
Based on these figures, the fixed investment per man employed would amount to about $5,325.

C. PRODUCTION REQUIREMENTS - CANNED CAULIFLOWER

ANNUAL CAPACITY - ONE SHIFT OPERATION - 9 WEEKS : 641,000 CANS

I.P. No. 67351
S.I.C. 2033

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 128,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H. P. Filler 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P - 120 P.S.I., Washer, Blancher, Wash Reel.

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 10,300
c. Total Capital Requirements	$ 138,300

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Cauliflower	382 tons	
Cans	641,000	
Additives		
Labels and Cartons		
Total direct materials		$ 53,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,800

c. Availability of materials & supplies

Cauliflower must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 6 H.P.	
Fuel - oil	
Water - must be potable	
	$ 1,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,000

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 5,200
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 15,700

c. Training needs

The manager and the inspector should be fully experienced. They with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a Own transport equipment

Truck.

b. External transport facilities

During the canning season the input at this plant will amount to about 7.1 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

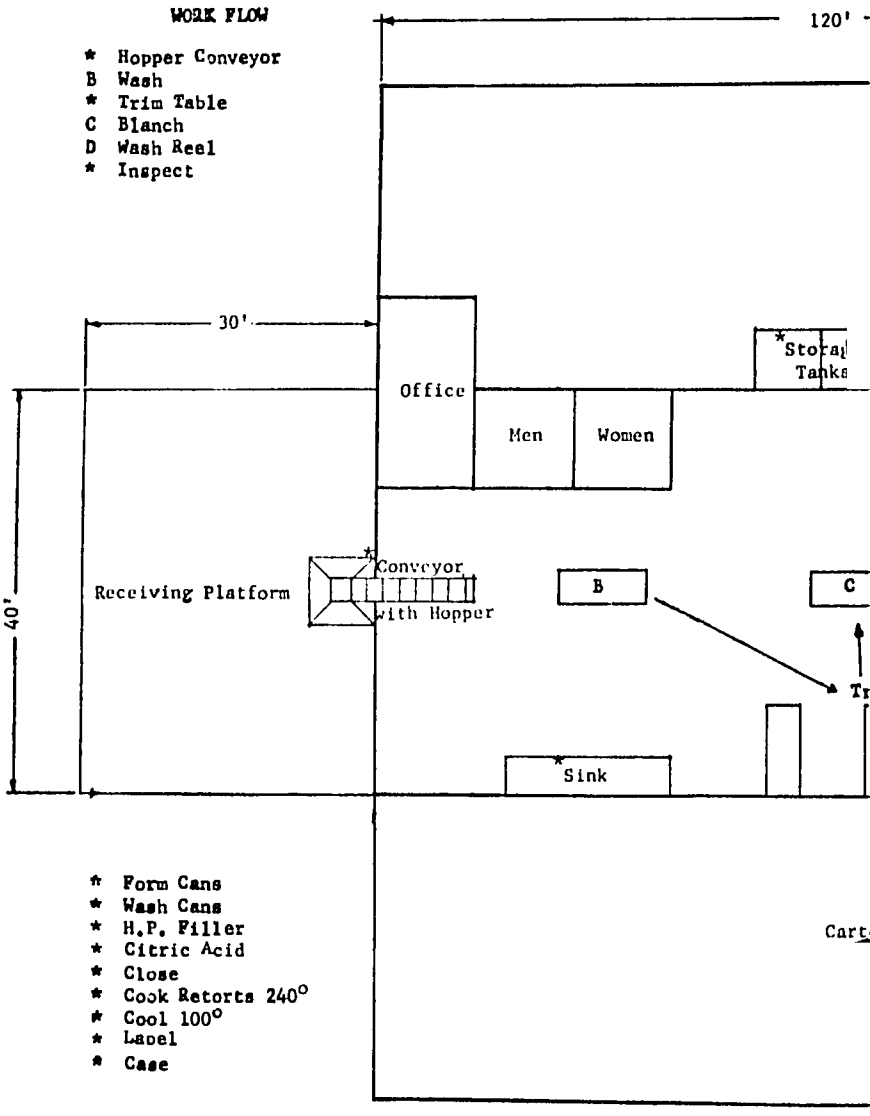
Direct materials	$ 53,000	
Direct labor	15,700	
Manufacturing overhead*	18,500	
Total manufacturing cost		$ 87,200
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,800
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 114,000
Annual Gross Profit		$ 6,000
ANNUAL SALES REVENUE		$ 120,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNE

PLANT L



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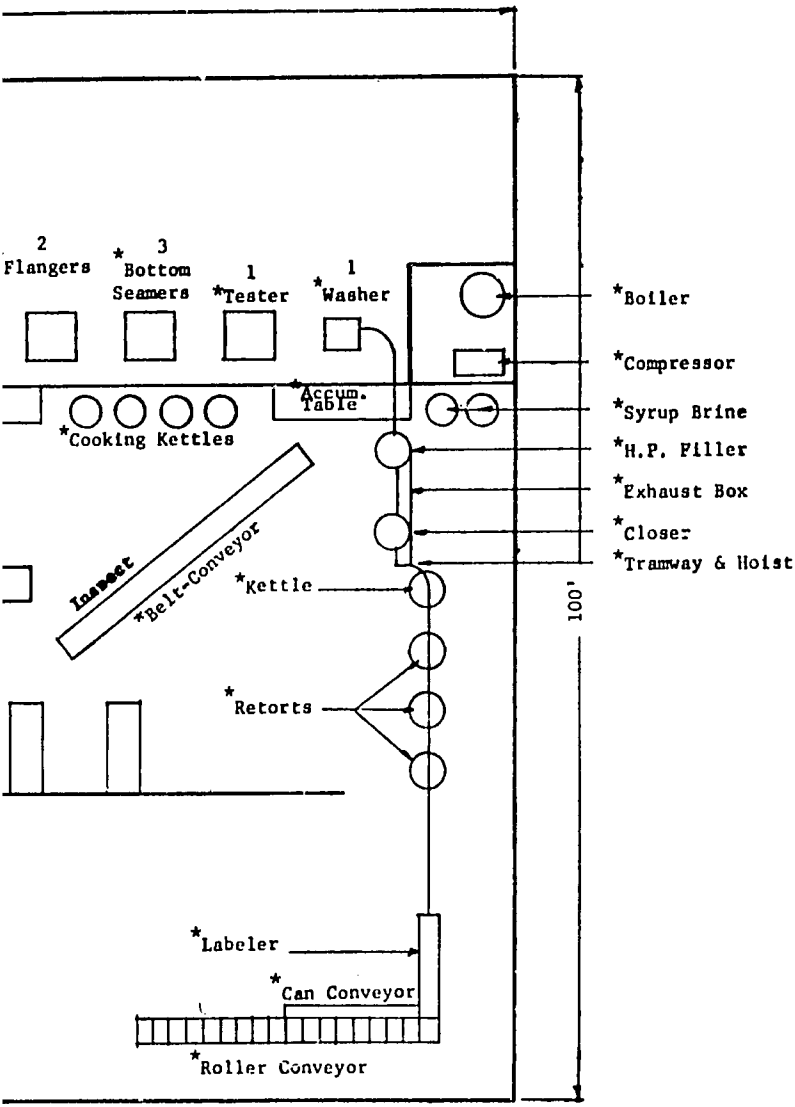
Items marked with letters indicate equipment adde



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s product.

I.P. No. 67351
S.I.C. 2033

CANNED CAULIFLOWER

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U. S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th Edition. 254 pp. $7.50

Industrial Press
93 Worth Street
New York, New York 10013

The 24 chapters of the book are divided into three main sections: (1) Basic quality control applications; (1) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, aad enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years : Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S Patent Office, Washington, D.C. 20231. $.50 each.

A. Patent No. 3,272,636. Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770. Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475. January 1963 7 p.
Sterlizing method for canned foodstuff.

D. Patent No. 2,794,326. June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,326. May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D. C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N. W.
Washington, D. C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

The price of *Industry Profiles* is a minimum of $3.00 for from one to five "*Profiles*." The purchaser may select up to five of any "*Profiles*" available.

Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED PUMPKIN

I. P. No. 67352
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included long with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED PUMPKIN

PRODUCT DESCRIPTION

Canned pumpkin, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned pumpkin normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requiremens" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $90,000.
The total fixed investment, plus working capital, is estimated at $138,500.
The annual gross profit, before taxes, is estimated at $5,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.6%.
(A gross profit on sales, before taxes, of 5.6%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 3.6%.

5. COST PER MAN EMPLOYED

Eighteen direct workers and four indirect workers or a total of twenty-two workers, are employed.
The total fixed capital investment is estimated at $131,000.
Based on these figures, the fixed investment per man employed would amount to about $5,950.

C. PRODUCTION REQUIREMENTS CANNED PUMPKIN

ANNUAL CAPACITY - ONE SHIFT OPERATION 6 WEEKS: 427,500 CANS

I.P. No. 67352
S.I.C. 2033

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - 100' x 120' one story	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 131,000

Principal Items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H P - 120 P.S.I., Soak Tank, Washer, Breaker, Wash Reel, Press, Pulper

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 7,500
c. Total Capital Requirements	$ 138,500

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Pumpkin	600 tons	
Cans	427,500	
Additives		
Cartons and Labels		
Total direct materials		$ 33,200
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil and maintenance of truck		
Total supplies		$ 1,800

c. Availability of materials & supplies

Pumpkin should be available locally. Cartons and Labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 17-3/4 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,100

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,300

5. MANPOWER

	Number	Annual Cost
a. Indirect Labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 3,400
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	13	
Total direct labor	18	$ 10,500

c. Training Needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment.

Truck

b. External transport facilities.

During the canning season the input at this plant will amount to about 16.6 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 33,200	
Direct labor	10,500	
Manufacturing overhead*	16,600	
Total manufacturing cost		$ 60,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		11,700
Sales expense		9,000
Freight-out, travel discounts Allowances & bad debts		4,000
Total annual costs		$ 85,000
Annual Gross Profit		$ 5,000
ANNUAL SALES REVENUE		$ 90,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect Labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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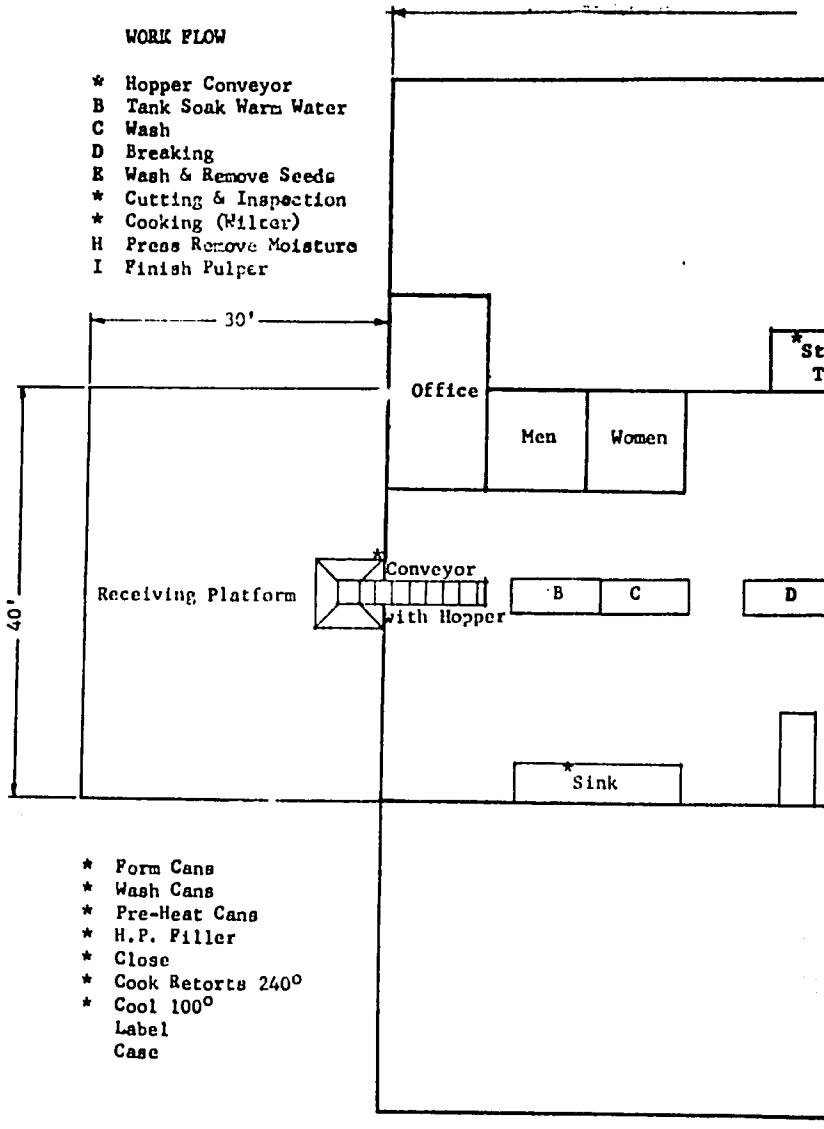

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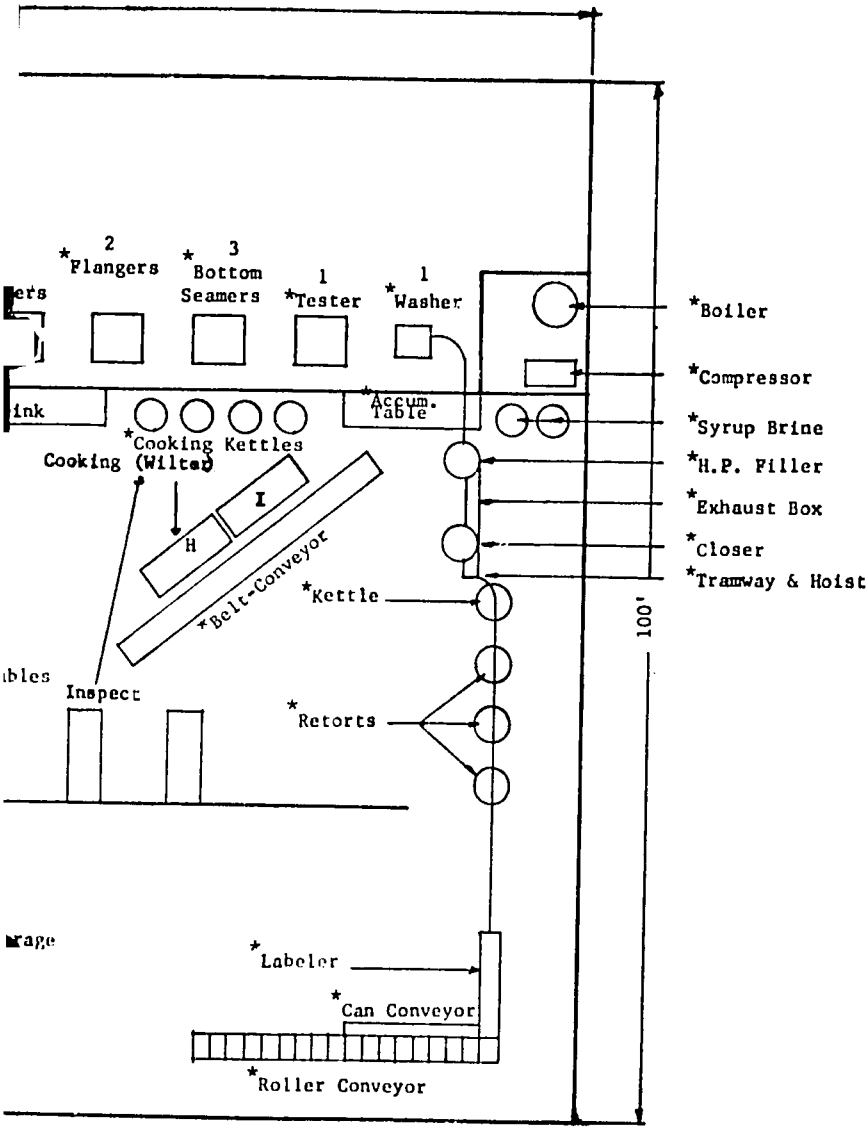

canning all products.

r this product.

I. P. No. 67352
S. I. C. 2033

CANNED PUMPKIN

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute details, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing, and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N.Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. **$.50 each.**

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,326 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. **$5.00.** Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. **$25.00.** Annual.

Edward E. Judge
P O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the :

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D. C. 20006

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Springfield, Virginia 22151

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED WHOLE KERNEL CORN

I. P. No. 67353
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED WHOLE KERNEL CORN

I. P. No. 67353
S. I. C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned whole kernel corn, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned corn normally would be nationwide. If a plant is efficiently managed and operation it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $116,000.
The total fixed investment, plus working capital, is estimated at $139,000.
The annual gross profit, before taxes, is estimated at $6,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.2%.
(A gross profit on sales, before taxes, of 5.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 4.3%.

5. COST PER MAN EMPLOYED

Eighteen direct workers and four indirect workers, or a total of twenty-two workers, are employed.
The total fixed capital investment is estimated at $129,000.
Based on these figures, the fixed investment per man employed would amount to about $5,875.

C. PRODUCTION REQUIREMENTS CANNED WHOLE KERNEL CORN
ANNUAL CAPACITY - ONE SHIFT OPERATION: 10 WEEKS: 712,500 CANS

I.P. No. 67353
S.I.C. 2033

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 129,000

Principal items:
Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H P. - 120 P.S.I., 2 Huskers, 2 Inspection Belts, Trimmer, Washer, Cutter, Desilker and Washer

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 10,000
c. Total Capital Requirements	$ 139,000

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Sweet corn	930 tons	
Cans	712,500	
Additives		
Cartons and Labels		
Total direct materials		$ 46,400

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,800

c. Availability of materials & supplies

Corn must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 17-1/2 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,100

5. MANPOWER

	Number	Annual Cost
a Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 5,700
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	13	
Total direct labor	18	$ 15,800

c. Training needs

The manager and the inspector should be fully experienced. They with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment
Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 15.5 tons per day.
Good highways.

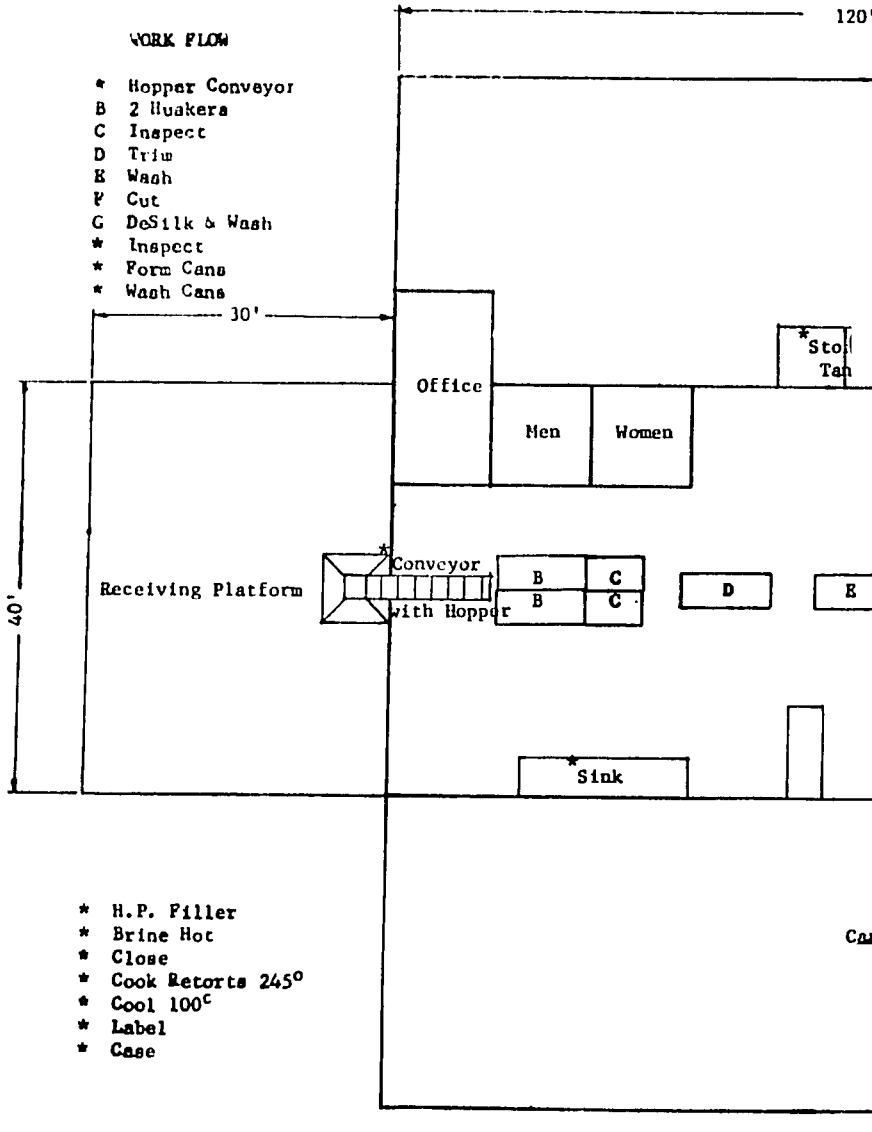
7. TOTAL ANNUAL COSTS AND SALES

REVENUE		
Direct materials	$ 46,800	
Direct labor	15,800	
Manufacturing overhead*	19,100	
Total manufacturing cost		$ 81,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		12,700
Sales expense		11,000
Freight-out, travel discounts Allowances & bad debts		5,000
Total annual costs		$ 110,000
Annual Gross Profit		$ 6,000
ANNUAL SALES REVENUE		$ 116,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNED

PLANT



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Items marked with letters indicate equipment add

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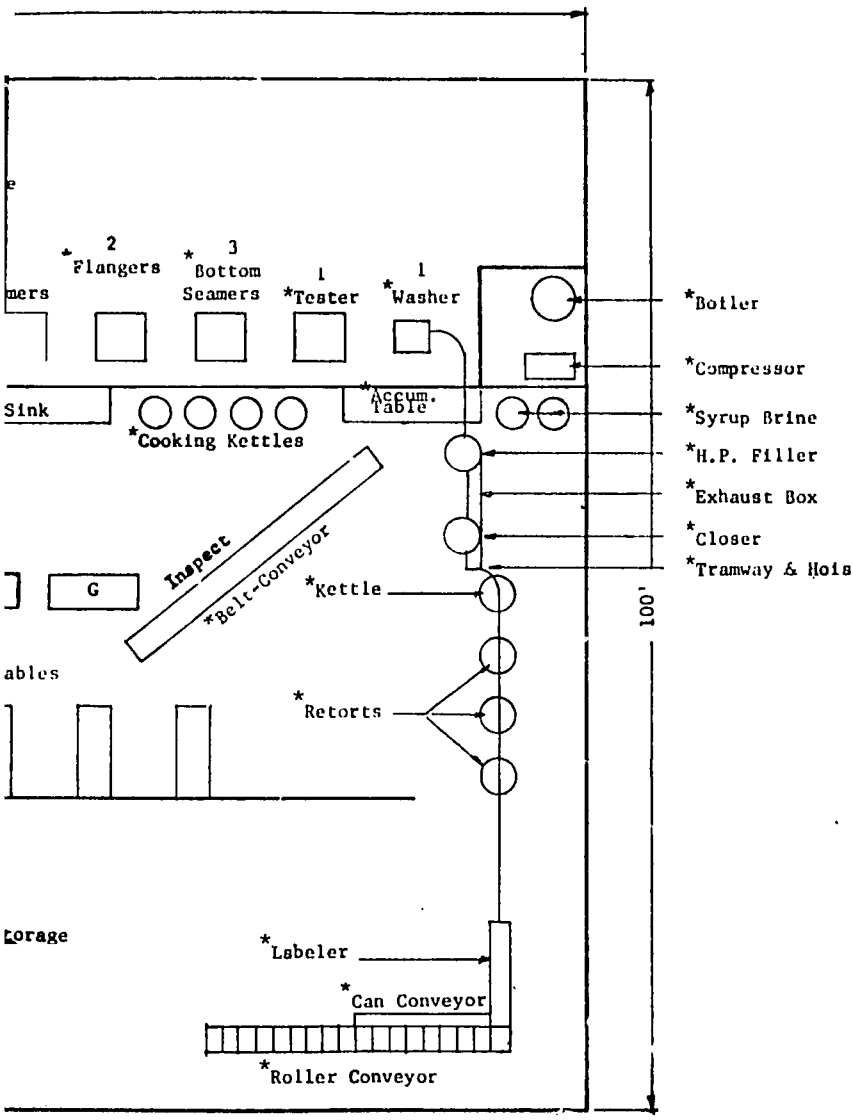
I. P. NO. 67353
S. I. C. 2033



r canning all products.

or this product.

I.P. No. 67353
S.I.C. 2033

CANNED WHOLE KERNEL CORN

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute details, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each

A. Patent No. 3,272,636 Sept. 1966 4 p.
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B Patent No. 3,232,770 Feb. 1966 9 p.
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Sterilizing method for canned foodstuff.

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Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

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The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

NDUSTRY PROFILES

CANNED GREEN BEANS

I. P. No. 67354
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

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CANNED GREEN BEANS

I. P. No. 67354
S. I. C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned green beans, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commerial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned green beans normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $130,000.
The total fixed investment, plus working capital, is estimated at $144,600.
The annual gross profit, before taxes, is estimated at $7,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.4%.
(A gross profit on sales, before taxes, of 5.4%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 4.8%.

5. COST PER MAN EMPLOYED

Seventeen direct workers and four indirect workers, or a total of twenty-one workers, are employed.
The total fixed capital investment is estimated at $134,000.
Based on these figures, the fixed investment per man employed would amount to about $6,375.

C. PRODUCTION REQUIREMENTS - CANNED GREEN BEANS

I.P. No. 67354
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION - 12 WEEKS: 855,000 CANS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$134,000

Principal Items :

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift Truck with Pallets, Compresor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Washer, 2 Snippers, 2 Inspection Belts, Grader, Cutter, Blancher, Wash Reel

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 10,600
c. Total Capital Requirements	$144,600

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Green beans	282 tons	
Cans	855,000	
Additives		
Labels and Cartons		
Total direct materials		$ 55,900

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,900

c. Availability of materials & supplies

Green beans must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 16-1/4 H.P.	
Fuel - oil	
Water - must be potable	$ 1,900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,600

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 6,900
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	12	
Total direct labor	17	$ 18,000

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 4 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

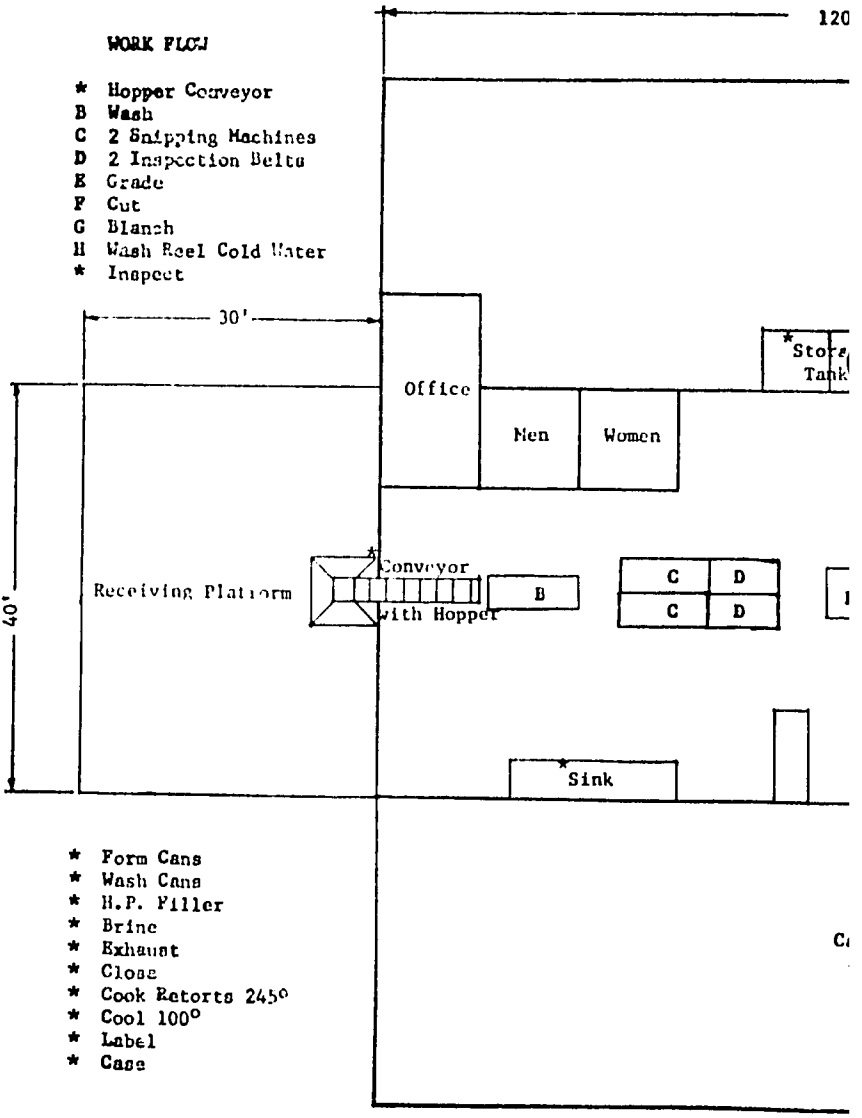
Direct materials	$ 55,900	
Direct labor	18,000	
Manufacturing overhead*	21,300	
Total manufacturing cost		$ 95,200
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 13,800
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 123,000
Annual Gross Profit		$ 7,000
ANNUAL SALES REVENUE		$ 130,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNE

PLANT

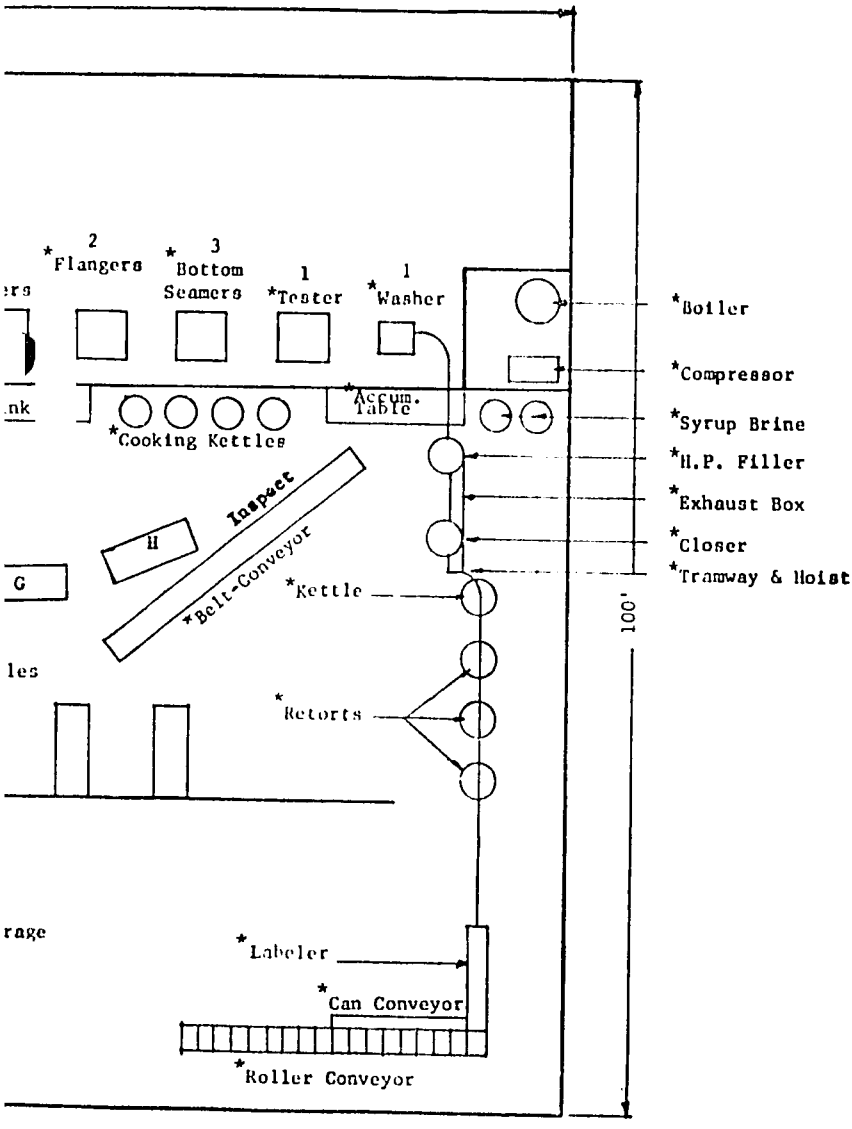


Items marked with an asterisk indicate basic eq

Items marked with letters indicate equipment ad

EANS

I. P. NO. 67354
S. I. C. 2033



anning all products.

this product.

I. P. No. 67354
S.I.C. 2033

CANNED GREEN BEANS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U. S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U.S. Government Printing Office
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Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

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NDUSTRY PROFILES

CANNED ONIONS

I. P. No. 67355
S. I. C. 2033

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CANNED ONIONS

I.P. No. 67355
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned onions, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned onions normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $110,000.
The total fixed investment, plus working capital, is estimated at $144,100.
The annual gross profit, before taxes, is estimated at $6,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.5%.
(A gross profit on sales, before taxes, of 5.5%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 4.2%.

5. COST PER MAN EMPLOYED

Eighteen direct workers and four indirect workers, or a total of twenty-two workers, are employed.
The total fixed capital investment is estimated at $135,000.
Based on these figures, the fixed investment per man employed would amount to about $6,125.

C. PRODUCTION REQUIREMENTS - CANNED ONIONS

ANNUAL CAPACITY - ONE SHIFT OPERATION - 8 WEEKS : 570,000 CANS

I.P. No. 67355
S.I.C. 2033

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 135,000

Principal items :

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H. P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Dry Clean Reel, Scalder, Abrasive Peeler, Washer, Grader

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 9,100
c. Total Capital Requirements	$ 144,100

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Onions	280 tons	
Cans	570,000	
Additives		
Labels & Cartons		
Total direct materials		$ 49,300

b. Supplies	
Lubricants & hand tools	
Cutting tools and abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance for truck	
Total supplies	$ 1,800

c. Availability of materials & supplies

Onions must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 15-1/2 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,700

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 4,600
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	13	
Total direct labor	18	$ 12,600

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 6 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

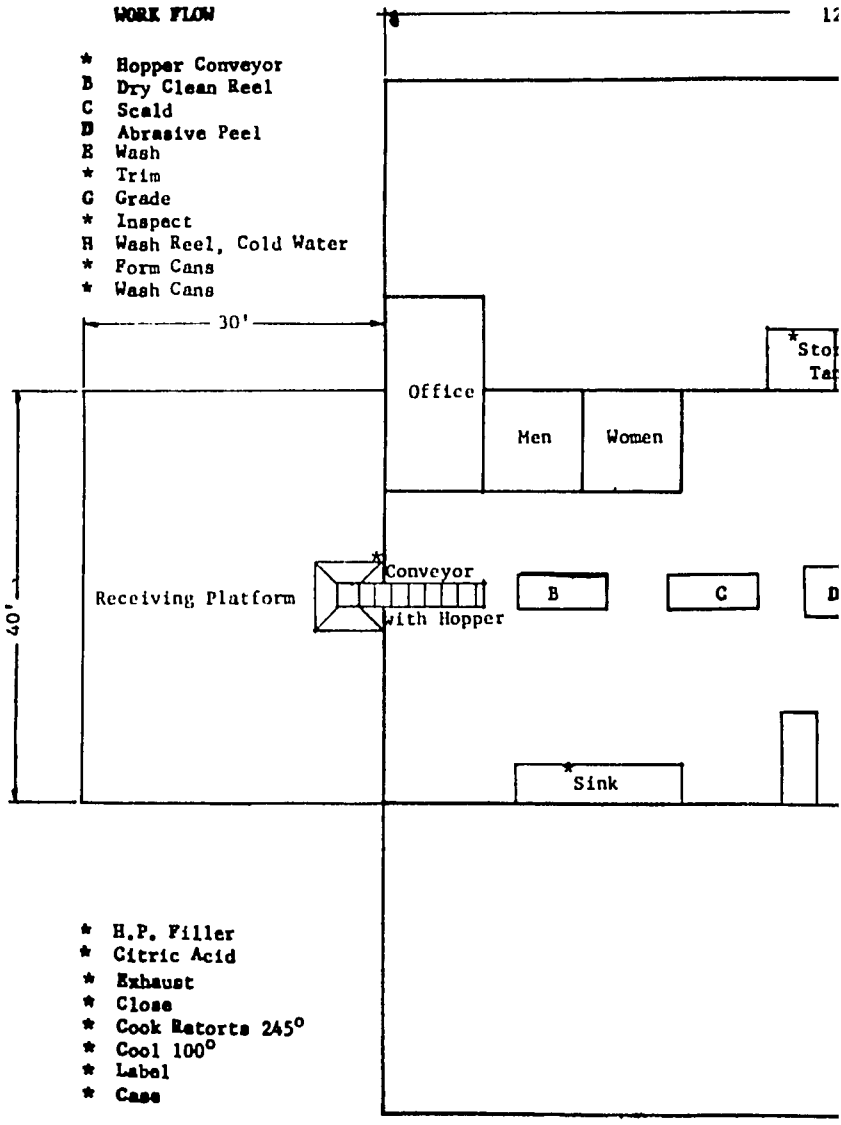
Direct materials	$ 49,300	
Direct labor	12,600	
Manufacturing overhead*	18,500	
Total manufacturing cost		$ 80,400
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 11,600
Sales expense		$ 8,500
Freight-out, travel discounts Allowances & bad debts		$ 3,500
Total annual costs		$ 104,000
Annual Gross Profit		$ 6,000
ANNUAL SALES REVENUE		$ 110,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANN

PLAN



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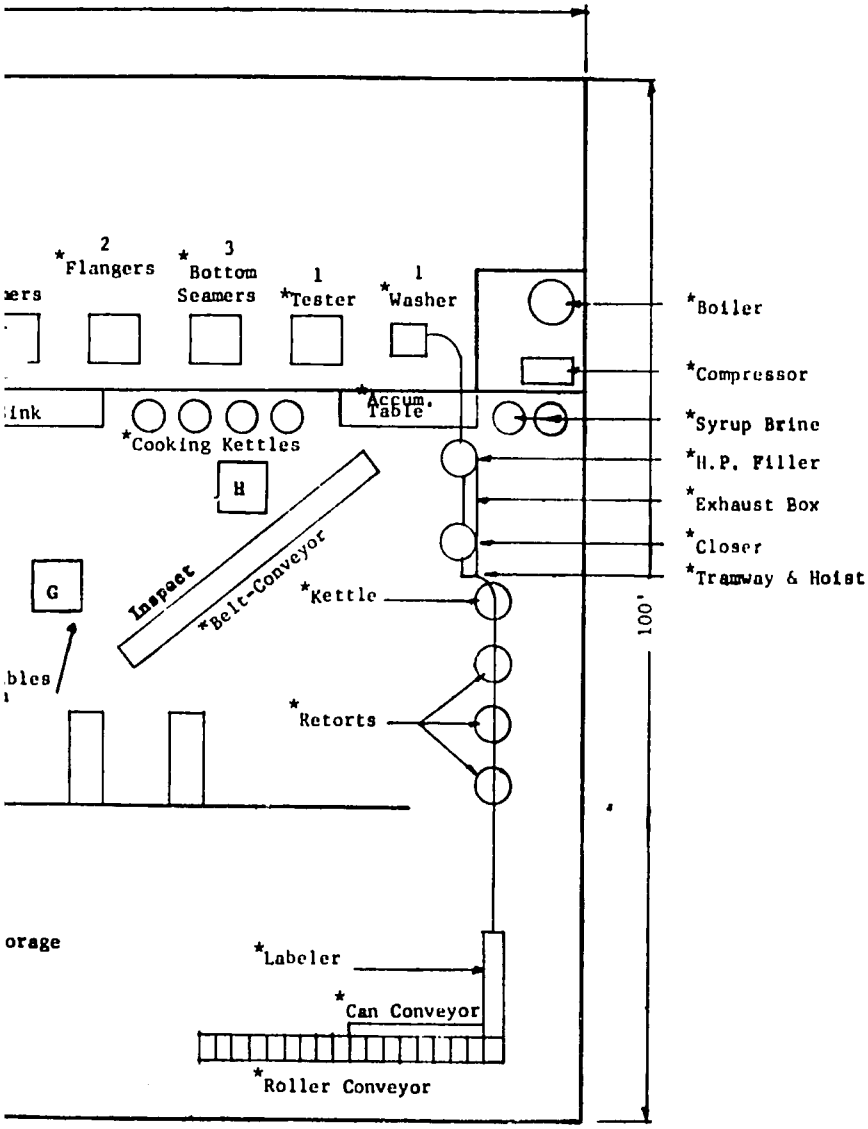

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I.P. No. 67355
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CANNED ONIONS

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National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

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The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
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GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED APPLE SAUCE

I. P. No. 67356
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED APPLE SAUCE

I. P. No. 67356
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned apple sauce, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned apple sauce normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh fruits, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $ 174,000.
The total fixed investment, plus working capital, is estimated at $ 147,900.
The annual gross profit, before taxes, is estimated at $ 9,500.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.5%.
(A gross profit on sales, before taxes, of 5.5%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 6.4%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $133,000.
Based on these figures, the fixed investment per man employed would amount to $ 5,541.

C. PRODUCTION REQUIREMENTS CANNED APPLE SAUCE
ANNUAL CAPACITY -ONE SHIFT OPERATION : 16 WEEKS : 1,150,000 CANS

I.P. No. 67356
S.I.C. 2033

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 133,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Wash Reel, Peel and Core, Chip Reel, Blancher, Grinder

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 14,900
c. Total Capital Requirements	$ 147,900

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Apples	743 tons	
Cans	1,150,000	
Additives		
Labels and cartons		
Total direct materials		$ 82,400

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance for truck	
Total supplies	$ 2,300

c. Availability of materials & supplies

Apples must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 12 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,700

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,500

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 9,100
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 27,800

c. Training Needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 7.8 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 82,400	
Direct labor	27,800	
Manufacturing overhead*	23,600	
Total manufacturing cost		$ 133,800
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 11,700
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 164,500
Annual Gross Profit		$ 9,500
ANNUAL SALES REVENUE		$ 174,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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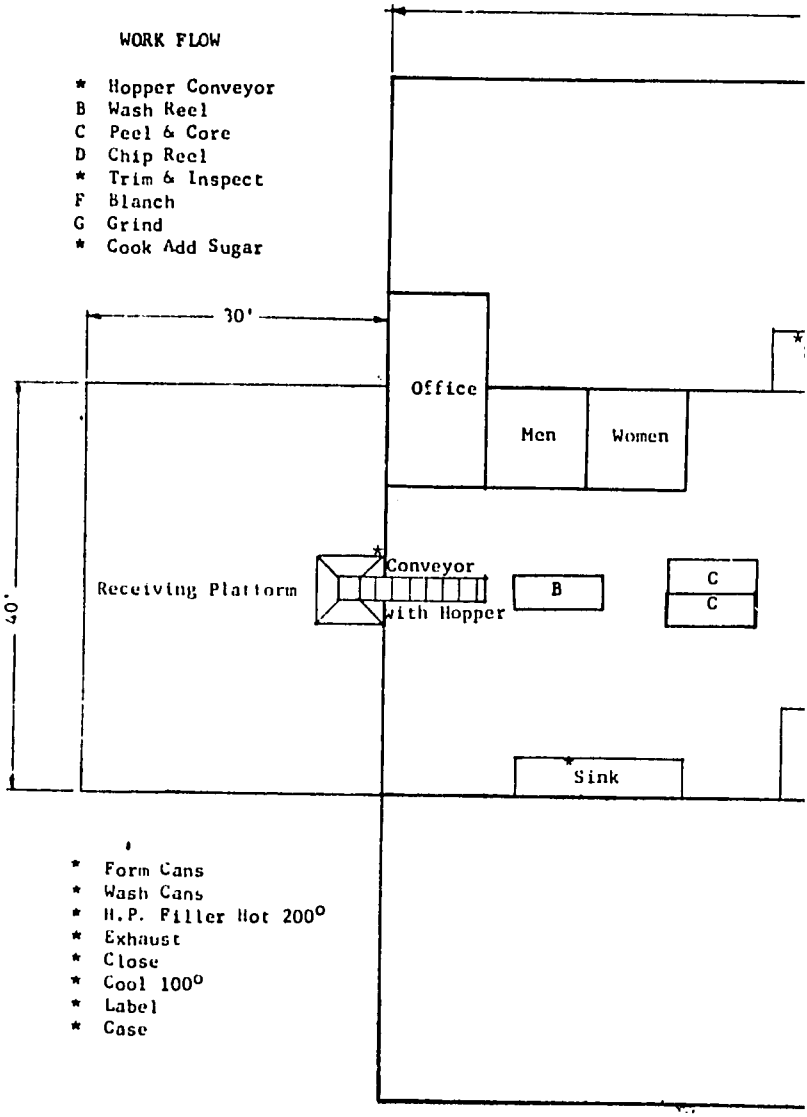

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I. P. NO. 67356
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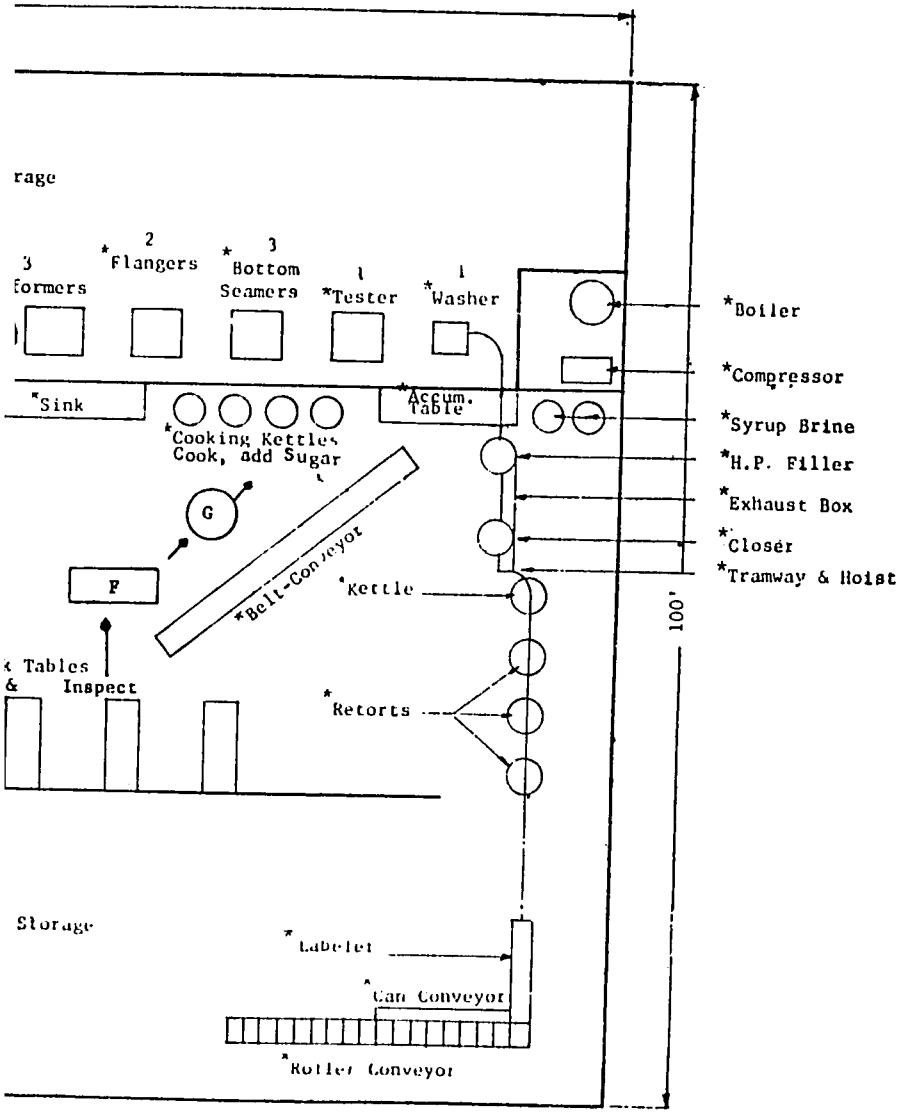

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CANNED APPLE SAUCE

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INDUSTRY PROFILES

CANNED PEARS

I. P. No. 67357
S. I. C. 2033

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CANNED PEARS

I.P. No. 67357
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned pears, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned pears normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh fruits, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognised that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $153,000.
The total fixed investment, plus working capital, is esimated at $143,800.
The annual gross profit, before taxes, is estimated at $8,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.2%.
(A gross profit on sales, before taxes, of 5.2%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.6%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $131,000.
Based on these figures, the fixed investment per man employed would amount to about $5,450.

C. PRODUCTION REQUIREMENTS - CANNED PEARS

I.P. No. 67357
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION: 9 WEEKS: 645,000 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 131,000

Principal items :

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Fruit Washer, Peel & Core, Wash Spray

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 12,800
c. Total Capital Requirements	$ 143,800

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Pears	388 tons	
Cans	645,000	
Additives		
Labels and Cartons		
Total direct materials		$ 82,000
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil & maintenance of truck		
Total supplies		$ 1,800

c. Availability of materials & supplies

Pears must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 14-1/2 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation Equipment	4	
Total depreciation		$ 10,300

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 5,200
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 15,700

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at the plant will amount to about 7.2 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

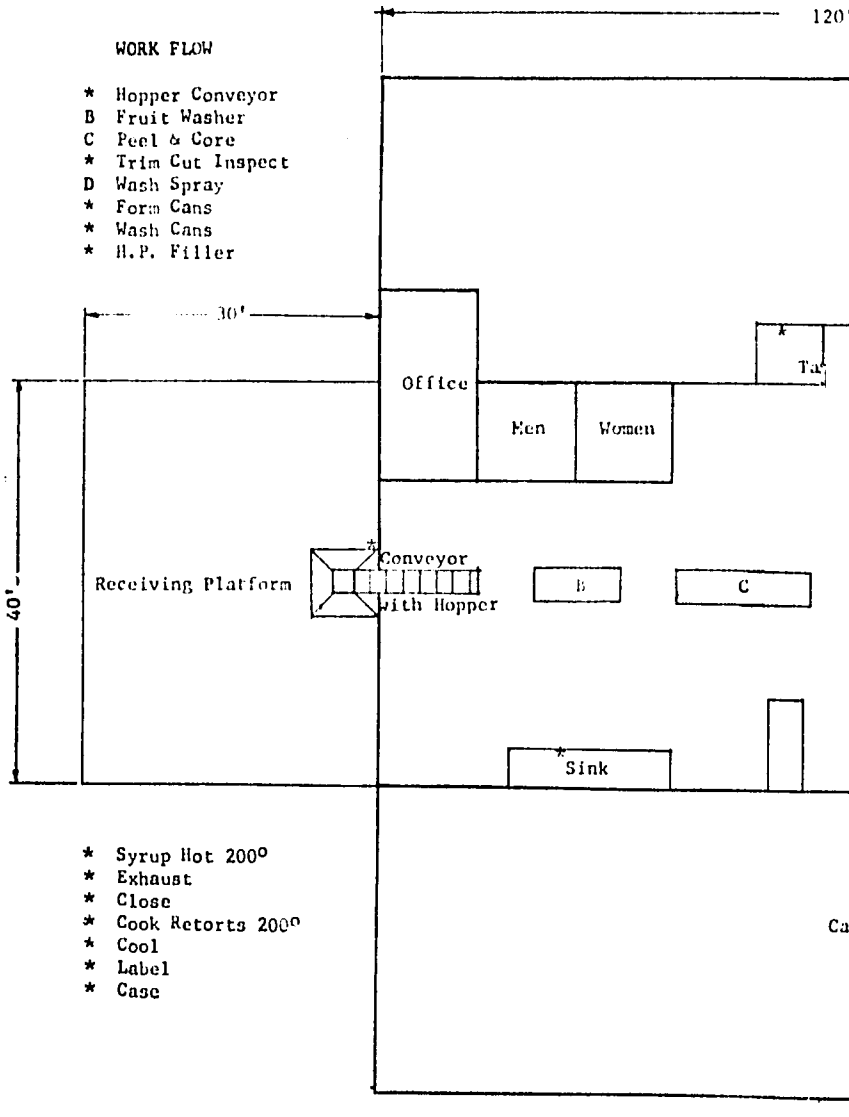
Direct materials	$ 82,000	
Direct labor	15,700	
Manufacturing overhead*	18,800	
Total manufacturing cost		$ 116,500
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		13,500
Sales expense		10,000
Freight-out, travel discounts Allowances & bad debts		5,000
Total annual costs		$ 145,000
Annual Gross Profit		$ 8,000
ANNUAL SALES REVENUE		$ 153,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNE

PLANT



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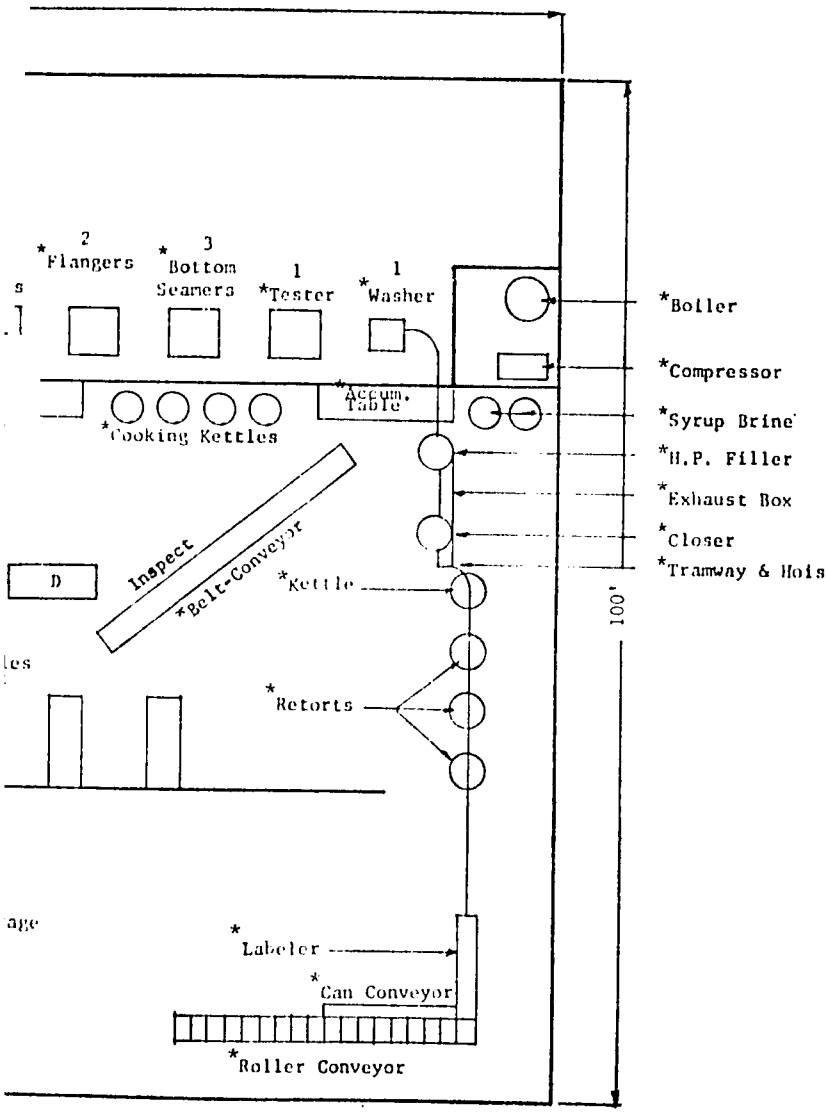
Items marked with letters indicate equipment add

I. P. NO. 67857
S. I. C. 2033



nning all products.

his product.

6

I.P. No. 67357
S.I.C. 2033

CANNED PEARS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N.Y. 10013

The 24 chapters of the book are divided into three main sections; (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5 00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A The First Two Years : Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 p. $1.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U. S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,326 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Streets, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

BURLAP CLOTH FROM JUTE

I. P. No. 67358
S. I. C. 2299

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

67

BURLAP CLOTH FROM JUTE

I. P. No. 67358
S. I. C. No. 2299
DECEMBER 1967

PRODUCT DESCRIPTION

Burlap, 10 oz., made from jute.

A. GENERAL EVALUATION OF PROSPECTS

Burlap is used in industries for rug backing, cotton baling, bagging, gunny sacks and wrapping of various products. Paper and synthetic products have been substituted for burlap in many instances, partly because jute was not readily available during the war. However, burlap is still widely used. Capital requirements are moderate and the investment per man employed is low. Consumption of this product depends upon the need for bagging of agricultural products and for other industial uses.

B. MARKET ASPECTS

1. USERS

Burlap is used by various types of industry for wrapping and by baggers of agricultural products such as coffee, potatoes, beans, etc.

2. SALES CHANNELS AND EXTENT OF MARKET

This plant would sell directly to industries requiring burlap for wrapping and bagging and to buyers of agricultural products and to large agricultural producers. It is not practical to estimate the market required to support this plant's operation in terms of population. Burlap consumption depends upon the needs of local industries for burlap wrapping and bagging. A comprehensive survey should be conducted to determine market potential. The plant itself should be located close to the source of raw material which is very bulky. The finished product is easily transported so nationwide distribution should be attempted. Competition in the domestic market would derive primarily from producers of other wrapping materials such as paper and synthetic products. But, where jute is available locally, burlap should have the price advantage. Burlap is shipped and used worldwide and competition from other wrapping materials is serious. Some Industrial uses for burlap--such as the backing for linoleum--have declined. This plant could not expect to compete in broad international markets.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $500,000.
The total fixed investment, plus working capital, is estimated at $265,500.
The annual gross profit, before taxes, is estimated at $36,000.
Using these figures, the profit on gross sales, before taxes, amounts to 7.2%.
(A gross profit on sales, before taxes, of 7.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 13.6%.

5. COST PER MAN EMPLOYED

Forty-eight direct and five indirect workers or a total of fifty-three workers, are employed.
The total fixed capital investment is estimated at $177,000.
Based on these figures, the fixed investment per man employed would amount to about $3,340.

C. PRODUCTION REQUIREMENTS - BURLAP CLOTH FROM JUTE

I.P. No. 67358
S.I.C. 2299

ANNUAL CAPACITY - THREE SHIFT OPERATION: 3,200,000 YARDS.
NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land about one acre	
Building - 100' x 100' - no windows in walls, well ventilated & humidified	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 177,000

Principal items :
Bale Breaking & Batching
Softener
Blending
Winders
Spinning
Roving
Drawing
Carding
Looms
Bailer
Diesel power motor
Humidifier
Auxiliary equipment

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 88,500

c. Total Capital Requirements $ 265,500

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Jute fiber	1,000 tons	
Baling material		
Total direct materials		$ 151,000

b. Supplies

Lubricants & hand tools
Gas, oil and maintenance of truck
Maintenance & spare parts
Office supplies
Total supplies $ 7,600

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 130 H.P. connected load	
Fuel - oil for heating	
Water - production, sanitation and fire protection	$ 10,600

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 14,700

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	2	
Truck driver	1	
Total indirect labor	5	$ 39,000
b. Direct labor		
Skilled workers	3	
Semi-skilled workers	3	
Unskilled workers	42	
Total direct labor	48	$ 184,200

c. Training needs

Manager should have years of experience. He with 3 skilled workers should be able to train all workers and reach full production in one month.

6. TRANSPORTATION

a. Own transport equipment

Truck.

b. External transport facilities

In and out shipments about 8 tons per day.
Good highways and railroad if possible.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 151,000	
Direct labor	184,200	
Manufacturing overhead*	71,900	
Total manufacturing cost		$ 407,100
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 33,900
Sales expense		$ 15,000
Freight-out, travel discounts Allowances & bad debts		$ 8,000
Total annual costs		$ 464,000
Annual Gross Profit		$ 36,000
ANNUAL SALES REVENUE		$ 500,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

BURLA

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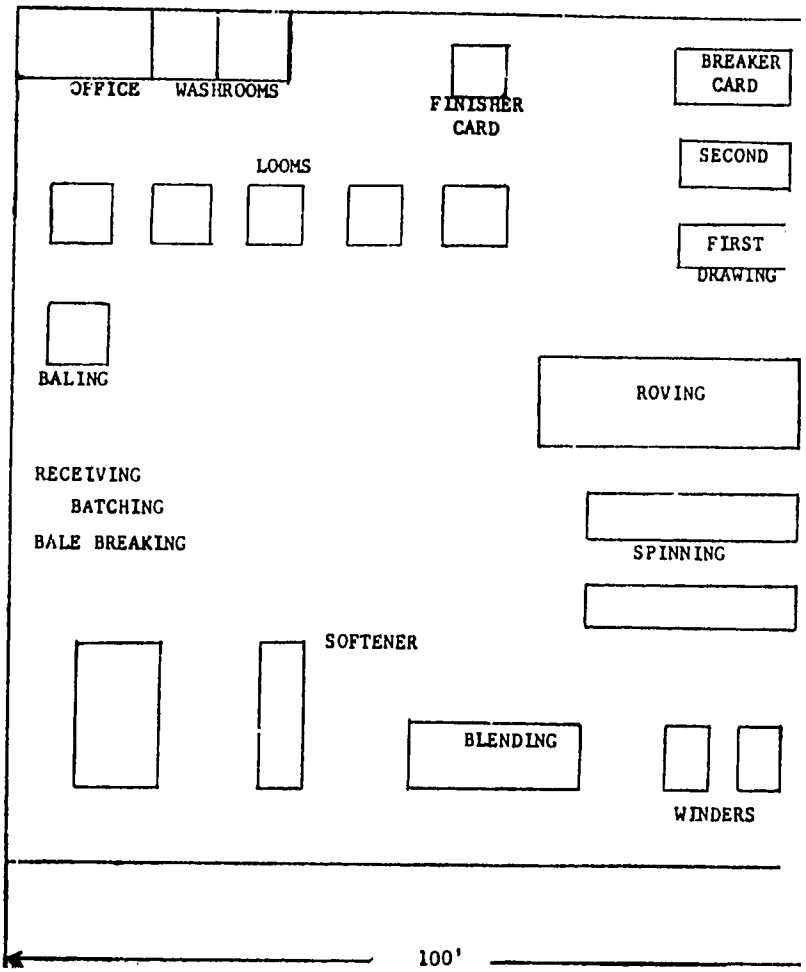
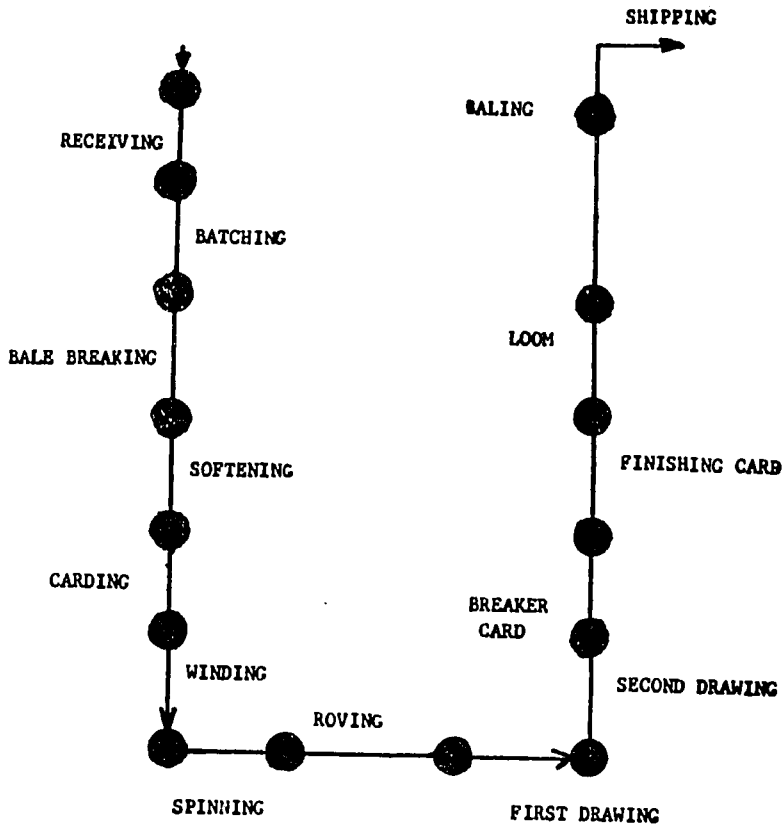

OFFICE
WASHROOMS
FINISHER CARD
BREAKER CARD
SECOND
LOOMS
FIRST
DRAWING
BALING
ROVING
RECEIVING
BATCHING
BALE BREAKING
SPINNING
SOFTENER
BLENDING
WINDERS
100'

DM JUTE

I. P. NO. 67358
S.I.C. 2299

YOUT



I. P. No. 67358
S. I. C. 2299

BURLAP CLOTH FROM JUTE

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Fiber to Fabric. M. D. Potter and B. P. Corbman. 1959. 324 pp. Illus. $5.48
4th Edition in preparation.

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

Discusses all fibers, their properties, finishing and weaving.

B. The Modern Textile Dictionary. G. E. Linton. 1962. 772 pp. Illus. $18.50

Duell, Sloan & Pierce, Inc.
60 East 42nd Street
New York, New York 10017

Terms pertaining to fibers and operations in their processing.

II. TECHNICAL AND TRADE PERIODICALS

A. Textile World. Monthly. $2.00/year.

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

B. Modern Textile Magazine. Monthly. $5.00/year.

Alfred H. McCollough, Publisher
303 Fifth Avenue
New York, New York 10016

Devoted to the textile industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

C. Improving Materials Handling in Small Plants. $.20

Small Business Management Series No. 4
U.S. Government Printing Office
Washington, D.C. 20402

Prepared by Small Business Administration to assist in the development of management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 2,972,799 1961 4 p.
Woven cotton or burlap bag and method of making same.

B. Patent No. 2,964,067 December 1960 5 p.
Floor covering and method of making same.

C. Patent No. 2,869,589 1959 3 p.
Process for making woven material for bags and other agricultural items.

D. Patent No. 2,750,652 June 1956 6 p.
Pile rug and rug base.

E. Patent No. 2,734,541 1956 5 p.
Manufacture of bag for agricultural products.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Burlap and Jute Association
160 Broadway
New York, New York 10038

B. Twisted Jute Packing and Oakum Institute
P.O. Box 52
Scarsdale, New York 10583

VI. DIRECTORIES

A. Davison's Textile Catalogs and Buyers' Guide. Annual. $12.00

Davison Publishing Company
Ridgewood, New Jersey 07450

Covers complete textile field, listing about 15,000 textile firms.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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INDUSTRY PROFILES

WALL BOARD FROM GYPSUM AND FIBER

I. P. No. 67359
S. I. C. 3275

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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I.P. No. 67359
S.I.C. 3275
DECEMBER 1967

WALLBOARD FROM GYPSUM AND FIBER

PRODUCT DESCRIPTION

Four-foot by eight-foot by 3/8-inch thick wallboard made from gypsum and fiber.

A. GENERAL EVALUATION OF PROSPECTS

Gypsum board compares very favorably with masonite board as far as durability is concerned, however, masonite board is more resilient and will withstand greater degrees of bending without breaking. Gypsum board also compares favorably with transite board as a construction material. In countries where gypsum is available in large quantities at low cost, the prospects for this industry should be good. There must be a sufficient amount of construction work underway and planned, however, and a survey should be made to determine the potential sales volume for this product.

B. MARKET ASPECTS

1. USERS

The building and construction industries.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales will be made direct to large contractors and builders and to building supply companies which sell direct to small users. Since this product is used only in the construction of buildings, the market must be predicated upon the volume of construction work being done in the country. This can be determined only by performing a comprehensive survey. Since wallboard of this type cannot be produced in small plants, no domestic competition can be expected unless other large plants are already in operation within the country. Wallboard is heavy and bulky but its packaging permits nationwide distribution providing good highways are available. This factory should have no difficulty competing with imported wallboard.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $770,000.
The total fixed investment, plus working capital, is estimated at $1,166,000.
The annual gross profit, before taxes, is estimated at $80,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 10.4%.
(A gross profit on sales, before taxes, of 10.4%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 6.9 %.

5. COST PER MAN EMPLOYED

Thirty direct workers and ten indirect workers, or a total of forty workers, are employed.
The total fixed investment is estimated at $1,034,000.
Based on these figures, the fixed investment per man employed would amount to $25,850.

C. PRODUCTION REQUIREMENTS - WALLBOARD FROM GYPSUM AND FIBER

I.P. No. 67359
S.I.C. 3275

ANNUAL CAPACITY - THREE-SHIFT OPERATION: 22,000,000 SQUARE FEET

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres located at gypsum mine	
Building - 70' x 400', one story	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 1,034,000
Principal items:	
Hammer Mill	
Pulper and Beater	
Flow Box and Gate	
Stock Tank	
Agitator	
Stock Pumps	
Crushers and Feeders	
Dryer	
Boiler	
Starters	
Piping	
Spare Parts	
b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 132,000
c. Total Capital Requirements	$1,166,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Gypum	14,000 tons	
Coconut fibers	2,500 tons	
Starch	88 tons	
Paper	1,200 tons	
Chemicals and soap		
Tape and packaging material		
Total direct materials		$ 208,000
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil and maintenance of truck		
Total supplies		$ 11,600

c. Availability of materials & supplies

Some supplies may have to be imported. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 500 H.P. connected load	
Fuel - production and heat	
Water - 5,000,000 gals.	
	$ 22,000

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 96,400

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager and 3 supervisors	4	
Office	2	
Maintenance	2	
Truck Driver	1	
Inspector	1	
Total indirect labor	10	$ 81,000
b. Direct labor		
Skilled workers	6	
Semi-skilled workers	9	
Unskilled workers	15	
Total direct labor	30	$ 135,000

c. Training needs

Manager and 3 supervisors should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own Transport equipment

Truck

b. External transport facilities

In and out shipments 230 tons per day.

Good highways and railroad siding.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 208,000	
Direct labor	135,000	
Manufacturing overhead*	211,000	
Total manufacturing cost		$ 554,000
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 76,000
Sales expense		$ 36,000
Freight-out, travel discounts Allowances & bad debts		$ 24,000
Total annual costs		$ 690,000
Annual Gross Profit		$ 80,000
ANNUAL SALES REVENUE		$ 770,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

WALLBOARD

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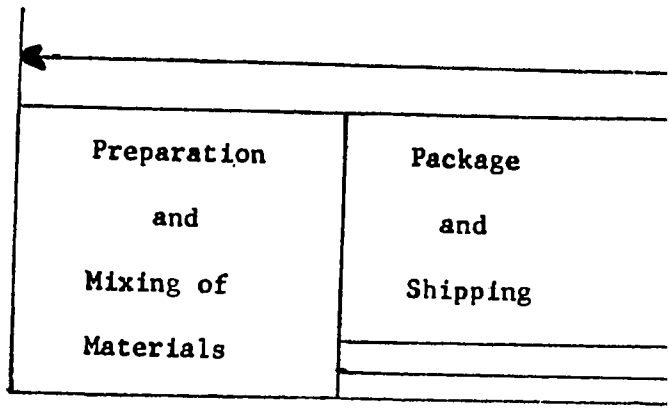
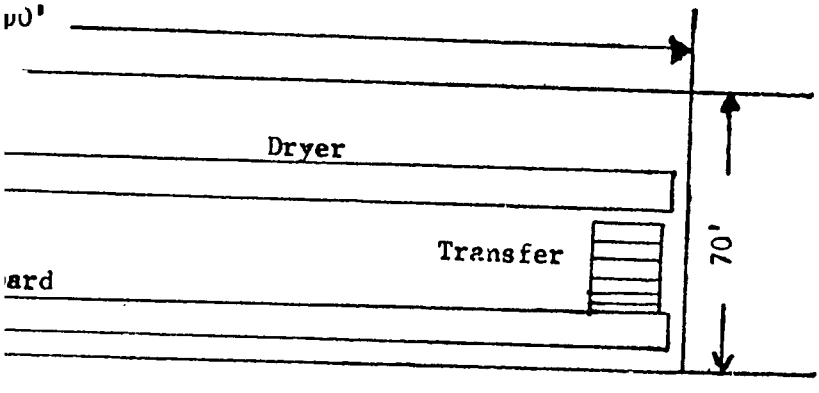


M AND FIBER

I.P. NO. 67359
S.I.C. 3275

O U T



I.P. No. 67359
S.I.C. 3275

WALLBOARD FROM GYPSUM AND FIBER

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. ASTM Standards on Gypsum Products and Plaster Aggregates, With Related Standards. Third Edition. Loose-Leaf. May, 1966. $1.75. (plus postage)

American Society for Testing and Materials
1916 Race Street
Philadelphia, Pennsylvania 19103

B. Manual of Lathing and Plastering. John R. Diehl. 366 pp. Gypsum Association Edition. 1965. $2.25. (plus postage)

Gypsum Association
201 North Wells Street
Chicago, Illinois 60606

II. TECHNICAL AND TRADE PERIODICALS

A. Gypsum Products, Design Data. Loose-Leaf. Additions supplied periodically. Prices on request from:

Gypsum Association
201 North Wells Street
Chicago, Illinois 60606

A notebook of material sources for building officials containing latest information on gypsum wallboard, fire resistance, lath and plaster, gypsum sheathing and miscellaneous material. New and revised literature supplied periodically.

B. Building Supply News. Monthly. $5.00/year

Cahners Publishing Company, Inc.
5 South Wabash Avenue
Chicago, Illinois 60603

Magazine for lumber and building materials dealers.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

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Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,223,580 December 1965 3 p.
Dimensionally stable mineral wood fiberboard.

B. Patent No. 3,159,528 December 1964 7 p.
Method of production of a fiberboard.

C. Patent No. 3,151,016 September. 1964 7 p.
Method of making a pressed fiberboard.

D. Patent No. 3,113,065 December 1963 4 p.
Resin bonded fiberboard and the process of making same.

E. Patent No. 3,087,851 April 1963 7 p.
Bitumen impregnated fiberboard.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Gypsum Association
201 North Wells Street
Chicago, Illinois 60606

B. Building Research Institute
1725 De Sales Street, N. W.
Washington, D. C. 20036

VI. DIRECTORIES

A. Building Supply News Purchasing File. Annual. $2.50

Cahners Publishing Company, Inc.
5 South Wabash Avenue
Chicago, Illinois 60603

Manufacturers and suppliers of building material, equipment and machinery.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the :

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

RESTAURANT AND CAFETERIA FURNITURE

I. P. No. 67360
S. I. C. 2599

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Indvstry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included long with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

RESTAURANT AND CAFETERIA FURNITURE

I. P. No. 67360
S.I.C. 2599
DECEMBER 1967

PRODUCT DESCRIPTION

Wooden tables and chairs, arm chairs, display racks and other items used in restaurants and cafeterias. These products are lacquer finished.

A. GENERAL EVALUATION OF PROSPECTS

The equipment in this plant can turn out many kinds of restaurant and cafeteria furniture. With the addition of tubular bending equipment, it could also turn out restaurant and cafeteria furniture with tubular legs. The manufacturing processes used in this plant are relatively simple and the capital requirements comparatively modest. Many developing countries have a supply of workers accustomed to woodworking. It should not be difficult to train local labor to perform the operations required in this plant. Technically this industry is well-suited to conditions existing in many emerging nations. In countries where an ample supply of lumber is available and the sales outlook is adequate, this project should be given careful consideration. If dried lumber is not available, a dry kiln should be installed.

B. MARKET ASPECTS

1. USERS

This furniture is designed for use in restaurants, cafeterias, hotels, clubs and other establishments where food is served to the public.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to restaurant equipment wholesalers for distribution. Since the furniture is designed exclusively for food service in public places and is seldom, if ever, used for any other purpose, the market needed to support the production of this plant depends upon the volume of restaurant and cafeteria business in the area. A comprehensive market survey should be undertaken to determine sales potential. These products are bulky and not easy to handle. However, their value is high in relation to their transportation costs and, since restaurants are found in small villages as well as in metropolitan areas, the domestic market should be nationwide. Lumber for these products must be tongued, grooved and glued. Small woodworking shops could not compete with this plant's output.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $200,000.
The total fixed investment, plus working capital, is estimated at $134,000.
The annual gross profit, before taxes, is estimated at $14,400.
Using these figures, the profit on gross sales, before taxes, amounts to about 7.2%.
(A gross profit on sales, before taxes, of 7.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 10.8%

5. COST PER MAN EMPLOYED

Fourteen direct and five indirect workers, or a total of nineteen workers, are employed.
The total fixed capital investment is estimated at $99,000.
Based on these figures, the fixed investment per man employed would amount to about $5,200.

C. PRODUCTION REQUIREMENTS - RESTAURANT AND CAFETERIA FURNITURE

I.P. No. 67360
S.I.C. 2599

ANNUAL CAPACITY - ONE SHIFT OPERATION: 5,000 TABLES; 2,000 CHAIRS
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres including lumber yard	
Building - one story 60' x 80' use any suitable local material	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 99,000

Principal items:
Radial saw
Jointer
Planer
Ripsaw
Trimsaw
Glue jointer
Glue reel
Bandsaw
Drill press
Single-end tenoner
3-Drum sander
Assembly presses
Spray booths

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales Costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 35,000
c. Total Capital Requirements	$ 134,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Lumber	240,000 bd. ft.	
Hardware		
Glue		
Lacquer		
Crating		
Total direct materials		$ 37,700

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 5,000

c. Availability of materials & supplies
All should be available locally.
All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - about 80 KW per day	
Fuel - scrap wood used	
Water - sanitation and fire protection	
	$ 2,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 9,300

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	1	
Maintenance	1	
Truck Driver	1	
Total indirect labor	5	$ 41,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	6	
Unskilled workers	6	
Total direct labor	14	$ 63,600

c. Training needs
The manager with the supervisor and two skilled workers should be able to train all workers and reach full production within thirty days.

6. TRANSPORTATION

a. Own transport equipment
Truck

b. External transport facilities
Good highways.

Railroad, if possible.

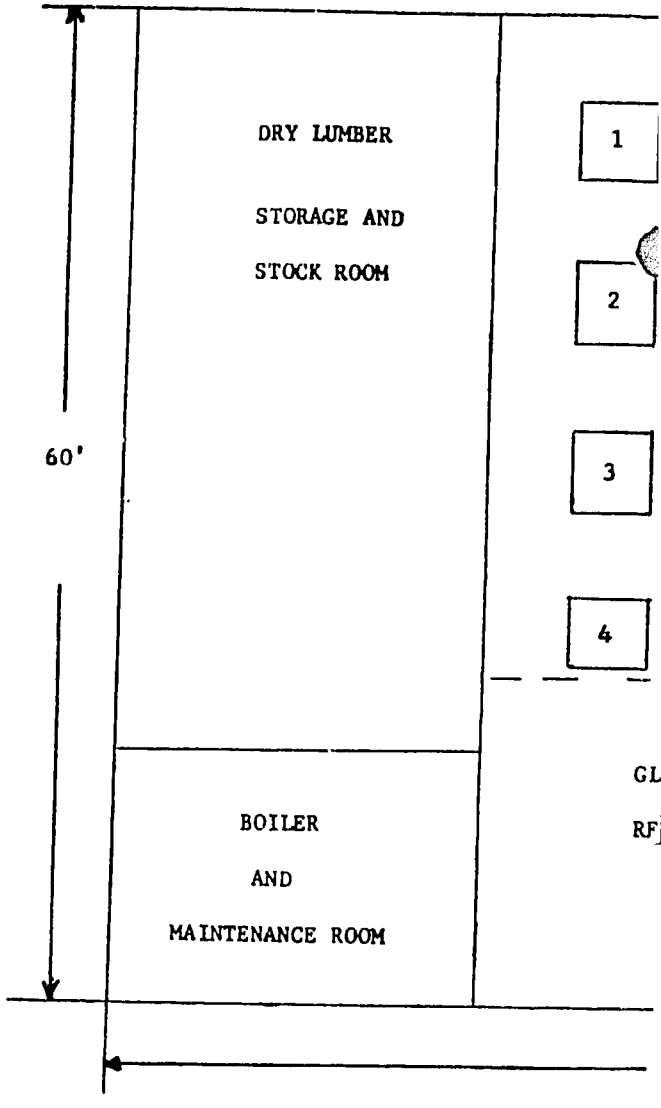
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 37,700	
Direct labor	63,600	
Manufacturing overhead*	57,800	
Total manufacturing cost		$ 159,100
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 11,500
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 3,000
Total annual costs		$ 185,600
Annual Gross Profit		$ 14,400
ANNUAL SALES REVENUE		$ 200,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not feasible practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

RESTAURANT

P L A



1. Radial Saw
2. Jointer
3. Planer
4. Ripsaw

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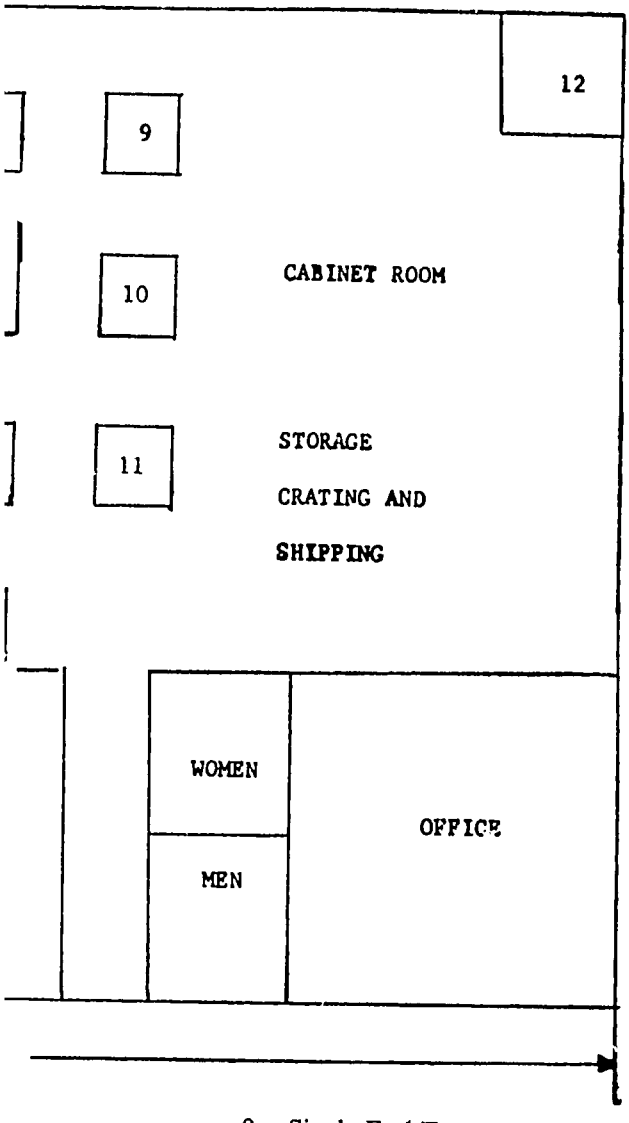
FETERIA FURNITURE

I.P. NO. 67360
S.I.C. 2599

A Y O U T



9. Single End Tenoner
10. 3 Drum Sander
11. Drum Sander
12. Spray Booth

RESTAURANT AND CAFETERIA FURNITURE

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Wood Machining Processes. Peter Koch. 1964. 530 pp. Illus $15.00

The Ronald Press Company
15 East 26th Street
New York, New York 10010

Guide to basic facts, methods, and relationships that govern wood machining processes.

B. Art of Wood Turning. W. W. Klenke. Revised Edition 1954. $4.00

Charles A. Bennet Company, Inc.
809 West Detweiler Drive
Peoria, Illinois 61614

A picturized treatment of procedures and methods used to make the right joint, the wood to use, the service to be expected from the finished article.

II. TECHNICAL AND TRADE PERIODICALS

A. Furniture Manufacturer. Monthly. $3.00/year.

Vincent Edwards, Inc.
342 Madison Avenue
New York, New York 10017

Furniture components, manufacturing processes, marketing.

B. Woodworking Digest. Monthly. $5.00/year.

Hitchcock Publishing Company
Wheaton, Illinois 60188

Devoted to industrial woodworking

III. BUSINESS MANAGEMENT MATERIALS

A. Profitable Small Plant Layout. John R. Immer. 48 pp. Illus. 1964. No. 21 (2nd Edition) in the Small Business Management Series of the Small Business Administration, Washington, D. C.

Superintendent of Doduments
U.S. Government Printing Office
Washington, D.C. 20402

How to move materials through the shop economically and efficiently.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

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IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each

A. Patent No. D-178,095. 1956. 2 p.
Design of chair.

B. Patent No. 3,008,782. November 1962. 4 p.
Furniture construction.

C. Patent No. 2,973,806. 1961. 5 p.
Process for manufacturing chair.

D. Patent No. 2,905,334. September 1959. 5 p.
Table construction.

E. Patent No. 2,657,965. November 1953. 4 p.
Table top and frame construction.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Association of Furniture Manufacturers
666 Lake Shore Drive
Chicago, Illinois 60611

Keeps members informed of latest developments in machinery, materials, processes and market opportunities.

B. Furniture Manufacturers Association
103 Pearl Street, N. W.
Grand Rapids, Michigan 49502

VI. DIRECTORIES

A. Hitchcock's Woodworking Directory and Handbook. Annual. $5.00

Hitchcock Publishing Company
Wheaton, Illinois 60188

Lists producers of furniture and other wood products, machinery, manufacturers for the industry, and trade associations.

VII. PROFESSIONAL ENGINEERING SERVICES

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INDUSTRY PROFILES

VENETIAN BLINDS

I. P. No. 67361
S. I. C. 2591

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I.P. No. 67361
S.I.C. 2591
DECEMBER 1967

VENETIAN BLINDS

PRODUCT DESCRIPTION

Venetian blinds made from plastic slats, cotton tape, card and metal brackets. Venetian blinds are made in a large number of sizes, both in width and lengh, to fit all sizes of windows. For the purpose of this profile, a production of 10,000 venetian blinds, 40" wide and 72" long, is used. If smaller blinds are made, the number produced will be greater; if larger blinds are made, the number produced will be less. This plant is essentially an assembly plant. The slats will have holes punched in them and all materials will be received, ready for assembly.

A. GENERAL EVALUATION OF PROSPECTS

Since this is an assembly plant, the total fixed capital investment is very low when compared with the annual sales revenue and only seven people are employed. The assembly work does not require any unusual skill; therefore, only one skilled worker is required.

B. MARKET ASPECTS

1. USERS

Households, office buildings, hotels, restaurants, apartment buildings, institutions, clubs, any buildings where people live or work.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made to retail stores for distribution in small lots but would be sold direct to purchasers of large quantities of venetian blinds for use in large buildings. The market needed to support this plant will depend largely upon the per capita income of the population. In some countries where the per capita income is low, sales would be made mainly in urban areas. While capital investment in this industry is small--since it is an assembly plant--large quantities of materials must be purchased in order to secure them at reasonable cost. No competition should be experienced from small industry. Unless another venetian blind plant is established within the country, no serious domestic competition should be encountered. A plant of this size could not hope to compete in international markets but some export sales might be made to neighboring countries.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $100,000.
The total fixed investment, plus working capital, is estimated at $33,200.
The annual gross profit, before taxes, is estimated at $10,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 10%.
(A gross profit on sales, before taxes, of 10%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 30%.

5. COST PER MAN EMPLOYED

Six direct and three indirect workers, or a total of nine workers, are employed.
The total fixed capital investment is estimated at $ 17,200.
Based on these figures, the fixed investment per man employed would amount to about $1,925.

C. PRODUCTION REQUIREMENTS - VENETIAN BLINDS

I. P. No. 67361
S.I.C. 2591

ANNUAL CAPACITY - ONE SHIFT OPERATION: 10,000 VENTIAN BLINDS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 5,000 sq. ft.	
Building - one story 30′ x 40′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 17,200

Principal items:

Assembly tables
Hand tools
Spray booth
Spray racks

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 16,000

c. Total Capital Requirements	$ 33,200

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Slats, plastic	360,000	
Tape	120,000	
Cord & panels	200,000	
Metal brackets	20,000	
Metal equalizers	10,000	
Top & bottom slats	20,000	
Packaging		
Total direct materials		$ 22,300

b. Supplies

Lubricants & hand tools
Cutting tools & abrasives
Maintenance & spare parts
Office supplies
Gas, oil and maintenance of truck

Total supplies	$ 1,440

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 2 H.P. connected load	
Fuel - heating as required	
Water - sanitation and fire protection	$ 600

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation Equipment	4	
Total depreciation		$ 1,860

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Office	1	
Truck Driver	1	
Total indirect labor	3	$ 21,000
b. Direct labor		
Skilled workers	1	
Semi-skilled workers	3	
Unskilled workers	2	
Total direct labor	6	$ 28,200

c. Training needs

The manager and one skilled worker should be able to train all workers and reach full production in one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

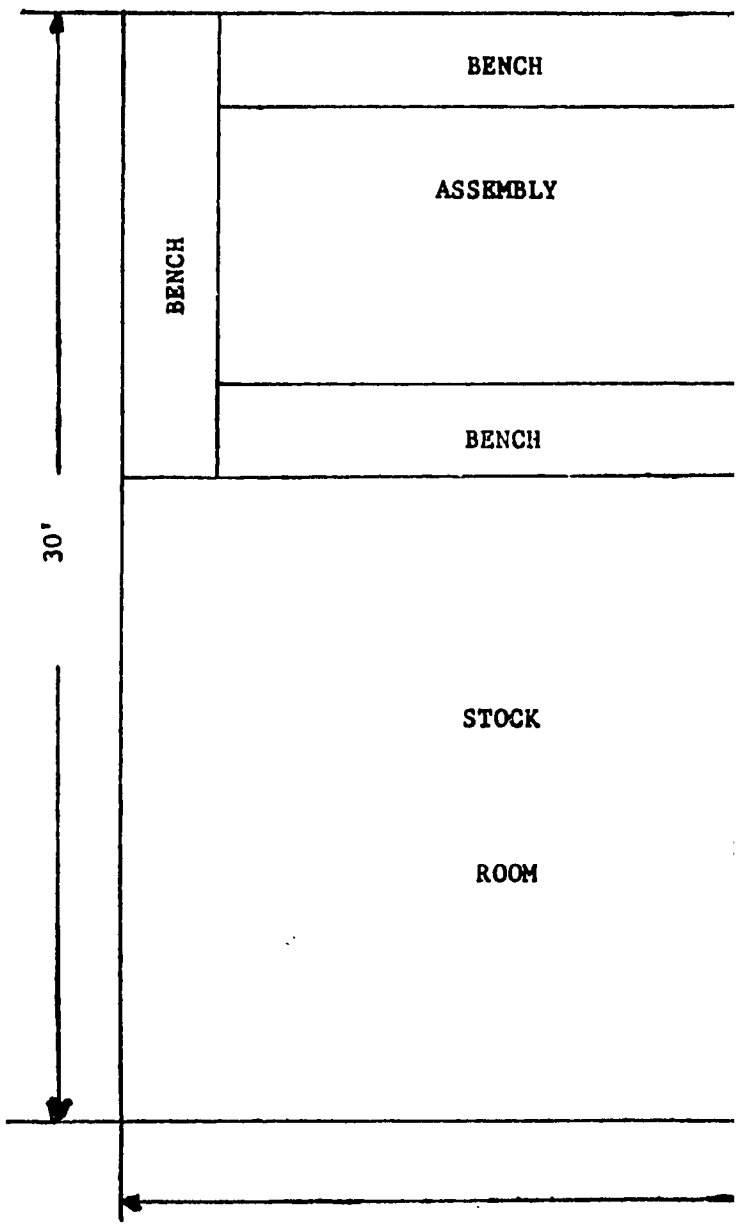
Direct materials	$ 22,300	
Direct labor	28,200	
Manufacturing overhead*	24,900	
Total manufacturing cost		$ 75,400
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 6,600
Sales expense		$ 6,000
Freight-out, travel discounts Allowances & bad debts		$ 2,000
Total annual costs		$ 90,000
Annual Gross Profit		$ 10,000
ANNUAL SALES REVENUE		$ 100,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

VENETIA

PLANT



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S. I. C. 2591

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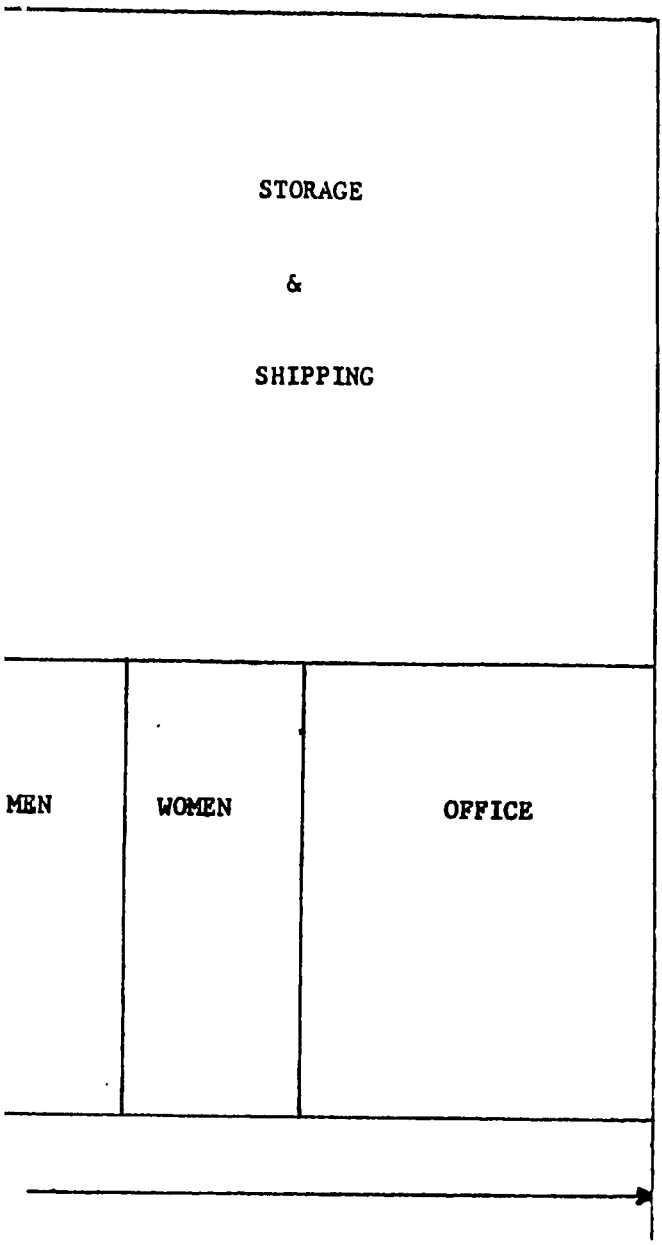

I.P. No. 67361
S.I.C. 2591

VENETIAN BLINDS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

There are no technical or trade books devoted exclusively to venetian blinds available. However, since this is an assembly plant and the operations will always be the same, it would be practical to make a time and motion study of the operation and place the work on piece work. For this purpose, it is suggested that the following manuals be secured.

A. Process Engineering Economics. H. E. Schweyer. 1955. 409 pp. Illus. $10.50

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

A source of ideas for effecting savings in the design, operation, and management of industries.

B. Total Quality Control. Dr. A. V. Feigenbaum. 1961. 610 pp. Illus. $14.00

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

II. TECHNICAL AND TRADE PERIODICALS

No technical or trade periodicals are devoted exclusively to the venetian blind industry.

A. Factor Equipment and Production. Monthly. No price given.

C. W. Cargo, Publisher
444 Belmont Ave.
Chicago, Illinois 60657

B. Factory. Monthly. $2.00/year.

McGraw-Hill, Inc
330 West 42nd Street
New York, New York 10036

C. Contract. Monthly. $5.00/year.

Gralla Publications, Inc.
7 East 43rd Street
New York, New York 10017

Magazine of commercial and institutional design and furnishings.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A.	Patent No. 3,224,490 Vertical Venetian blind construction.	December 1965	16 p.
B.	Patent No. 3,134,427 Venetian blind.	May 1964	4 p.
C.	Patent No. 3,129,750 Venetian blinds.	April 1964	3 p.
D.	Patent No. 3,123,130 Operating device for venetian blinds.	March 1964	4 p.
E.	Patent No. 3,101,113 Venetian blind.	August 1963	7 p.
F.	Patent No. 3,110,013 Venetian blind mechanism	August 1963	4 p.
G.	Patent No. 3,090,428 Operating mechanisms for venetian blind.	May 1963	4 p.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Venetian Blind Institute
9 Fairview Terrace
P.O. Box 276
Maplewood, New Jersey 07040

B. American Institute of Interior Designers
673 Fifth Ave[illegible]
New York, N[illegible] [illegible]ork 10022

VI DIRECTORIES

Housewares. Annual. $1.00

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Lists U.S. manufacturers of housewares and hardware and their suppliers.

VII. PROFESSIONAL ENGINEERING SERVICES

Since this is an assembly plant with no machine tools and only a few hand tools as necessary equipment, there is no need for an engineering company's professional advice when establishing this factory. The plant layout on pages 4-5 of this profile should give sufficient information to anyone wishing to set up a venetian blind plant.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

NDUSTRY PROFILES

MEN'S SPORT SHIRT

I. P. No. 67362
S. I. C. 2321

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I. P. No. 67362
S. I. C. No. 2321
DECEMBER 1967

MEN'S SPORT SHIRTS

PRODUCT DESCRIPTION

Men's sport shirts made from cotton plaid gingham. These shirts have elbow length sleeves and open necks.

A. GENERAL EVALUATION OF PROSPECTS

These shirts are popular in tropical and semi-tropical climates where, quite often, a sport shirt is worn in the daytime for business and a dress shirt is worn for social activities in the evening. These shirts would be worn in urban areas more than in rural areas. The type of machinery needed to produce these shirts is identical with that needed for work and dress shirts. However, the degree of skill is somewhat less than on the dress shirts. When production volume is small, it might be possible to produce all types of shirts in the same factory.

B. MARKET ASPECTS

1. USERS

Teenagers and male adults.

2. SALES CHANNELS AND EXTENT OF MARKET

This factory would sell to wholesalers for resale to small retail outlets. It would sell directly to large retail stores. The rate of consumption of sport shirts will depend primarily upon the income level and the dressing habits of the population. These shirts are easily shipped and can be transported anywhere within the country. Since the investment required for this industry is not large, competition might be encountered from other domestic shirt manufacturing plants. A plant of this size would not be able to compete with large mass production plants in international markets but it should be able to meet import competition since imported goods would have the disadvantage of having to pay import duties in most countries.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availabiilty of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

The annual gross sales revenue is estimated at $350,000.
The total fixed investment, plus working capital, is estimated at $132,400.
The annual gross profit, before taxes, is estimated at $25,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 7.1%.
(A gross profit on sales, before taxes, of 7.1%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 19.0%.

5. COST PER MAN EMPLOYED

Thirty direct workers and nine indirect workers or a total of thirty-nine workers, are employed.
The total fixed capital investment is estimated at $71,600.
Based on these figures, the fixed investment per man employed would amount to about $1,840.

C. PRODUCTION REQUIREMENTS - MEN'S SPORT SHIRTS

I.P. No. 67362

ANNUAL CAPACITY - ONE SHIFT OPERATION: 180,000 SHIRTS

S.I.C. 2321

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - one-half acre	
Building - one story, 60' x 100' may use any suitable local material	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 71,600*

Principal items :

3 Cutting tables	Racks
Cloth spreader	Benches
Cloth winder	Chairs

Electric knives
Electric drill
24 Sewing machines
1 Buttonhole machine
Folding machine
Presser
2 Trim masters
Turning stands
2 Hand trucks
Stacker

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 60,800
c. Total Capital Requirements	$ 132,400

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Percale print	154,000 yds.	
Lining		
Thread		
Buttons		
Size tags, paper		
Labels, woven		
Pins		
Boxes		
Shipping cartons		
Total direct materials		$ 49,600

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 4,300

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 80 H.P. connected load	
Fuel - 4,000 gals. oil	
Water - sanitation & fire protection	$ 3,120

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 5,880

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager & Supervisors	5	
Office	2	
Machine fixer	1	
Truck driver	1	
Total indirect labor	9	$ 77,000
b. Direct labor		
Skilled workers	4	
Semi-skilled workers	22	
Unskilled workers	4	
Total direct labor	30	$ 148,400

c. Training needs

Manager and supervisors and 2 skilled workers should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment

Truck.

b. External transport facilities

In and out shipments less than one ton per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

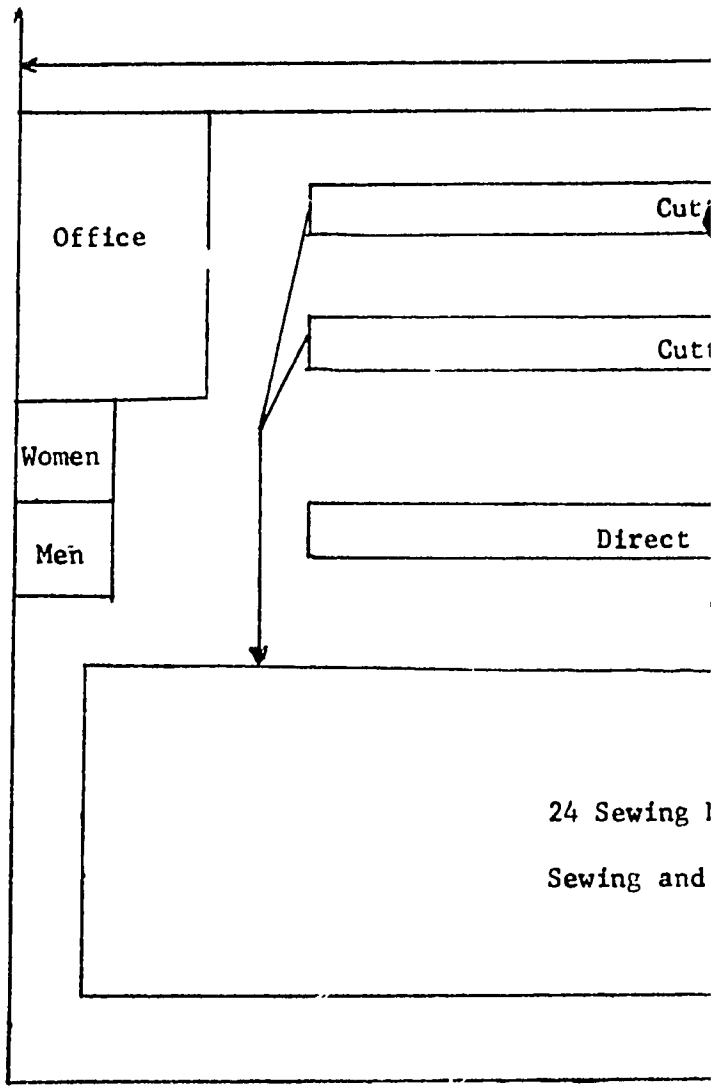
Direct materials	$ 49,600	
Direct labor	148,400	
Manufacturing overhead*	90,300	
Total manufacturing cost		$ 288,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 18,700
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 6 00
Total annual costs		$ 325,000
Annual Gross Profit		$ 25,000
ANNUAL SALES REVENUE		$ 350,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

MEN

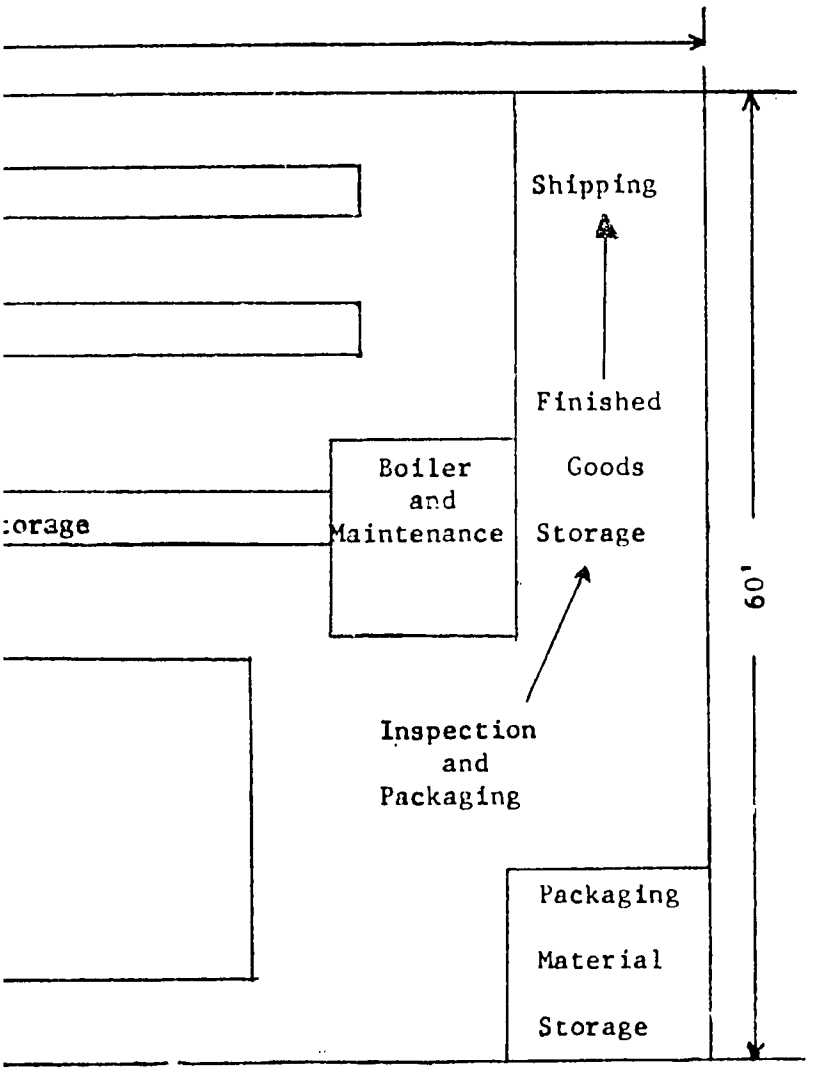
PLANT LA



HIRTS

I. P. NO. 67362
S. I. C. 2321

WORK FLOW



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MEN'S SPORT SHIRTS

SELECTED REFERENCES

I TECHNICAL AND TRADE BOOKS

A. Apparel Manufacturing Analysis. Jacob Solinger. 1961. 800 pp. Illus. $25.00

John Wiley and Sons, Inc.
605 Third Avenue
New York, New York 10016

The nature and scope of apparel production.

B. Clothing Construction. E. A. Mansfield. 1953. 454 pp. Illus. $7.50

Houghton Mifflin Company
2 Park Street
Boston, Massachusetts 02108

C. Progressive Apparel Production. B. Frank. 1953. $4.50

Fairchild Publications, Inc.
7 East 27th Street
New York, New York 10003

Progressive sewing techniques in the garment industry.

II. TECHNICAL AND TRADE PERIODICALS

A. Men's Wear. Semi-Monthly. $5.00/year

Fairchild Publications, Inc.
7 East 27th Street
New York, New York 10003

B. Apparel Manufacturer. Monthly. $5.00/year

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Information about the apparel manufacturing industry: new processes, equipment, products

C. The Bobbin Magazine. Monthly. $4.00/year

Needle Trades Publishing Company
P. O. Box 1354
Columbia, South Carolina 29202

Management magazine for the needle trades industries.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. (7th Ed.) No. 15 in the Small Business Management Series

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each

A. Patent No. 3,174,156 March 1965 5 p.
Shirt and sport shirt construction.

B. Patent No. 3,066,418 December 1962 5 p.
Outer shirts and blouses.

C. Patent No. 2,999,245 September 1961 6 p.
Shirt construction.

D. Patent No. 2,941,210 1960 4 p.
Improved methods for making men's shirts.

E. Patent No. 2,846,687 August 1958 5 p.
Men's shirts.

F. Patent No. 2,935,749 1960 6 p.
Men's and boys' dress shirts.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. American Apparel Manufacturers Association, Inc.
2000 "K" Street, N. W
Washington, D. C. 20006

B. Shirt Institute
331 Madison Avenue
New York, New York 10017

VI. DIRECTORIES

A. Apparel Manufacturers Directory. Annual. $3.00

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Lists 5,000 suppliers of garment industry fabrics, trimmings, machinery and equipment.

I. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by referring to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

RICE BRAN OIL AND BRAN MEAL

I. P. No. 67363
S. I. C. 2044

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using his profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67363
S.I.C. 2044
DECEMBER 1967

RICE BRAN OIL AND BRAN MEAL

PRODUCT DESCRIPTION

Rice bran oil and meal obtained by milling rice. Rice meal is the ground by-product of rice milling, consisting of rice bran, polishings and some rice flour, used chiefly as a feed for livestock.

A. GENERAL EVALUATION OF PROSPECTS

The prospects for this factory will depend upon the local availability of rice suitable for the extraction of bran oil and meal and upon the potential market for these by-products. Rice bran would not be available locally unless one or more rice milling plants exist in the country. Rice bran oil is an exportable item. Therefore, if the entire production of the plant could not be consumed locally, the balance could probably be exported. While the gross profits of this plant are moderate in comparison with the gross sales, they are, nevertheless, satisfactory in comparison with the capital requirements.

B. MARKET ASPECTS

1. USERS

Rice bran oil and meal are utilized by a variety of industries in the manufacture of other products, including the manufacture of livestock feed, furfural, a solvent used in making deodorants, disinfectants and preservatives, and in the manufacture of black enamel and paint removers.

2. SALES CHANNELS AND EXTENT OF MARKET

Rice bran oil would be sold direct to other industries. Rice bran meal would also be sold direct to other manufacturers who require this by-product and would be sold direct to distributors of livestock feed. The market needed to support this plant cannot be measured in terms of population; therefore, a comprehensive market survey of potential users should be made. This plant should be located near the country's industrial center. Both the oil and meal are exportable items and there should be an export market for the balance of the products not consumed locally. This industry cannot operate profitably on a small basis.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $1,870,000.
The total fixed investment, plus working capital, is estimated at $702,000.
The annual gross profit, before taxes, is estimated at $243,000.
Based on these figures, the profit on gross sales, before taxes, amounts to 13.0%.
(A gross profit on sales, before taxes, of 13.0%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, amounts to about 34.6%.

5. COST PER MAN EMPLOYED

Fifteen direct workers and six indirect workers, or a total of twenty-one workers, are employed.
The total fixed capital investment is estimated at $393,500.
Based on these figures, the fixed investment per man employed would amount to about $18,735.

C. PRODUCTION REQUIREMENTS - RICE BRAN OIL AND BRAN MEAL I.P. No. 67363

ANNUAL CAPACITY-THREE SHIFT OPERATION: 4,000 TONS OF OIL AND 22,000 TONS OF MEAL S.I.C. 2044

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 1/2 acres	
Building - 3,000 sq. ft. Fireproof	
4 buildings - walls 10' to 33' high	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 393,500

Principal items:

The production tools and equipment for this plant are usually sold on a turnkey basis. The equipment includes tanks, conveying equipment, pipes, pumps, extraction equipment, heaters, and other tools and equipment.

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 308,500
c. Total Capital Requirements	$ 702,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Rice bran	30,000 tons	
Solvent	13,000 gals.	
Bags		
Total direct materials		$1,245,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 10,600

c. Availability of materials & supplies

All materials and supplies should be available locally.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 1,000 H.P. connected load	
Fuel - production, heating and sanitation	
Water - 4,000,000 gallons annually for production and sanitation	$ 61,800

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 38,500

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Office	2	
Maintenance	2	
Truck Driver	1	
Total indirect labor	6	$ 42,000
b. Direct labor		
Skilled workers	3	
Semi-skilled workers	6	
Unskilled workers	6	
Total direct labor	15	$ 69,600

c. Training needs

The manager should be fully experienced. He and the 3 skilled workers should be able to train the other workers and reach full production in 30 days.

6. TRANSPORTATION

a Own transport equipment

One truck.

b. External transport facilities

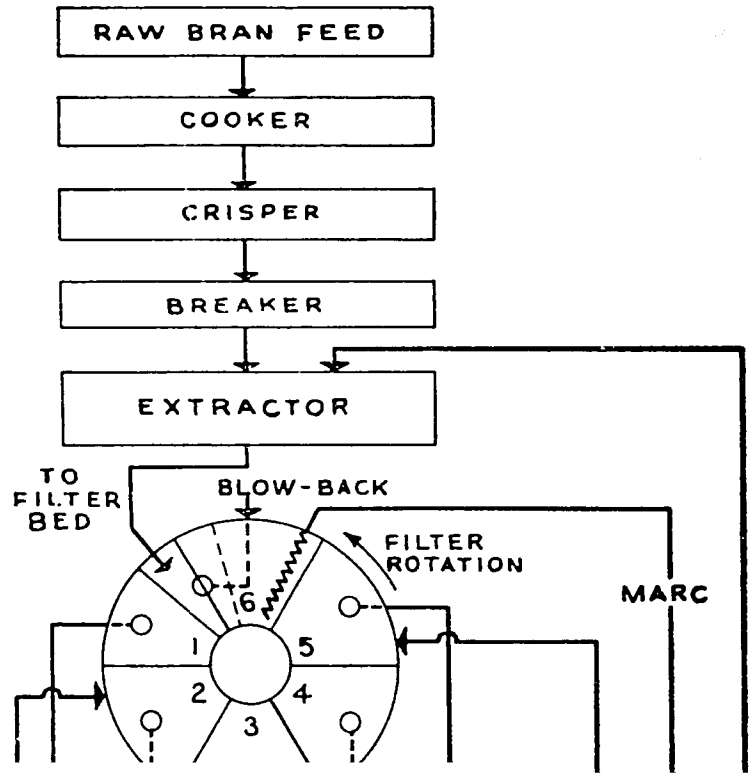
In and out shipments total about 240 tons per day. Railroad and good highways are essential.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$1,245,000	
Direct labor	69,600	
Manufacturing overhead*	152,900	
Total manufacturing cost		$1,467,500
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 79,500
Sales expense		$ 50,000
Freight-out, travel discounts Allowances & bad debts		$ 30,000
Total annual costs		$1,627,000
Annual Gross Profit		$ 243,000
ANNUAL SALES REVENUE		$1,870,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.


RAW BRAN FEED
COOKER
CRISPER
BREAKER
EXTRACTOR
TO FILTER BED
BLOW-BACK
FILTER ROTATION
MARC
1
2
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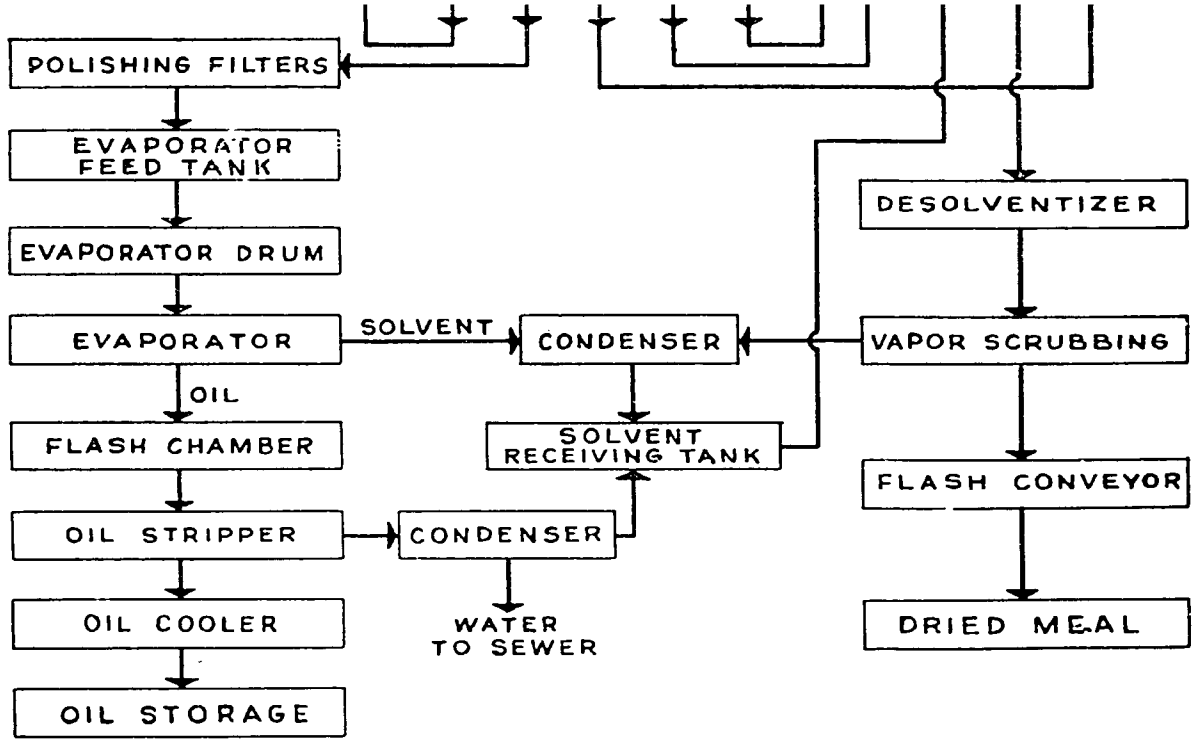
RICE BR



WORK-FLOW CHART
FOR
FILTRATION - EXTRACTION OF RICE BRAN OIL

BRAN MEAL

I.P. NO. 67363
S.I.C. 2044

RICE BRAN OIL AND BRAN MEAL

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Chemistry and Technology of Cereals as Food and Feed. S. A. Matz. 1959. 732 p. $15.00

The Avi Publishing Company, Inc.
P. O. Box 388
Westport, Connecticut 06881

Covers the production of oils from cereals and feed manufacturing from rice.

II. TECHNICAL AND TRADE PERIODICALS

A. American Oil Chemists' Society Journal. Monthly. $9.00/year.

American Oil Chemists' Society
35 East Wacker Drive
Chicago, Illinois 60601

B. Food Processing/Marketing. Monthly. $7.00/year.

Putnam Publishing Co.
111 E. Delaware Place
Chicago, Illinois 60611

C. American Miller and Processor. Monthly. $2.50.

National Provisioner
15 W. Huron
Chicago, Illinois 60610

Grain milling and processing.

D. Grain and Feed Journals and Rice News. Semi-monthly. $5.00.

Grain and Feed Journals Consolidated
141 W. Jackson Boulevard
Chicago, Illinois 60604

Whole grain feed and seed industry.

III. BUSINESS MANAGEMENT MATERIALS

A. Profitable Small Plant Layout. John R. Immer. 48 pp. Illus. 1964. No. 21 (2nd Edition) in the Small Business Management Series of the Small Business Administration, Washington, D. C.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

How to move materials through the shop economically and efficiently.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

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U.S. Government Printing Office
Washington, D. C. 20402

Insights and clues concening the entire process of small business formation, growth, and decline.

IV. U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. 3,259,501 July 1961 8 p.
Rice hull products and method.

B. Patent No. 3,083,365 March 1963 3 p.
Process of removing oils from suds, etc.

C. Patent No. 3,012,888 December 1961 3 p.
Method for producing a granular, oil free phosphate product.

D. Patent No. 2,829,054 April 1958 4 p.
Method of enriching food products.

E. Patent No. 2,831,770 April 1958 2 p.
Enrichment of cereal grains.

F. Patent No. 2,811,447 October 1957 2 p.
Fortified cereal grains.

G. Patent No. 2,829,055 1958 6 p.
Method of extracting oils from rice.

H. Patent No. 2,733,136 1956 4 p.
Apparatus for the extraction of oils from vegetable materials.

I. Patent No. 2,707,712 1955 12 p.
Method and apparatus for the extraction of oils from animal and vegetable products.

J. Patent No. 2,727,914 1955 3 p.
Rice bran oil extraction process.

K. Patent No. 2,680,754 1954 9 p.
Solvent extraction of oils, fats, and waxes from particles of solid matter.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Rice Millers Association
425-13th Street, N. W.
Washington, D. C. 20004

B. Rice Council for Market Development
3917 Richmond Avenue
Houston, Texas 77027

C. American Feed Manufacturers Association, Inc.
53 West Jackson Boulevard
Chicago, Illinois 60604

VI. DIRECTORIES

No directory available devoted exclusively to the subject of rice bran oil and bran meal.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

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National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED RED RASPBERRIES

I. P. No. 67364
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67364
S.I.C. 2033
NOVEMBER 1967

CANNED RED RASPBE...IES

PRODUCT DESCRIPTION

Canned red raspberries, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned red raspberries normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh fruits, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $134,000.
The total fixed investment, plus working capital, is estimated at $139,300.
The annual gross profit, before taxes, is estimated at $7,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.2%.
(A gross profit on sales, before taxes, of 5.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.0%.

5. COST PER MAN EMPLOYED

Nineteen direct workers and four indirect workers, or a total of twenty-three workers, are employed.
The total fixed capital investment is estimated at $128,000.
Based on these figures, the fixed investment per man employed would amount to $5,575.

C. PRODUCTION REQUIREMENTS - CANNED RED RASPBERRIES
ANNUAL CAPACITY - ONE SHIFT OPERATION : 6 WEEKS : 427,500 CANS

I.P. No. 67364
S.I.C. 2033

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 128,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tra nway & Hoist, Auxiliary Kettle, 3, Retorts (4 crates) 30 Crates, 10 Crate Dollies Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Fruit Washer, Eliminator, Inspection Belt

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 11,300
c. Total Capital Requirements	$ 139,300

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Red raspberries	182 tons	
Cans	427,500	
Additives		
Cartons and labels		
Total direct materials		$ 72,200
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil and maintenance of truck		
Total supplies		$ 1,800

c. Availability of materials & supplies

Red raspberries must be available locally.
Labels and cartons should be available locally.
Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,000

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 3,400
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	14	
Total direct labor	19	$ 10,000

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in one week.

6. TRANSPORTATION

a. Own transport equipment

Truck.

b. External transport facilities

During the canning season the input to the plant will amount to about 5 tons per day. Good highways.

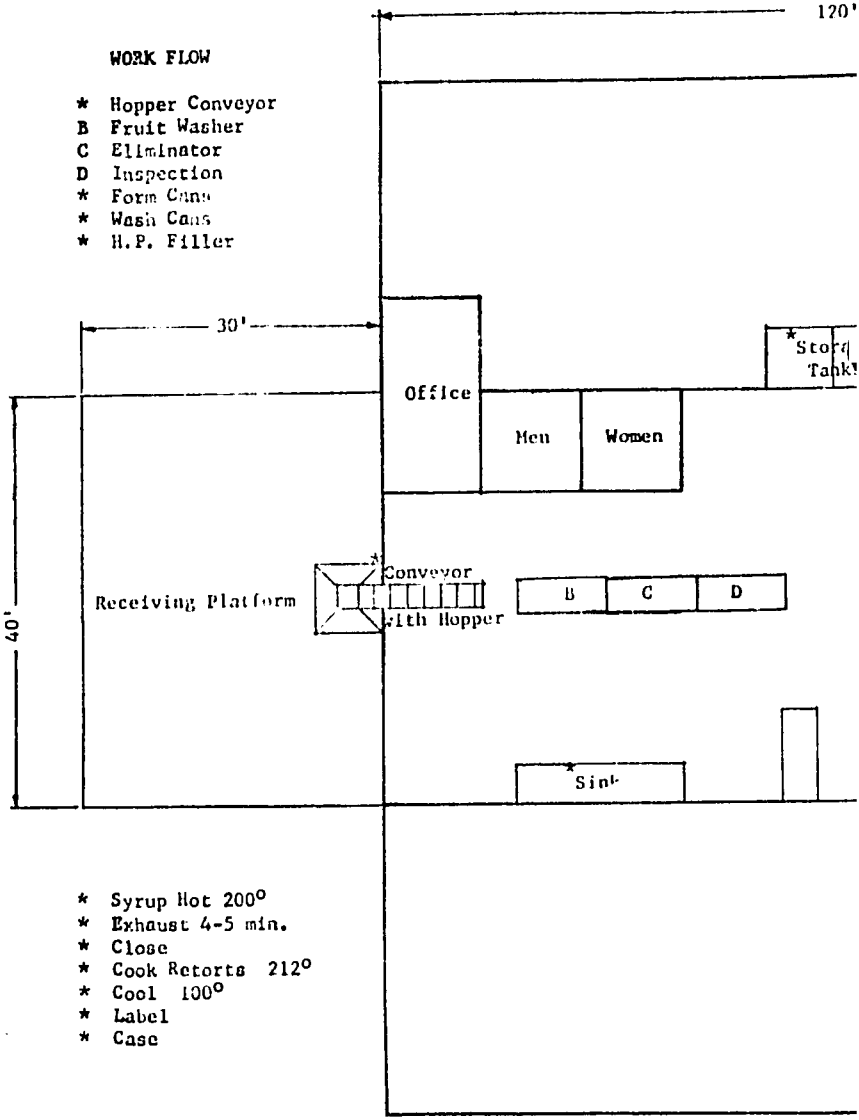
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct Materials	$ 72,200	
Direct labor	10,000	
Manufacturing overhead*	16,600	
Total manufacturing cost		$ 98,800
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,200
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 127,000
Annual Gross Profit		$ 7,000
ANNUAL SALES REVENUE		$ 134,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNED

PLANT



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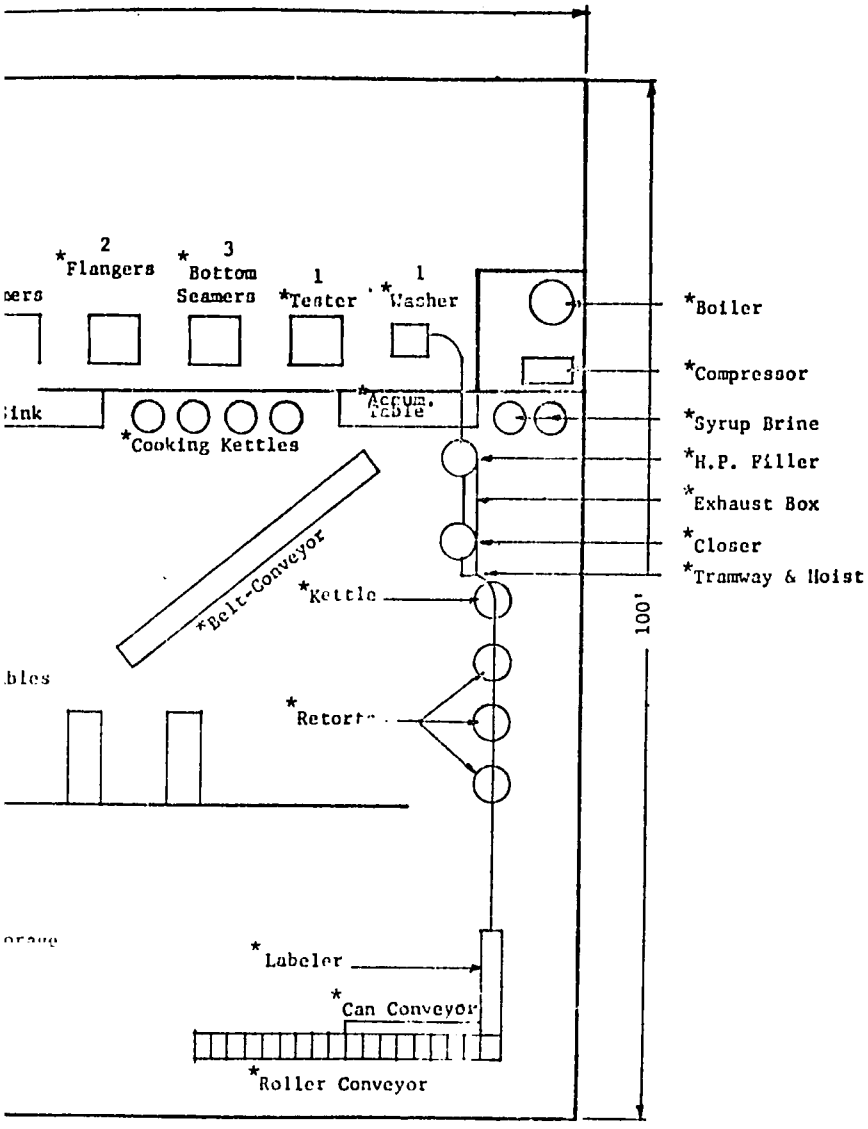
Items marked with letters indicate equipment a



canning all products.

r this product.

I. P. No. 67364
S. I. C. 2033

CANNED RED RASPBERRIES

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling packaging, international trade, U. S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.000.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. (Small Business Administration). 233 pp. $1.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,326 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N. W.
Washington, D. C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N. W.
Washington, D. C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N. W.
Washington, D. C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N. W.
Washington, D. C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

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GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED TOMATO SOUP, READY TO SERVE

I. P. No. 67365
S. I. C. 2032

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I. P. No. 67365
S.I.C. 2032
NOVEMBER 1967

CANNED TOMATO SOUP, READY TO SERVE

PRODUCT DESCRIPTION

Canned tomato soup, ready to serve, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned tomato soup normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned soups. Consumption of canned soups will vary primarily with the climate, the availability of fresh vegetables, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $114,000.
The total fixed investment, plus working capital, is estimated at $135,500.
The annual gross profit, before taxes, is estimated at $6,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.2%.
(A gross profit on sales, before taxes, of 5.2%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 4.4%.

5. COST PER MAN EMPLOYED

Fifteen direct workers and four indirect workers, or a total of nineteen workers, are employed.
The total fixed capital investment is estimated at $ 126,000.
Based on these figures, the fixed investment per man employed would amount to about $6,600.

C. PRODUCTION REQUIREMENTS - CANNED TOMATO SOUP, READY TO SERVE

I.P. No. 67365
S.I.C. 2032

ANNUAL CAPACITY - ONE SHIFT OPERATION - 12 WEEKS : 855,000 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 126,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Washer, Cutter, Pump, Extractor, 2 Mixing Kettles

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 9,500
c. Total Capital Requirements	$ 135,500

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Tomatoes	300.0 tons	
Water	200.0 ,,	
Salt	5.0 ,,	
Sugar	10.2 ,,	
Cracked meal	10.8 ,,	
Onions powdered	450.0 lbs.	
White pepper	108.0 ,,	
Bay	8.0 ,,	
Italian thyme	16.5 ,,	
Cans	855,000	
Cartons & Labels		
Total direct materials		$ 44,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance on truck	
Total supplies	$ 2,000

c. Availability of materials & supplies

Tomatoes must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 9,800

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 6,900
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	10	
Total direct labor	15	$ 16,100

c. Training Needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at the plant will amount to about 4.4 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 44,000	
Direct labor	16,100	
Manufacturing overhead*	20,600	
Total manufacturing cost		$ 80,700
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,300
Sales expense		11,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 108,000
Annual Gross Profit		$ 6,000
ANNUAL SALES REVENUE		$ 114,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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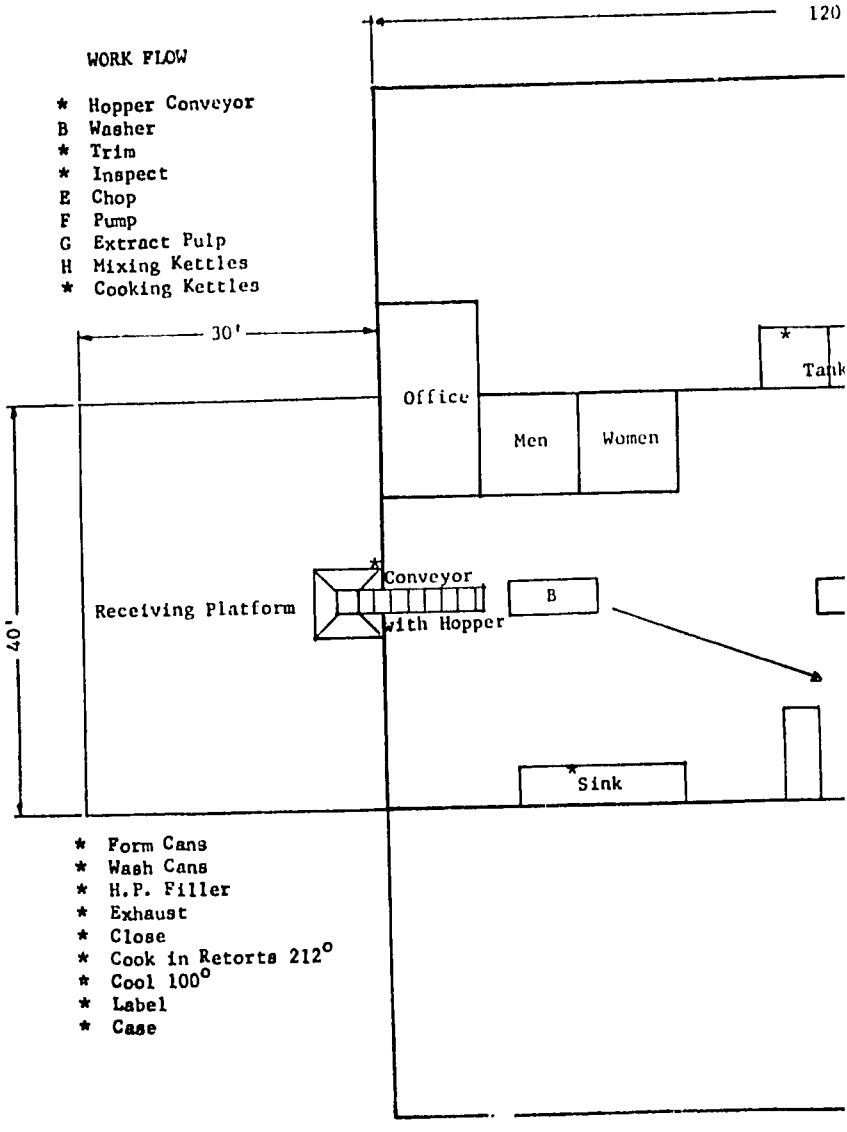
PLANT

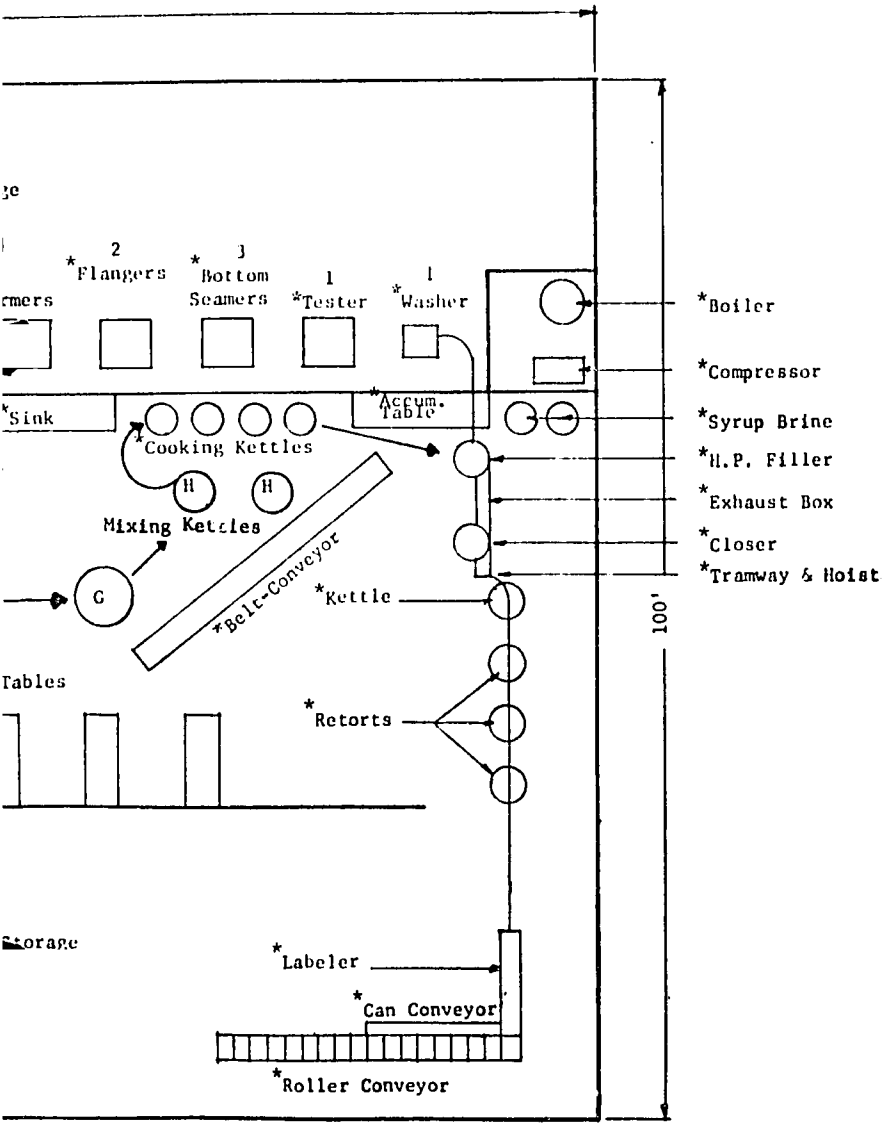


Items marked with an asterisk indicate basic

Items marked with letters indicate equipment

O SOUP, READY TO SERVE

I. P. NO. 67365
S. I. C. 2032



or canning all products,

for this product.

12

I. P. No. 67365
S. I. C. 2032

CANNED TOMATO SOUP, READY TO SERVE

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications: (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards ahd additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the Food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N. W.
Washington, D. C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N. W.
Washington, D. C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.
National Canners Association
1133 20th Street, N. W.
Washington, D. C. 20036

B. Canning Machinery Directory. Gratis.
Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N. W.
Washington, D. C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.
Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

The price of *Industry Profiles* is a minimum of $3.00 for from one to five "*Profiles*." The purchaser may select up to five of any "*Profiles*" available.

Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

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INDUSTRY PROFILES

CANNED PEA SOUP, READY TO SERVE

I. P. No. 67366
S. I. C. 2032

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The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67366
S.I.C. 2032
NOVEMBER 1967

CANNED PEA SOUP, READY TO SERVE

PRODUCT DESCRIPTION

Canned pea soup, ready to serve, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned pea soup normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned soups. Consumption of canned soups will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognised that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $145,000.
The total fixed investment, plus working capital, is estimated at $138,100.
The annual gross profit, before taxes, is estimated at $8,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.5%.
(A gross profit on sales, before taxes, of 5.5%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.8%.

5. COST PER MAN EMPLOYED

Fifteen direct workers, and four indirect workers, or a total of 19 workers, are employed.
The total fixed capital investment is estimated at $126,000.
Based on these figures, the fixed investment per man employed would amount to $6,600.

C. PRODUCTION REQUIREMENTS - CANNED PEA SOUP, READY TO SERVE

I.P. No. 67366
S.I.C. 2032

ANNUAL CAPACITY - ONE SHIFT OPERATION: 14 WEEKS: 997,500 CANS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 126,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H P.- -120 P.S.I., Dry Clean Blower, Wash Reel, Blancher, 2 Mixing Kettles

b. Working Capital (15 Days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 12,100
c. Total Capital Requirements	$ 138,100

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Dried peas	114.6 tons	
Wheat flour	4.0 tons	
Sugar	3.5 tons	
Salt	2.5 tons	
Water	393.0 gals.	
Cans	997,500	
Labels & cartons		
Total direct materials		$ 64,500

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil & maintenance of truck	
Total supplies	$ 2,200

c. Availability of materials & supplies

Peas must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable.	
	$ 2,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 9,800

5. MANPOWER

	Number	Annual cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 8,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	10	
Total direct labor	15	$ 18,800

c. Training needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season, the input at the plant will amount to about 1.5 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

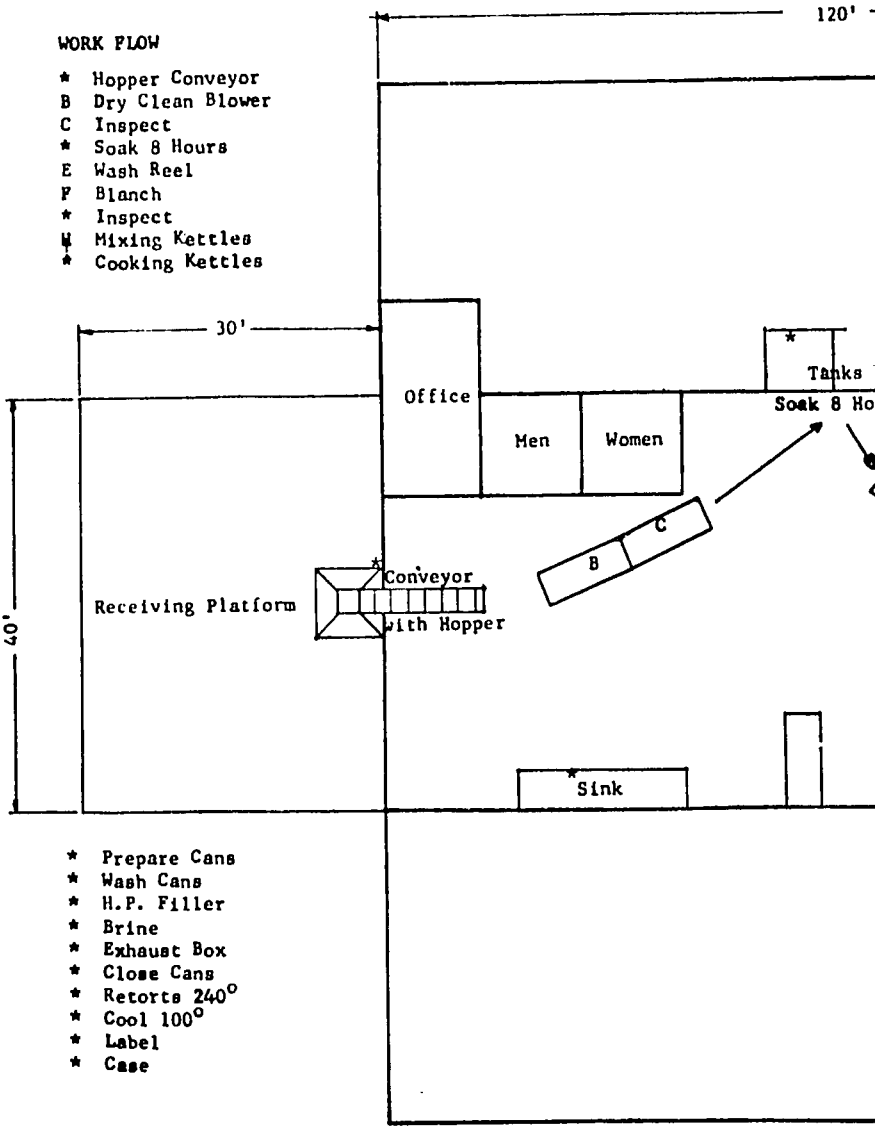
Direct materials	$ 64,500	
Direct labor	18,800	
Manufacturing overhead*	22,400	
Total manufacturing cost		$ 105,700
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 14,300
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 5,000
Total annual costs		$ 137,000
Annual Gross Profit		$ 8,000
ANNUAL SALES REVENUE		$ 145,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNED

PLANT L

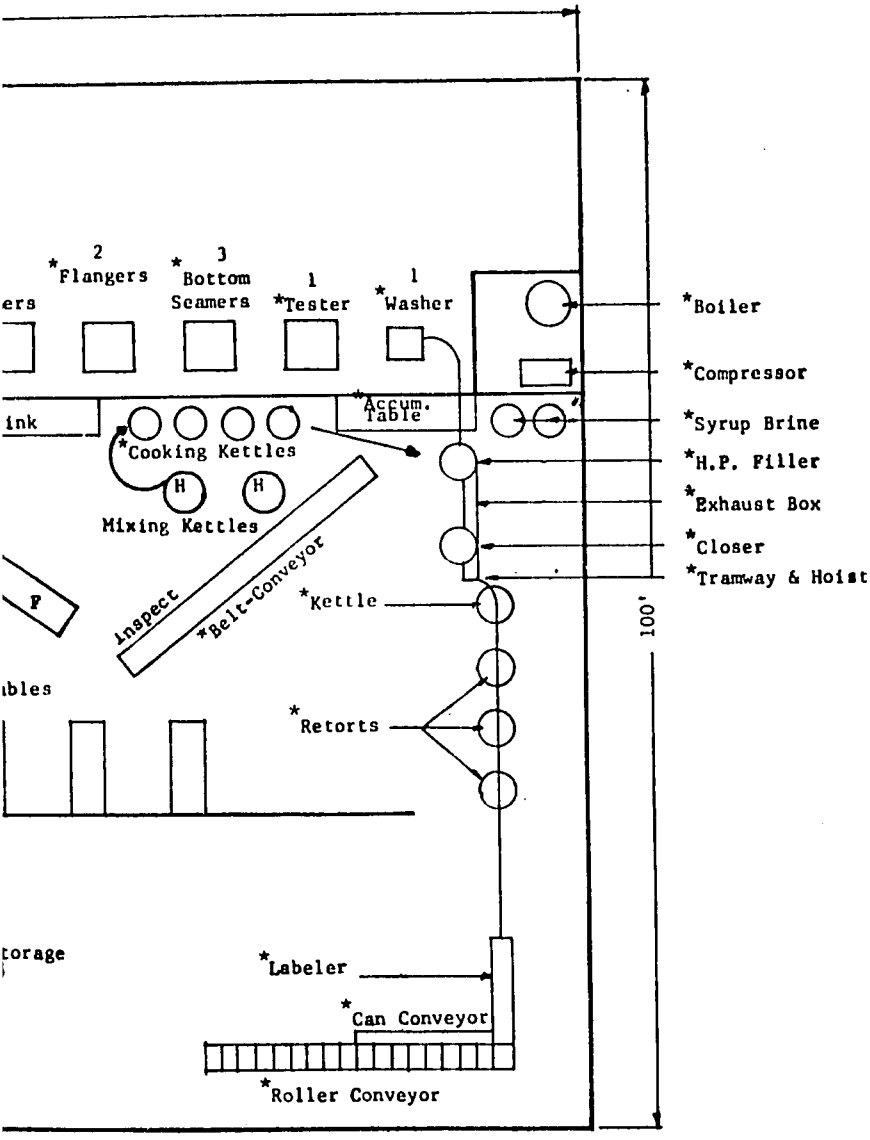


Items marked with an asterisk indicate basic equi

Items marked with letters indicate equipment add

P, READY TO SERVE

I. P. NO. 67366
S. I. C. 2032



canning all products.

r this product.

I.P. No. 67366
S.I.C. 2032

CANNED PEA SOUP, READY TO SERVE

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Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

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93 Worth Street
New York, N.Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

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Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

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III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
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Prepared by the Small Business Administration to assist in the development of more effective management in small business.

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Available U.S. Patent Office, Washington, D.C. 20231. $.50 each.

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Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

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Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

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Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

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GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED PORK AND BEANS

I. P. No. 67367
S. I. C. 2032

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

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I. P. No. 67367
S. I. C. 2032
NOVEMBER 1967

CANNED PORK AND BEANS

PRODUCT DESCRIPTION

Canned pork and beans, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned pork and beans normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned pork and beans. Consumption of this product will vary primarily with the climate, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $210,000.
The total fixed investment, plus working capital, is estimated at $147,700.
The annual gross profit, before taxes, is estimated at $12,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.7%.
(A gross profit on sales, before taxes, of 5.7%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 8.1%.

5. COST PER MAN EMPLOYED

Twenty-one direct workers and four indirect workers, or a total of twenty-five workers, are employed.
The total fixed capital investment is estimated at $130,000.
Based on these figures, the fixed investment per man employed would amount to $5,200.

C. PRODUCTION REQUIREMENTS - CANNED PORK AND BEANS — I.P. No. 67367
ANNUAL CAPACITY - ONE SHIFT-OPERATION: 20 WEEKS : 1,425,000 CANS — S.I.C. 2032

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 130,000

Principal items:
Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Dry Clean Blower, Inspection Belt, Fume and Destone, Blancher, Meat Cutter

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 17,700
c. Total Capital Requirements	$ 147,700

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Dry beans	455 tons	
Meat	19 ,,	
Cans	1,425,000	
Additives		
Labels & Cartons		
Total direct materials		$ 105,100

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,900

c. Availability of materials & supplies

Dry beans and pork should be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 14-3/4 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 2,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,200

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 11,400
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	16	
Total direct labor	21	$ 36,600

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in one week.

6 TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 4 tons per day. Good highways.

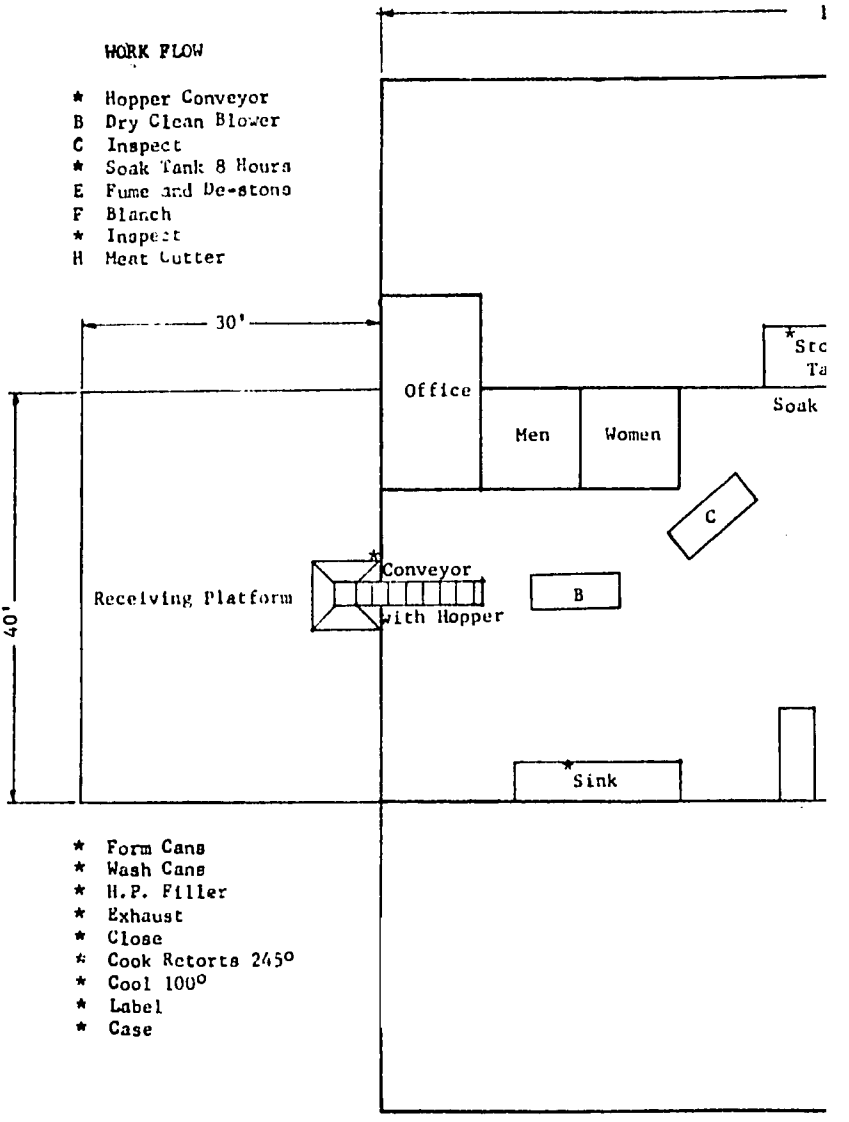
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$105,100	
Direct labor	36,600	
Manufacturing overhead*	25,900	
Total manufacturing cost		$ 167,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		13,400
Sales expense		12,000
Freight-out, travel discounts Allowances & bad debts		5,000
Total annual costs		$ 198,000
Annual Gross Profit		$ 12,000
ANNUAL SALES REVENUE		$ 210,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANN

PLAN



Items marked with an asterisk indicate basic

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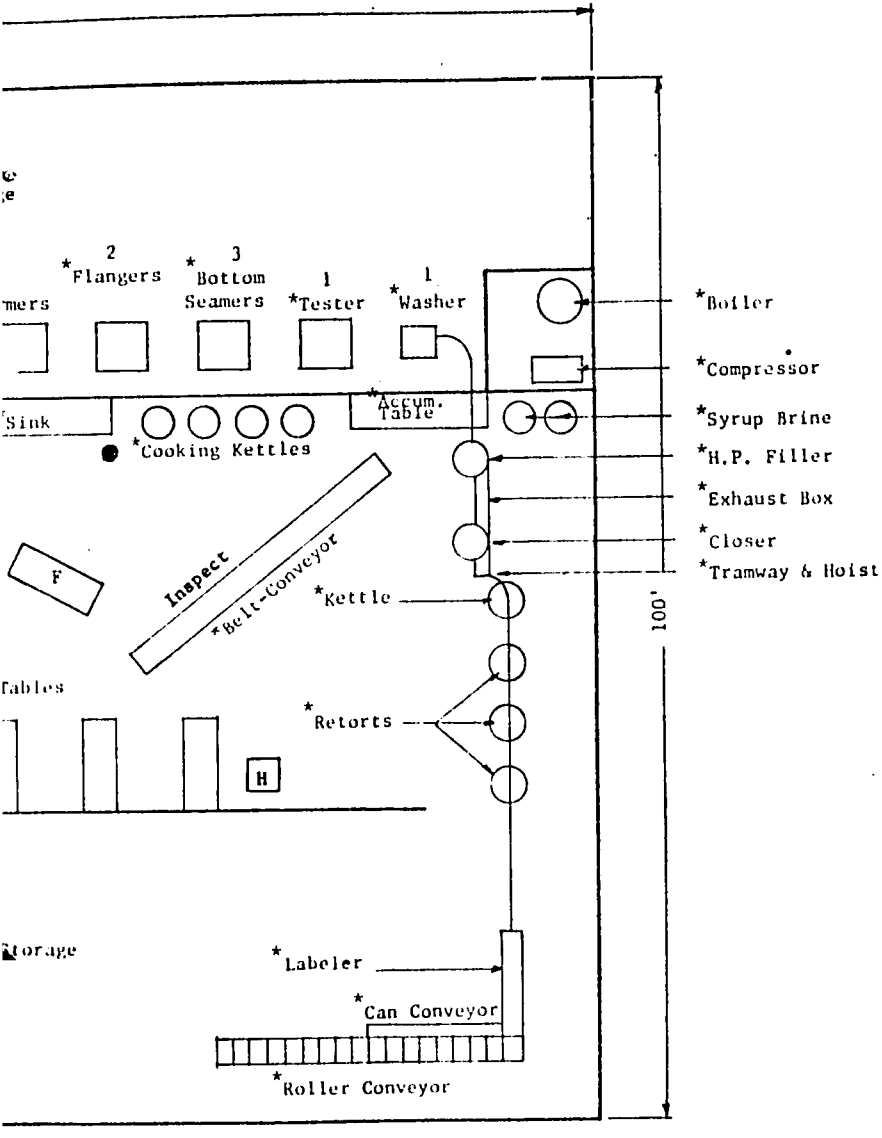

or canning all products.

for this product.

I.P. No. 67367
S.I.C. 2032
NOVEMBER 1967

CANNED PORK AND BEANS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
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C. Patent No. 3,071,475 Jan. 1963 7 p.
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INDUSTRY PROFILES

CANDY AND CONFECTIONERY

I. P. No. 67368
S. I. C. 2071

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I.P. No. 67368
S.I.C. 2071
DECEMBER 1967

CANDY AND CONFECTIONERY

PRODUCT DESCRIPTION

Confections whose basic ingredient is sugar or syrup. They may be flavored, colored or enriched with nuts or fruits.

A. GENERAL EVALUATION OF PROSPECTS

Candy can be made in many grades or qualities, varying according to taste, appearance and manufacturing cost. Many hard candies keep well and may be shipped long distances. Packaging costs are relatively high for high-quality candy while less expensive candy may be shipped in bulk in pails or cans. Naturally, the quality of the candy manufactured in this plant will depend upon the purchasing power of the local population. Candy is usually eaten by most of the population, particularly by children and teenagers. In most countries, the prospects for this industry should be good.

B. MARKET ASPECTS

1. USERS

Most of the local population will eat some candy. Children and teenagers are principal consumers.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made to wholesalers who would sell to the retail trade. Retail sales would also be made at the plant. The market for this product will depend to a great extent on the income of the populace. In the United States, women and middle-income families purchase the most candy. The extent of the market should be nationwide. Candy can be manufactured on a very small scale and domestic competition can be expected from bakeries and small stores which make their own candy and ice cream. If this plant is efficiently operated and managed well, it should encounter no difficulty in competing against imported candies.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $ 98,000.
The total fixed investment, plus working capital, is estimated at $67,300.
The annual gross profit, before taxes, is estimated at $10,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 10.2%.
(A gross profit on sales, before taxes, of 10.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 14.8%.

5. COST PER MAN EMPLOYED

Four direct workers and three indirect workers, or a total of seven workers, are employed.
The total fixed capital investment is estimated at $ 51,000.
Based on these figures, the fixed investment per man employed would amount to about $7,285.

C. PRODUCTION REQUIREMENTS - CANDY AND CONFECTIONERY

I.P. No. 67368

S.I.C. 2071

ANNUAL CAPACITY - ONE SHIFT OPERATION: 100,000 POUNDS
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - one-half acre	
Building - 4,000 sq. ft.	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 51,000

Principal items:

Rubber molds	Rubber matting
3 gas furnaces	Funnel dropper
3 kettles	2 bonbon dipping forks
2 chocolate melters	
Marble slab	Heating-cooling table
Slab bars	2 pulling hooks
2 adjustable roller cutters	Nut roaster
Cream beater-mixer	2 scales
Fire mixer	Hot water tank
Hobart mixer	Refrigerator
Uniform cutter	Water softener
Chocolate dipping table	Alkaline remover
Interlocking display tray	Delivery truck
Bonbon dipping table	Miscellaneous tools

b Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales Costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 16,300
c. Total Capital Requirements	$ 67,300

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
There are many materials from which candy is made, depending on the kind and quality. These materials include but are not limited to: sugar, molasses, glucose, invertase, corn starch, honey, acid, chocolate, butter, fats and oils, mild products, eggs, flavors, fruits, nuts. Since many kinds of candy would be produced, the cost of materials is shown as a lump sum.		
Packaging materials		
Total direct materials		$ 30,000
b. Supplies		
Lubricants & hand tools		
Gas, oil and maintenance of truck		
Maintenance & spare parts		
Office supplies		
Total supplies		$ 1,000

c. Availability of materials & supplies

All materials and supplies should be available locally.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - for production and lighting	
Fuel - gas for cooking furnaces and for heating	
Water - for production and sanitation	
Water must be potable.	$ 1,200

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 4,400

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Office	1	
Truck Driver	1	
Total indirect labor	3	$ 23,000
b. Direct labor		
Skilled workers	1	
Semi-skilled workers	0	
Unskilled workers	3	
Total direct labor	4	$ 16,800

c. Training needs

Manager must be fully experienced. He and one skilled worker should be able to train other workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

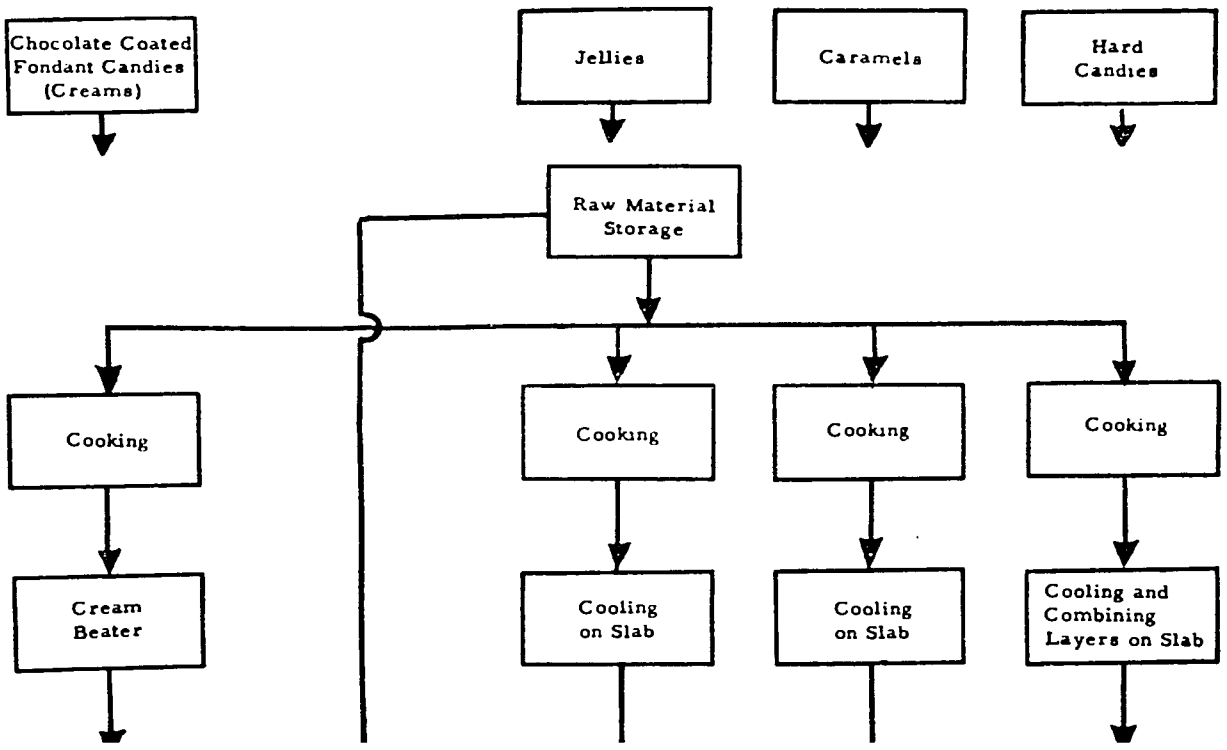
In and shipments only about 800 pounds per day.
Good highways needed.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 30,000	
Direct labor	16,800	
Manufacturing overhead*	29,600	
Total manufacturing cost		$ 76,400
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 4,600
Sales expense		$ 6,000
Freight-out, travel discounts Allowances & bad debts		$ 1,000
Total annual costs		$ 88,000
Annual Gross Profit		$ 10,000
ANNUAL SALES REVENUE		$ 98,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

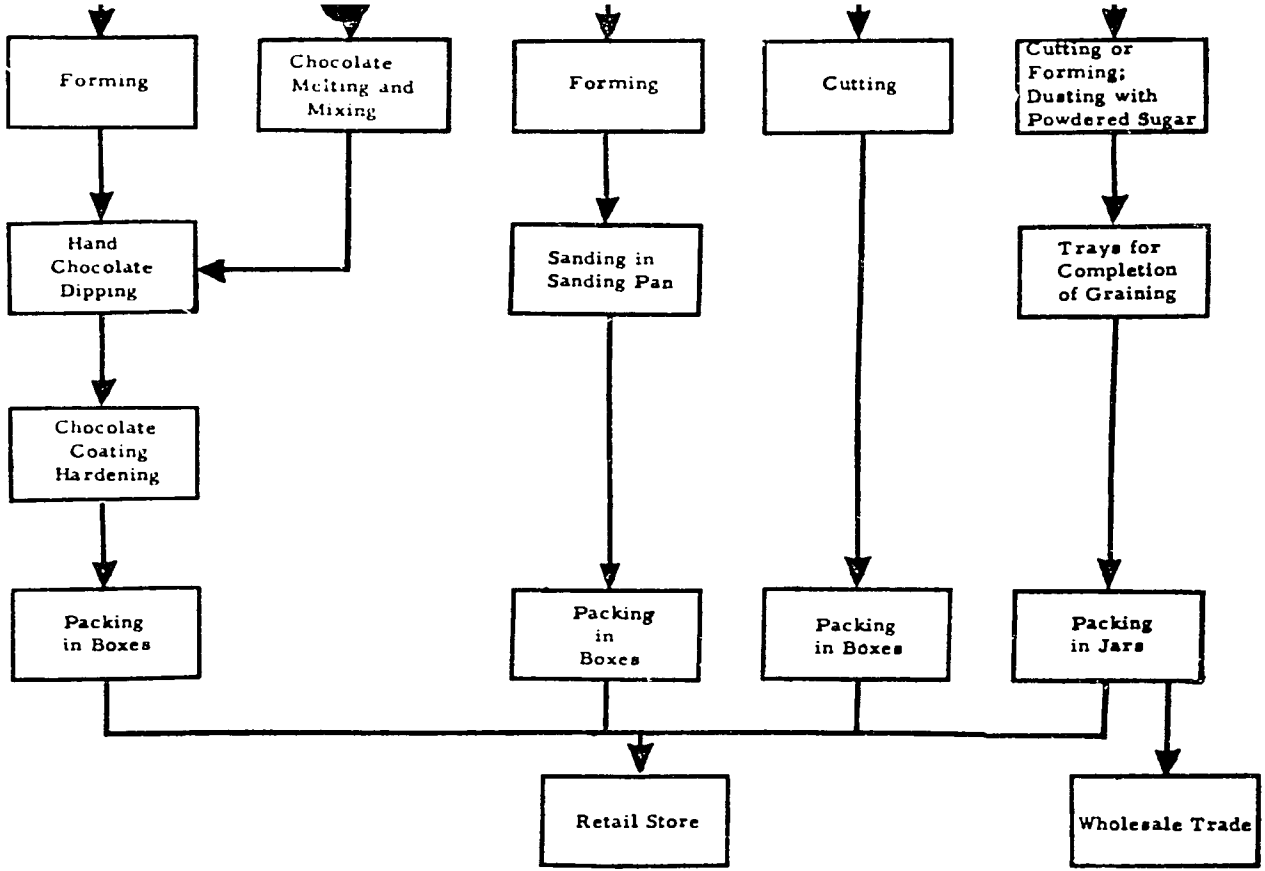
FLOW DIAGRAM



CANE

ONFECTIONERY

I.P. NO. 67368
S.I.C. 2071



I.P. No. 67368
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CANDY AND CONFECTIONERY

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Candy and Candy-making. Mary B. Bookmeyer. 1929. $3.40

Charles A Bennett Company, Inc.
809 West Detweiler Drive
Peoria, Illinois 61614

Gives formulas for making confections.

B. An Encyclopedia of Candy and Ice Cream Making. Simon I. Leon. 1959. 454 pp. $12.00.

Chemical Publishing Company
212 Fifth Avenue
New York, New York 10010

C. Federal Food, Drug, and Cosmetic Act, as amended. General Regulations for its Enforcement, Title 21, Part I, $3.00

Superintent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including additives, such as vitamins, seasoning, coloring, and the enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Manufacturing Confectioner. Monthly. $3.00/year.

The Manufacturing Confectioner Publishing Company
1031 South Boulevard
Oak Park, Illinois 60302

Deals with candy, chocolate and allied products, including new materials, machinery, equipment, and management of confectionery plants.

B. Candy Industry and Confectioners Jounal. Fortnightly. $5.00/year.

Don Gussow, Publisher
777 Third Avenue
New York, New York 10017

Prints sections on packaging and technology.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,152,908 October 1964 2 p.
Process for preparing a glazed chocolate product.

B. Patent No. 3,063,834 November 1962 3 p.
Confection and method of making.

C. Patent No. 3,062,662 November 1962 3 p.
Confection and method of making.

D. Patent No. 3,220,853 November 1965 3 p.
Improved confection, namely, stabilized colored marshmallows.

E Patent No. 3,184,316 May 1965 2 p.
Method for producing a candy coated mixture of nut meats and puffed cereal particles.

F. Patent No. 3,184,315 May 1965 2 p.
Manufacture of an improved chocolate flavored confection.

G. Patent No. 3,114,642 December 1963 2 p.
Hard candy and process for making same.

H. Patent No. 3,097,951 July 1963 3 p.
Process for making gealled confections.

I. Patent No. 3,085,017 April 1963 1 p.
Process for making a confection.

J. Patent No. 3,021,779 1962 5 p.
Circulation tempering of chocolate and similar substances.

K. Patent No. 3,009,427 1961 4 p.
Manufacture of a confection generally known as peanut brittle.

L. Patent No. 2,967,493 1961 4 p.
Method and apparatus for applying nuts to candy.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Confectioners Association
36 South Wabash Avenue
Chicago, Illinois 60603

VI DIRECTORIES

A. Candy Industry Catalog and Formula Book. Annual. $5.00

Don Gussow Publications
777 Third Avenue
New York, New York 10017

Lists suppliers to the candy industry of raw materials, machinery, instruments, packaging supplies, and sanitation needs.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the :

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

The price of *Industry Profiles* is a minimum of $3.00 for from one to five "*Profiles*." The purchaser may select up to five of any "*Profiles*" available.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

WOMEN'S AND MISSES' SUITS

I. P. No. 67369
S. I. C. 2337

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I. P. No. 67369
S. I. C. 2337
NOVEMBER 1967

WOMEN'S AND MISSES' SUITS

PRODUCT DESCRIPTION

Women's and misses two-piece suits made from worsted fabric.

A. GENERAL EVALUATION OF PROSPECTS

The success of this industry will depend upon the ready availability of the necessary raw materials and upon the styling and workmanship of these suits. Quality will be an important factor in meeting the heavy competition that can be expected from imported clothing of this type. The capital requirements for this plant are modest in relation to the gross sales revenue and the number of people employed.

B. MARKET ASPECTS

1. USERS

Ladies and adolescent girls will use this product.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to retail clothing stores. The population required to support the output of this plant depends to a great extent upon a relatively high per capita income. If the income in rural areas is low, this plant would have to depend on the urban areas alone to maintain the sales volume. Since this product is easily handled and its value is high in relation to its transportation costs, the domestic market should extend nationwide. Some export sales to neighboring countries not having a plant of this type may be made. This plant should have no difficulty competing against small factories producing hand-made suits. The principal competition will come from imports. However, with the advantages of lower freight rates and of not having to pay duties, this plant should be able to meet import competition.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $300,000.
The total fixed investment, plus working capital, is estimated at $117,200.
The annual gross profit, before taxes, is estimated at $21,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 7.0%.
(A gross profit on sales, before taxes, of 7.0%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 17.9%.

5. COST PER MAN EMPLOYED

Twenty-four direct workers and six indirect workers or a total of thirty workers, are employed.
The total fixed capital investment is estimated at $61,000.
Based on these figures, the fixed investment per man employed would amount to about $2,030.

C. PRODUCTION REQUIREMENTS - WOMEN'S AND MISSES' SUITS

I.P. No. 67369
S.I.C. 2337

ANNUAL CAPACITY - ONE SHIFT OPERATION : 16,000 SUITS
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - about 1/2 acre	
Building - one story, 60′ x 80,	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 61,000
Principal items:	
Cutting tables	
Cloth spreader	
Cloth unwinder	
Electric cutters	
Electric drill	
14 sewing machines	
Buttonhole machine	
Button machine	
Steam pressers	
Racks	
Benches	
Chairs	
b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 56,200
c. Total Capital Requirements	$ 117,200

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Suiting worsted	30,000 yds.	
Linings		
Button, thread, trimming & labels		
Packaging		
Total direct materials		$ 68,000
b. Supplies		
Lubricants & hand tools		
Gas, oil and maintenance of truck		
Maintenance & spare parts		
Office supplies		
Total supplies		$ 3,300

c. Availability of materials & supplies

All should be available locally. All available in world market.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 60 H.P. connected load	
Fuel - 5,000 gals. oil	
Water - 800,000 gals.	
	$ 2,900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 5,200

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	2	
Machine fixer	1	
Truck Driver	1	
Total indirect labor	6	$ 47,000
b. Direct labor		
Skilled workers	4	
Semi-skilled workers	18	
Unskilled workers	2	
Total direct labor	24	$ 121,200

c. Training needs

Manager and supervisor should be fully experienced. They with the help of 2 skilled workers should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

In and out shipments very small

Good highways,

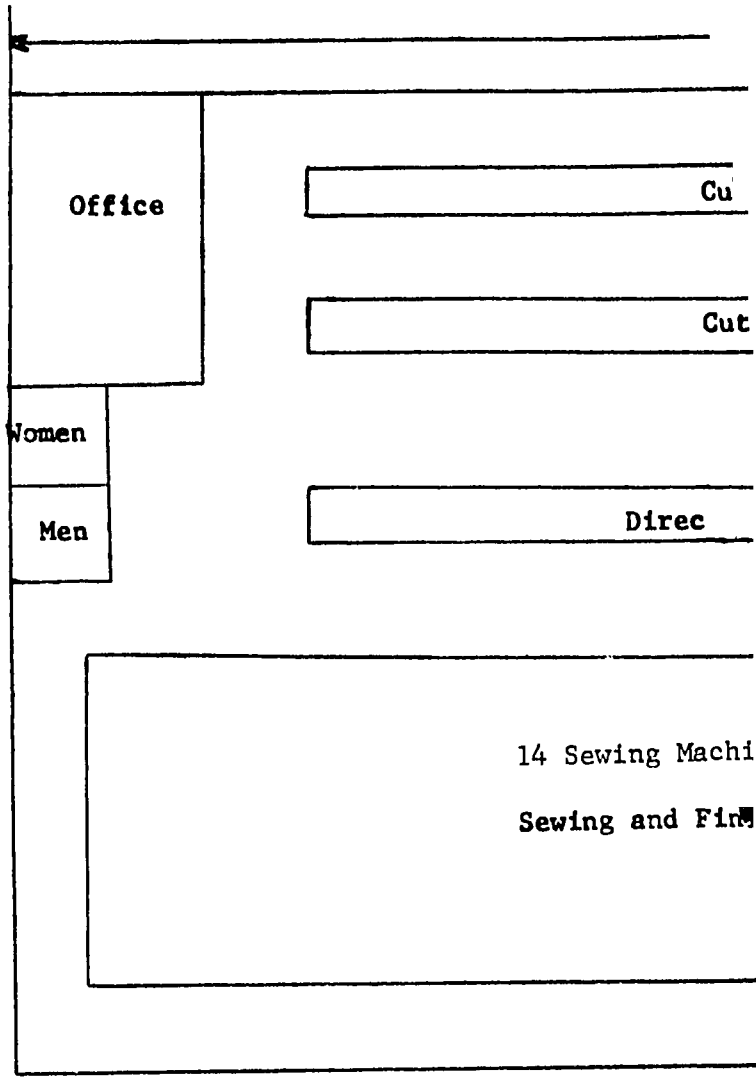
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 68,000	
Direct labor	121,200	
Manufacturing overhead*	58,400	
Total manufacturing cost		$ 247,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 13,400
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 279,000
Annual Gross Profit		$ 21,000
ANNUAL SALES REVENUE		$ 300,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

WOMEN'S

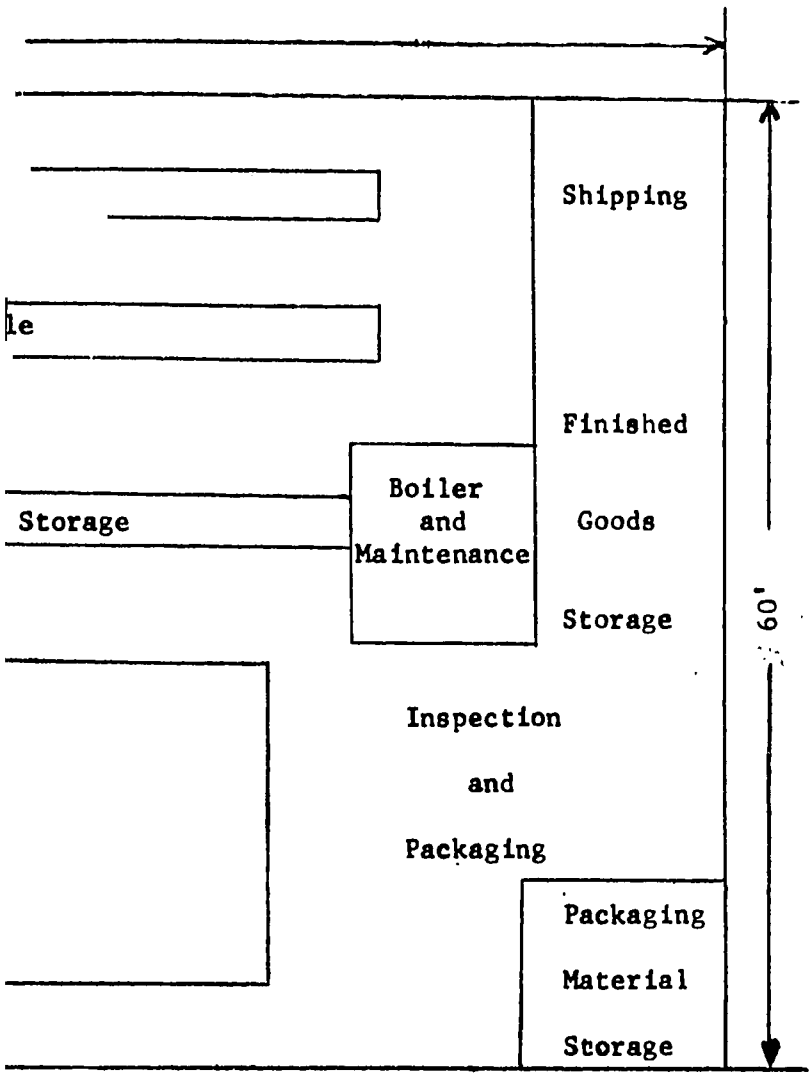
PLA



SSES' SUITS

I.P. NO. 67369
S.I.C. 2337

YOUT



I.P. No. 67369
S.I.C. 2337

WOMEN'S AND MISSES' SUITS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Apparel Manufacturing Analysis. Jacob Solinger. 1961. 800 pp. Illus. $25.00

John Wiley and Sons, Inc.
605 Third Avenue
New York, New York 10016

Provides a detailed analysis of all the operations which enter into the manufacturing of clothes.

B. Clothing Construction. E. A. Mansfield. 1953. 454 pp. Illus. $7.50

Houghton Mifflin Company
2 Park Street
Boston, Massachusetts 02108

Covers all types of clothing manufacture.

II. TECHNICAL AND TRADE PERIODICALS

A. Women's Wear Daily. $20.00/year

Fairchild Publications, Inc.
7 East 12th Street
New York, New York 10003

News and information concerning styles, markets, source of supply, management in the women's wear industry.

B. Apparel Manufacturer. Monthly. $5.00/year

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Information about the apparel manufacturing industry; new processes, equipment, products.

C. The Bobbin Magazine. Monthly. $4.00

Needle Trades Publishing Company
P. O. Box 1354
Columbia, South Carolina 29202

Management magazine for the needle trades industries.

III. BUSINESS MANAGEMENT MATERIALS

A. Profitable Small Plant Layout. John R. Immer. 48 pp. Illus. 1964. No. 21 (2nd Edition) in the Small Business Management Series of the Small Business Administration, Washington, D. C.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

How to move materials through the shop economically and efficiently.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

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U. S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,289,263 December 1966 3 p.
Accessible fastening means.

B. Patent No. 3,196,459 July 1965 4 p.
Closure means for a protective garment.

C. Patent No. 3,112,491 December 1963 3 p.
Connection devices for garments.

D. Patent No. 3,110,901 November 1963 3 p.
Garment by construction.

E. Patent No. 3,105,971 October 1963 3 p.
Buttonhole forming member for garments.

F. Patent No. 3,102,570 September 1963 3 p.
Seal means for slide fasteners.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. American Apparel Manufacturers Association, Inc.
2000 "K" Street, N. W.
Wathington, D. C. 20006

VI. DIRECTORIES

A. Apparel Manufacturers Directory. Annual. $3.00

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Lists 5,000 suppliers of garment industry fabrics, trimmings, machinery, and equipment.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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Washington, D. C. 20006

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INDUSTRY PROFILES

SHOE REPAIR SHOP

I. P. No. 67370
S. I. C. 7251

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The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67370
S.I.C. 7251
DECEMBER 1967

SHOE REPAIR SHOP

PRODUCT DESCRIPTION

This is a service industry undertaking repair of all types of shoes.

A. GENERAL EVALUATION OF PROSPECTS

The shop described in this profile contains mechanical equipment for this repairing of shoes. With this equipment, shoe repair can be done more quickly and cheaply. Repairs will look neater and last longer than hand repair of shoes. This shop is operated by the owner who employs no additional help and, therefore, has no labor training problems.

B. MARKET ASPECTS

1. USERS

All people who wear shoes.

2. SALES CHANNELS AND EXTENT OF MARKET

This shop would be located in an active urban shopping area. The space would be rented. People bring in shoes to be repaired and call for them later. The market is geographically small, lying entirely within the area where the shop is located. The only competition that could be encountered would come from other shoe repair shops within the area. Repair shops without mechanical equipment could not compete against this shop in quality of work or in price. There is, of course, no possibility of exporting this service.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $22,500.
The total fixed investment, plus working capital, is estimated at $8,600.
The annual gross profit, before taxes, is estimated at $2,200.
Using these figures, the profit on gross sales, before taxes, amounts to about 9.8%.
(A gross profit on sales, before taxes, of 9.8%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 25.5%.

5. COST PER MAN EMPLOYED

One direct worker and no indirect workers, or a total of one worker, is employed.
The total fixed capital investment is estimated at $ 5,000.
Based on these figures, the fixed investment per man employed would amount to $5,000.

C. PRODUCTION REQUIREMENTS - SHOE REPAIR SHOP I.P. No. 67370
ANNUAL CAPACITY - ONE SHIFT OPERATION: $22,500 GROSS SALES S.I.C. 7251

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - none	
Building - 20′ x 50′, rented, one story	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 5,000

Principal items:

Shoe Finisher, Stitcher - Landis, Stitcher - Mckay, Leather Splitter, Scriber, Last Stand & Posts, Bench and Furniture

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 3,600
c. Total Capital Requirements	$ 8,600

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Sole Leather	4,000 pair	
Rubber Heels	4,000 pair	
Findings		
Total direct materials		$ 7,200

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Rent	
Total supplies	$ 2,800

c. Availability of materials & supplies

All should be available locally. All are available on world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 10 H.P. connected load	
Fuel - heat as required	
Water - sanitation and fire protection	$ 800

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Total depreciation		$ 500

5. MANPOWER

a. Indirect labor	Number	Annual Cost
	0	
Total indirect labor	0	$
b. Direct labor		
Skilled workers - owner	1	
Semi-skilled workers	0	
Unskilled workers	0	
Total direct labor	1	$ 8,000

c. Training Needs

Owner does all the work and employs no help.

6. TRANSPORTATION

a. Own transport equipment

None required.

b. External transport facilities

Customers bring in shoes for repair and take them away.

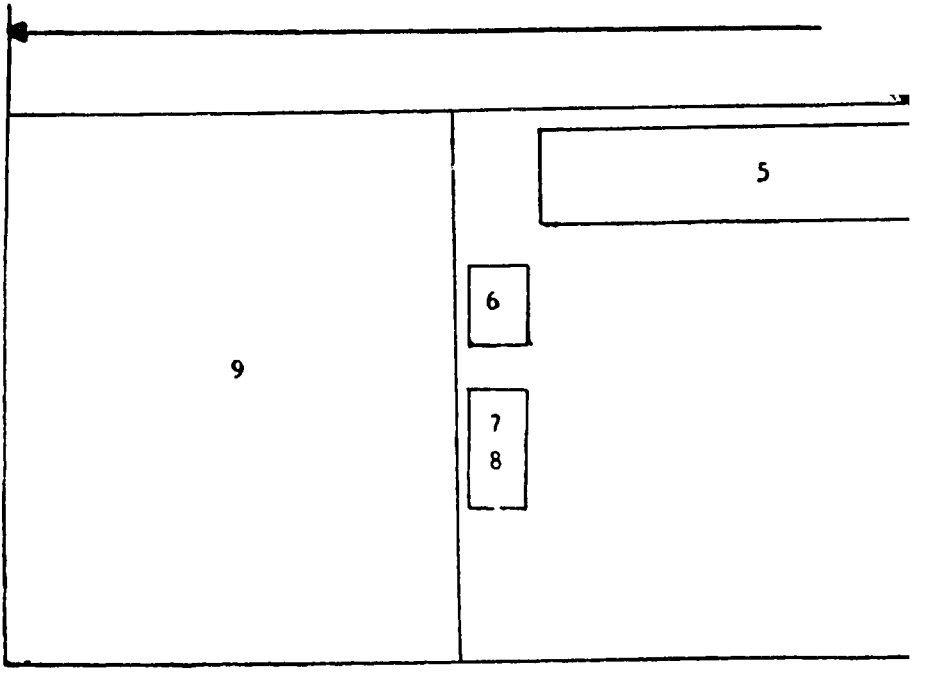
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 7,200	
Direct labor	8,000	
Manufacturing overhead*	4,100	
Total manufacturing cost		$ 19,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 1,000
Sales expense		0
Freight-out, travel discounts Allowances & bad debts		0
Total annual costs		$ 20,300
Annual Gross Profit		$ 2,200
ANNUAL SALES REVENUE		$ 22,500

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

SHOE F

PLANT



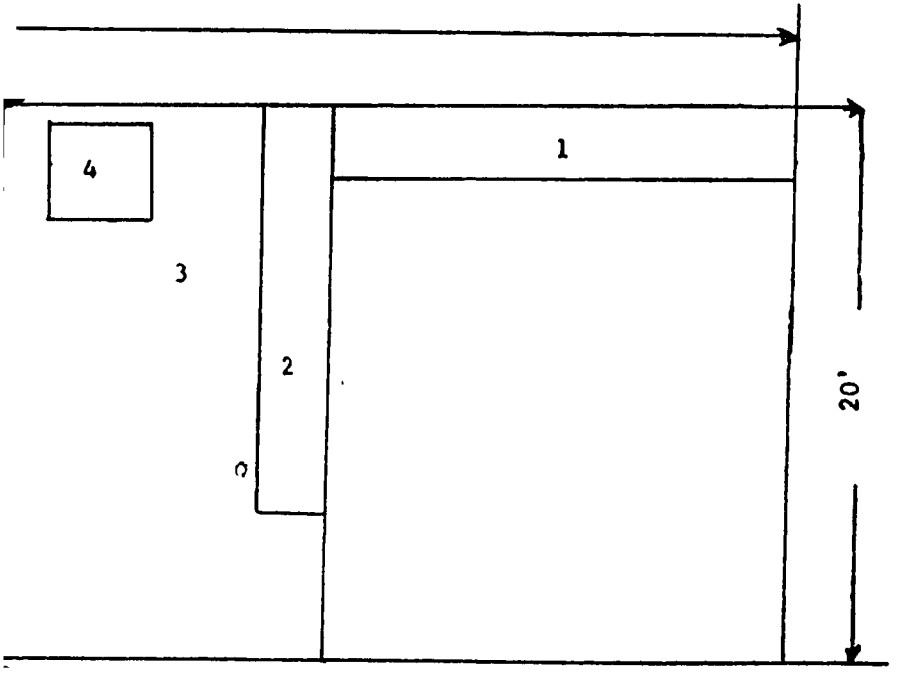
1. CHAIRS
2. WORK BENCH
3. LAST POST
4. STITCHER

9. STC

SHOP

I.P. No. 67370
S.I.C. 7251

OUT



5. FINISHER
6. SEWING
7. SPLITTER
8. SCIVER

OM

I. P. No. 67370
S. I. C. 7251

SHOE REPAIR SHOP

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Textbook of Footwear Manufacture. J. H. Thornton, ed. 1954. 611 pp. Illus. $13.50

Transatlantic Arts, Inc.
565 Fifth Avenue
New York, New York 10017

Equipment, machinery, and processes in the manufacture of shoes. Includes section on dress shoes for men.

B. Shoe Repairing. Henry Karg. 1965. 224 pp. $5.00

Bruce Publishing Company
400 North Broadway
Milwaukee, Wisconsin 53201

C. Comet 12 Auto Soler. 1965. 60 pp. Gratis

Auto Soler Company
267 Marrietta Street, N. W.
Atlanta, Georgia 30313

Manual of instruction on shoe repairing.

II. TECHNICAL AND TRADE PERIODICALS

A. American Shoemaking. Weekly. $3.00/year

Shoe Trades Publishing Company
683 Atlantic Avenuet
Boston, Massachusets 02111

Topics and information of interest to the shoe manufacturer.

B. Leather and Shoes. Weekly. $5.00/year

Rumpf Publishing Company
300 West Adams Street
Chicago, Illinois 60606

Covers materials, machinery, products and markets of the shoe industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. Starting and Managing a Small Business of Your Own. Wendell O. Metcalf. 49 pp. 1962. $.25. Vol. I (2nd Ed.) of the Starting and Managing Series of the Small Business Administration, Washington, D.C.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Pitfalls usually encountered when entering a new business. Sources of additional information given.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,246,352. April 1966. 12 p.
Sole cutting apparatus.

B. Patent No. 3,242,515. March 1966. 5 p.
Roughening the underside of the shoe.

C. Patent No. 3,231,914. February 1966. 10 p.
Apparatus for heat treating an article of footwear.

D. Patent No. 3,205,516. September 1965. 5 p.
Securing device for wraparound shoe sole edges.

E. Patent No. 3,147,500. September 1964. 9 p.
Processing of shoe soles.

F. Patent No. 3,087,161. April 1963. 5 p.
Grip device.

G. Patent No. 3,048,862. August 1962. 10 p.
Heel attaching machine.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Footwear Manufacturers Association
342 Madison Avenue
New York, New York 10017

B. National Shoe Institute
50 Rockefeller Plaza
New York, New York 10020

VI. DIRECTORIES

A. Leather and Shoes Blue Book. Annual. $3.00

Rumpf Publishing Company
300 West Adams Street
Chicago, Illinois 60606

Indicates 40,000 shoe manufacturers and sources of supply of materials and equipment used in shoe production.

VII. ENGINEERING COMPANIES

The services of a private professional engineer are not likely to be needed to establish a shoe repair shop, since the space required is usually rented and shoe repair machinery and equipment are largely operated on a lease basis from the manufacturer. Manufacturers of shoe repair equipment employ engineers and specialists familiar with the design and installation of their specialized products. These manufacturers usually give prospective customers the benefit of technical advice by their engineers or specialists in determining the suitability of their equipment for the shoe repair enterprise in question.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

GROCERY CARTS

I. P. No. 67371
S. I. C. 3481

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

GROCERY CARTS

PRODUCT DESCRIPTION

Grocery carts made with hard rubber tire wheels, steel tubing and steel rods, welded.

A. GENERAL EVALUATION OF PROSPECTS

Grocery carts have been in use in the United States for a long period of years, especially in large self-service supermarkets and retail chain stores. This method of merchandising is gradually being adopted in many developing countries, particularly in the large urban communities. A survey of potential sales should be made before deciding to invest in this plant. If the market, for grocery carts appears adequate enough to support this factory, prospects should be good. The capital investment needed to set up this plant is modest when compared to the annual sales revenue and the gross profit. The cost per man employed is also low.

B. MARKET ASPECTS

1. USERS

Grocery carts are intended for use in self-service retail stores and supermarkets.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to the stores and markets. The market for these products cannot be measured in terms of population but must be ascertained by conducting a feasibility study including a survey of sales potential. These carts cannot be manufactured in a small, low investment plant. Competition could stem only from producers of the same product operating a plant of the size indicated in this profile. These carts nest into each other and by using heavy paper to protect them during shipment, nationwide distribution is possible at reasonable cost. Grocery carts are not normally found in the export market so this plant should not find itself competing against similar imported items.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $340,000.
The total fixed investment, plus working capital, is estimated at $162,000.
The annual gross profit, before taxes, is estimated at $34,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 10.0%.
(A gross profit on sales, before taxes, of 10.0%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 21.0%.

5. COST PER MAN EMPLOYED

Twenty direct workers and six indirect workers, or a total of twenty-six workers, are employed.
The total fixed capital investment is estimated at $105,000.
Based on these figures, the fixed investment per man employed would amount to about $4,040.

C. PRODUCTION REQUIREMENTS - GROCERY CARTS

I.P. No. 67371
S.I.C. 3481

ANNUAL CAPACITY - ONE-SHIFT OPERATION: 10,000 UNITS
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - one acre	
Building - 50′ x 80′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 105,000

Principal items:
2 Punch presses
2 Drill presses
Tube benders
Rod benders
1 Metal band saw
2 Welding forms
2 Welding machines
1 Assembly conveyor

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 57,000
c. Total Capital Requirements	$ 162,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Steel tubing 7/8″	60 tons	
Steel rods	110 tons	
Wheel castings	40,000	
Tires	40,000	
Flats, bolts and nuts		
Total direct materials		$ 113,700

b. Supplies
Lubricants & hand tools
Cutting tools & abrasives
Maintenance & spare parts
Office supplies
Gas, oil and maintenance of truck
Total supplies $ 7,000

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 50 H.P. connected load	
Fuel - heat as required	
Water - sanitation & fire protection	
	$ 2,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,100

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	2	
Maintenance	1	
Truck Driver	1	
Total indirect labor	6	$ 45,000
b. Direct labor		
Skilled workers	3	
Semi-skilled workers	9	
Unskilled workers	8	
Total direct labor	20	$ 91,800

c. Training needs

Manager and supervisor should be fully experienced. They with two skilled workers should be able to train all workers and reach full production in 3 weeks.

6. TRANSPORTATION

a. Own Transport equipment
Truck

b. External transport facilities

In and out shipments amount to about 4 tons per day.

Good highways essential.

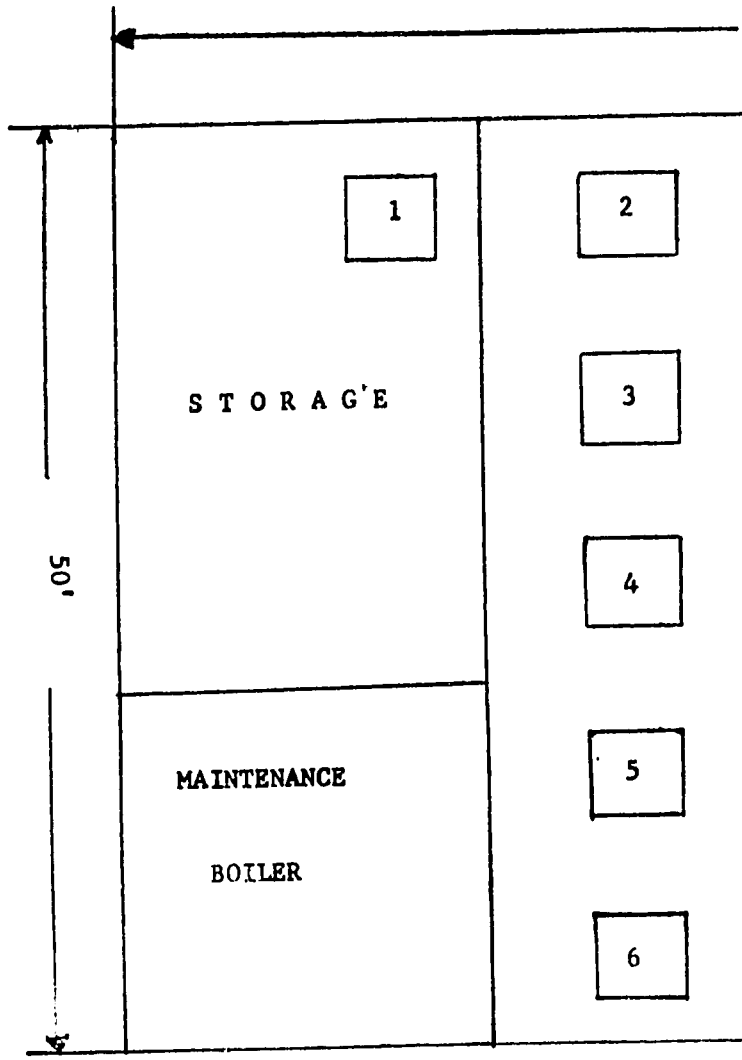
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 113,700	
Direct labor	91,800	
Manufacturing overhead*	64,500	
Total manufacturing cost		$ 270,000
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 18,000
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 306,000
Annual Gross Profit		$ 34,000
ANNUAL SALES REVENUE		$ 340,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

GROCEF

PLANT



1. METAL BAND SAW
2. TUBE BENDER
3. DRILL PRESS
4. DRILL PRESS
5. PUNCH
6. PUNCH
7. ROD BI
8. WELDI

S

I.P. NO. 67371
S.I.C. 3481

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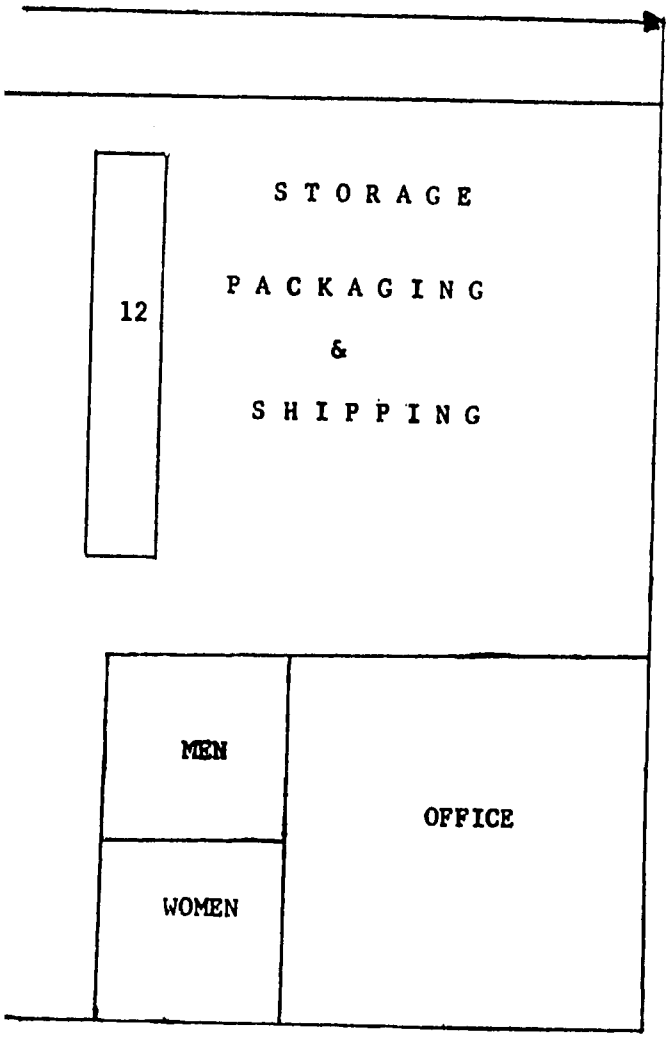

9. WELDING FORM
10. WELDING MACHINE
11. WELDING MACHINE
12. ASSEMBLY CONVEYOR

I. P. No. 67371
S.I.C. 3481

GRCOERY CARTS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Machine Shop Operations and Set-ups. H. W. Porter and others. 2nd Edition. 397 pp. Illus. $5.50.

American Technical Society
848 East 58th Street
Chicago, Illinois 60637

How work is set up and how machines are operated, including welding.

B. Metal Engineering Processes. ASME Handbook. R. W. Bolz, ed. 1958. 448 pp. Illus. $13.50

McGraw-Hill, Inc.
300 West 42nd Street
New York, New York 10036

Covers basic process for many types of machine shop operations, including forming of metals and welding.

C. Modern Welding. Andrew D. Althouse and others. 1965. Illus. $8.50

Goodheart-Wilcox Company, Inc.
18250 Hardwood Avenue
Homewood, Illinois 60430

Current information and data on welding.

II. TECHNICAL AND TRADE PERIODICALS

A. Metal Products Manufacturing. Monthly. $10.00

Dana Chase Publications
York Street at Park Avenue
Elmhurst, Illinois 60126

Production journal specializing in forming and tooling.

B. Machinery. Monthly. $10.00/year.

Industrial Press
200 Madison Avenue
New York, New York 10016

III. BUSINESS MANAGEMENT MATERIALS

A. Improving Materials Handling in Small Plants. $.20

Small Business Management Series No. 4
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by Small Business Administration to assist in the development of management in small business.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

Superintendent of Documents
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Insights and clues cocerning the entire process of small business formation, growth, and decline.

IV. REPRESENTATIVE U. S. PATENTS

Available U. S. Patent Office, Washington, D. C. 20231. $.50 each.

A.	Patent No. 3,272,527 Theft proof shopping cart.	September 1966	3 p.
B.	Patent No. 3,190,673 Pushcart for self-serving stores.	June 1965	3 p.
C.	Patent No. 3,186,728 Merchandise nestable cart.	June 1965	3 p.
D.	Patent No. 3,147,021 Grocery cart.	September 1964	3 p.
E.	Patent No. 3,112,934 Nesting market cart.	December 1963	8 p
F.	Reissued 25,616 Supermarket cart.	July 1964	8 p

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Association of Store Fixture Manufacturers
53 West Jackson Boulevard
Chicago, Illinois 60604

VI. DIRECTORIES

A. Directory of Supermarket and Grocery Chains. Annually. $50.00

Business Guides, Inc.
2 Park Avenue
New York, New York 10016

Names the buying personnel and products handled by all U. S. and Canadian supermarkets.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in the Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

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Springfield, Virginia 22151

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INDUSTRY PROFILES

ZINC DIE CASTINGS

I. P. No. 67372
S. I. C. 3369

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ZINC DIE CASTINGS

I. P. No. 67372
S. I. C. No. 3369
DECEMBER 1967

PRODUCT DESCRIPTION

Die cast parts for electric batteries and other electric instruments. Plant could produce other die cast products, New dies would be required for new products.

A. GENERAL EVALUATION OF PROSPECTS

This plant is equipped to manufacture electrodes for electric batteries, cups for electric leak-proof batteries and other devices used in connection with electric instruments. Dies for each product to be manufactured will be required. The investment needed to set up this plant in relation to the potential sales volume and profits is very conservative.

B. MARKET ASPECTS

1. USERS

Manufacturers of many kinds of electric batteries and electric instruments.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to manufacturers of electric batteries and electric instruments. The market for these products depends entirely upon the requirements of local industry. If plants able to use the volume of zinc die castings produced in this plant already exist in the domestic market, sales should be assured. Since a sizeable investment is required to establish the factory described in this profile, the only domestic competition that could be encountered would arise from other local plants with the same production capacity. Since zinc die castings are sold directly to industry, the market would be confined to the major manufacturing areas of the country. Export sales might be made to a neighboring country not having a die casting plant but having a battery and electric instrument manufacturing capability. This plant should have no difficulty competing against imported products since it has the advantage of lower freight rates and, in most cases, no tariffs.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availabiilty of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $150,000.
The total fixed investment, plus working capital, is estimated at $76,000.
The annual gross profit, before taxes, is estimated at $17,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 11.3%.
(A gross profit on sales, before taxes, of 11.3%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 22.3%.

5. COST PER MAN EMPLOYED

Ten direct workers and four indirect workers or a total of fourteen workers are employed.
The total fixed capital investment is estimated at $50,000.
Based on these figures, the fixed investment per man employed would amount to about $3,575.

C. PRODUCTION REQUIREMENTS - ZINC DIE CASTINGS

ANNUAL CAPACITY - ONE SHIFT OPERATION: 400,000

I.P. No. 67372
S.I.C. 3369

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - one acre	
Building - one story, 40' x 50'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 50,000

Principal items :

1 300-ton Casting machine
2 Drill presses
2 Tapping machines
Electric sander
Tumbling machine
Air compressor
Dies for casting

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 26,000

c. Total Capital Requirements $ 76,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Zinc	50 tons	
Packaging material		
Total direct materials		$ 20,000

b. Supplies	
Lubricants & hand tools	
Cutting tools and abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 3,600

c. Availability of materials & supplies

All should be available locally. All are available on world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 15 H.P. connected load	
Fuel - 12,000,000 cu. ft. of gas	
Water - sanitation & fire protection	$ 2,000

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 5,200

5. MANPOWER

a. Indirect labor	Number	Annual Cost
Manager	1	
Office	2	
Truck driver	1	
Total indirect labor	4	$ 29,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	4	
Unskilled workers	4	
Total direct labor	10	$ 46,400

c. Training needs

Manager should be fully experienced. He with the help of 2 skilled workers, should be able to train all workers and reach full production in 2 weeks.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

In and out shipments small.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

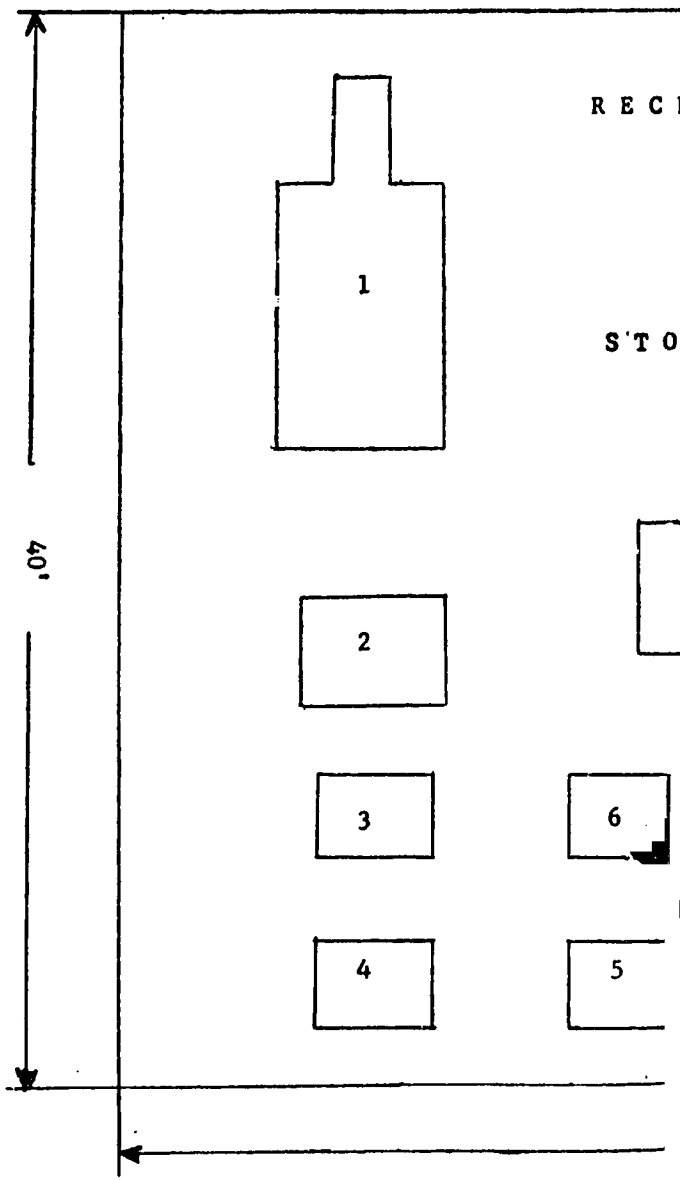
Direct materials	$ 20,000	
Direct labor	46,400	
Manufacturing overhead*	39,800	
Total manufacturing cost		$ 106,200
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,800
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 133,000
Annual Gross Profit		$ 17,000
ANNUAL SALES REVENUE		$ 150,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

ZINC DIE

PLANT

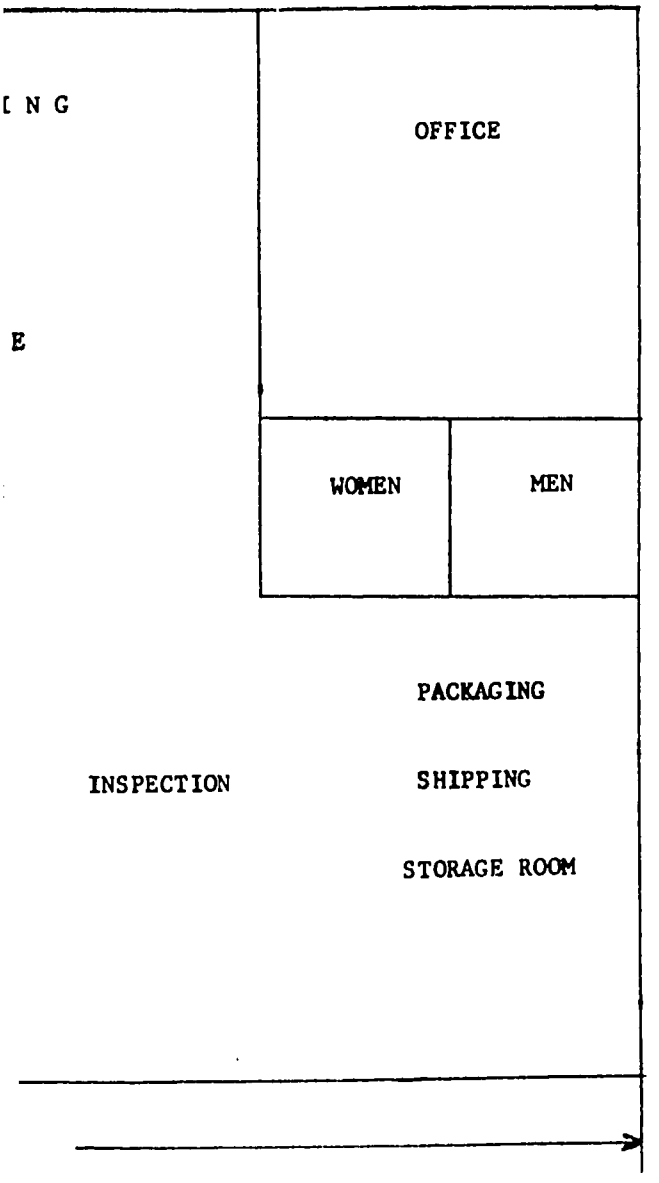


1. DIE CASTING MACHINE
2. TUMBLING MACHINE
3. DRILL PRESS

TINGS

I.P. NO. 67372
S.I.C. 3369

YOUT



4. DRILL PRESS
5. TAPPING MACHINE
6. TAPPI G MACHINE

IG MACHINE

ZINC DIE CASTINGS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. ASTME Die Design Handbook. 2nd Edition. 418 pp. Illus. $20.00

McGraw-Hill, Inc
330 West 42nd Street
New York, New York 10036

Includes hundreds of outstanding practical designs for all kinds of dies.

B. Die Casting. H. H. Doehler. 1951. 502 pp. 281 Illus. $15.00

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

Devoted completely to the field of die casting.

II. TECHNICAL AND TRADE PERIODICALS

A. Metal Progress. Monthly. $9.00/year.

American Society for Metals
Metals Park
Novelty, Ohio 44072

Contemporary improvements in the industrial uses of metals.

B. The Tools and Manufacturing Engineer. Monthly. $2.00/year.

American Society of Tool Engineers
20501 Ford Road
Dearborn, Michigan 48128

Development in tool production and in various fields of manufacturing.

III. BUSINESS MANAGEMENT MATERIALS

A. Improving Materials Handling in Small Plants. $.20

Small Business Management Series No. 4
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Admininistration to assist in the development of management in small business.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

C. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Editon).

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,270,378 September 1966 9 p.
Die casting apparatus.

B. Patent No. 3,256,572 June 1966 6 p.
Die casting apparatus with positive sprue removal.

C. Patent No. 3,248,759 May 1966 5 p.
Apparatus for delivery of predetermined amounts of metal to a die casting machine.

D. Patent No. 3,239,896 March 1966 6 p.
Die casting machine.

E. Patent No. 3,234,605 February 1966 7 p.
Die casting machine.

F. Patent No. 3,209,419 October 1965 6 p.
Method and apparatus for die casting.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. American Die Casting Institute, Inc.
366 Madison Avenue
New York, New York 10017

B. National Tool, Die and, Precision Machining Association
1411 "K" Street, N. W.
Washington, D. C. 20005

VI. DIRECTORIES

A. Journal of the National Tool, Die, and Precision Machining Association. $3.00/year.

National Tool, Die and Precision Machining Association
1411 "K" Street, N W.
Washington, D. C. 20005

Lists 800 members of the association and provides information for procurement.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

WOOD STAKE TRUCK BODIES

I. P. No. 67373
S. I. C. 3713

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

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WOOD STAKE TRUCK BODIES

I. P. No. 67373
S.I.C. 3713
DECEMBER 1967

PRODUCT DESCRIPTION

A body for automobile trucks made of wood with steel strips over the wood joints and around the edges with stakes at front, two sides and rear. The rear stake is in the shape of a gate which can be lowered or removed

A. GENERAL EVALUATION OF PROSPECTS

The fixed investment is moderate to the total sales revenue and the gross profits. The size of the stake body will vary in accordance with the size of the truck and the product to be hauled. In some countries, where transportation is difficult because of the lack of good roads, the number of trucks used would be less than in countries where good haghways exist. For this reason, a survey should be made to determine the sales potential for this product However, it should be borne in mind that the equipment in this plant may be used to produce other wood products.

B. MARKET ASPECTS

1. USERS

This product will be used only on automobile trucks.

2. SALES CHANNELS AND EXTENT OF MARKET

Some sales will be made direct to truck owners. The majority of sales, however, will be made through truck distributors. The market for truck stake bodies cannot be determined on the basis of population of the country. The market should be determined on the basis of the annual sales of trucks that require stake bodies. This demands a survey of the local truck assembly plants as well as of importers of motor-truck cabs. Stake bodies are usually not shipped but are installed on trucks driven to the plant site Considerable investment is required in machinery and equipment to produce a quality stake body. The only domestic competition would come from similar plants.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $260,000.
The total fixed investment, plus working capital, is estimated at $101,000.
The annual gross profit, before taxes, is estimated at $24,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 9.2%.
(A gross profit on sales, before taxes, of 9.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 23.7%

5. COST PER MAN EMPLOYED

Eleven direct and five indirect workers, or a total of sixteen workers, are employed.
The total fixed capital investment is estimated at $57,000.
Based on these figures, the fixed investment per man employed would amount to about $3,565.

C. PRODUCTION REQUIREMENTS - WOOD STAKE TRUCK BODIES I.P. No. 67373
ANNUAL CAPACITY - ONE SHIFT OPERATION: 2,000 STAKE BODIES S.I.C. 3713

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 1 acre	
Building - one story, 60' x 80'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 57,000

Principal Items :
Radial saw
Jointer
Ripsaw
Planer
Trimsaw
Boring machine
Drill press
Electric drill
Electric screw driver
Table sander
Spray booth

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 44,000
Total Capital Requirements	$101,000

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Lumber, dried	600,000 bd. ft.	
Steel strips		
Bolts & nuts & chains		
Paint		
Crating		
Total direct materials		$ 87,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 3,400

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 50 H.P. connected load	
Fuel - scrap wood used	
Water - sanitation & fire protection	$ 1,700

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 5,100

5. MANPOWER

a. Indirect labor	Number	Annual Cost
Manager	1	
Foreman	1	
Maintenance	1	
Office	1	
Truck Driver	1	
Total indirect labor	5	$ 38,000

b. Direct labor		
Skilled workers	3	
Semi-skilled workers	5	
Unskilled workers	3	
Total direct labor	11	$ 53,800

c. Training needs

The manager with the foreman and one skilled worker should be able to train all workers and reach full production in 2 weeks.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

Good highways.

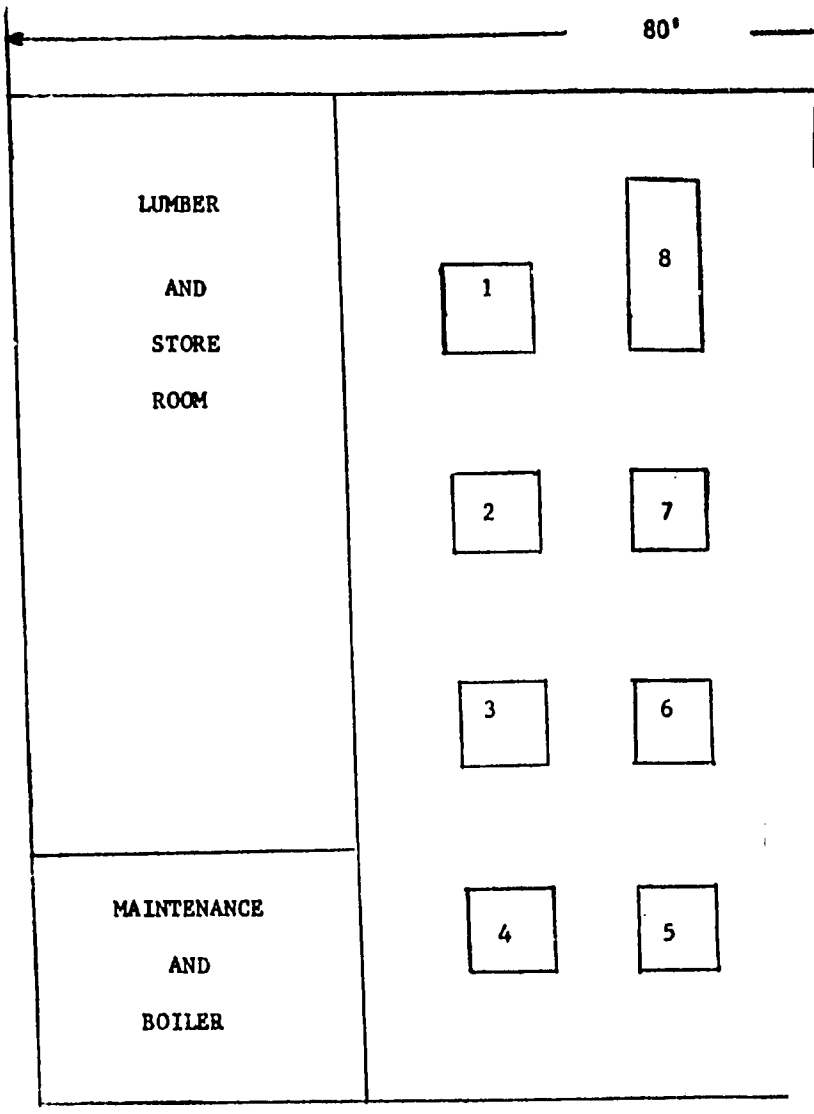
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 87,000	
Direct labor	53,800	
Manufacturing overhead*	48,200	
Total manufacturing cost		$ 189,000
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 17,000
Sales expense		$ 24,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 236,000
Annual Gross Profit		$ 24,000
ANNUAL SALES REVENUE		$ 260,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

WOOD STAKE

PLANT



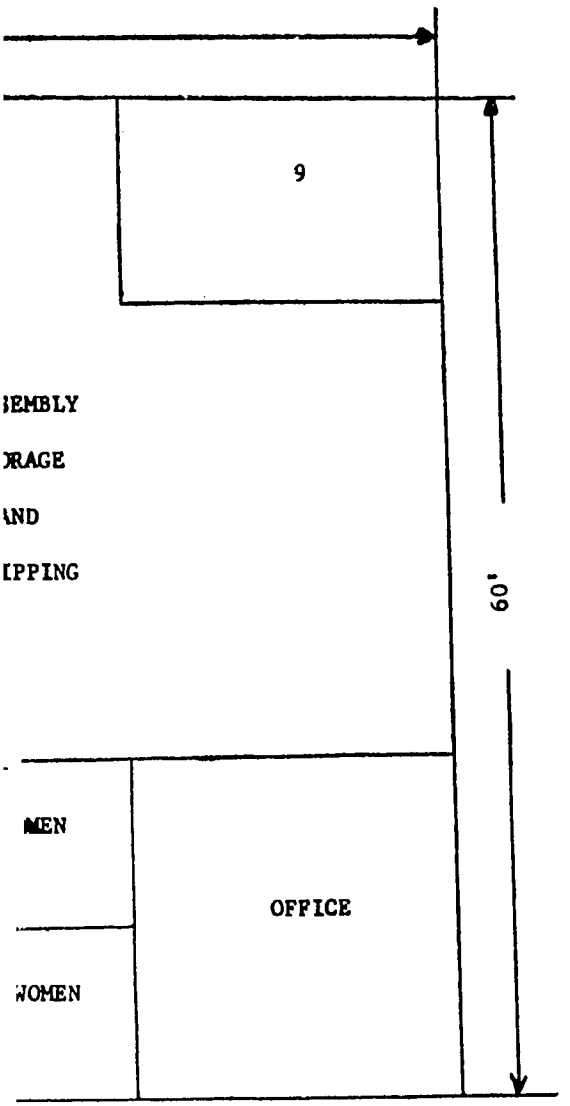
1. Radial Saw
2. Jointer
3. Ripsaw
4. Planer

9. Spray Boo

CK BODIES

I.P. No. 67373
S.I.C. 3713

'OUT



Trim Saw
Boring Machine
Drill Press
Table Sander

I.P. No. 67373
S.I.C. 3713

WOOD STAKE TRUCK BODIES

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. General Woodworking. 2nd Edition. C. H. Groneman. 1959. 256 pp. Illus. $7.25

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

Hand tool processes, machine tool processes and portable tool processes.

B. Cabinet Making and Mill Work. A. Dahl and J. D. Wilson. 1956. 352 pp. Illus. $6.50

American Technical Society
848 East 58th Street
Chicago, Illinois 60637

Tools, layout, lumber, materials, and construction.

II. TECHNICAL AND TRADE PERIODICALS

A. Woodworking Digest. Monthly. $5.00/year.

Hitchcock Publishing Company
Wheaton, Illinois 60188

Current information on tools, materials, and processes in the woodworking field.

B. Automotive World. Monthly. Controlled free distribution.

Johnston International Publishing Corporation
386 Park Avenue, South
New York, New York 10016

International news of automotive industry and repair work.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

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Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

C. Starting and Managing a Small Business of Your Own. Wendell O. Metcalf. 49 pp. 1962. $.25. Vol. I (2nd Edition) of the Starting and Managing Series of the Small Business Administration, Washington, D. C.

Superintendent of Doduments
U.S. Government Printing Office
Washington, D.C. 20402

Pitfalls usually encountered when entering a new business. Sources of additional information given.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each

A. Patent No. 3,141,698. July 1964 5 p.
Removable side construction for flat bed trailers.

B. Patent No. 3,126,224. March 1964. 8 p.
Convertible truck and trailer body construction.

C. Patent No. 3,097,880. July 1963. 5 p.
Side rack stake and side wall construction.

D. Patent No. 3,097,012. July 1963. 5 p.
Collapsible vehicle load bed sides.

E. Patent No. 3,041,103. June 1962. 4 p.
Vehicle stake locking devices.

F. Patent No. 3,010,755. November 1961. 4 p.
Interlocking post construction for rack body.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Wood working Machinery Manufacturers Association
1900 Arch Street
Philadelphia, Pennsylvania 19103

B. Truck Body & Equipment Association, Inc.
1012 - 14th Street, N. W.
Washington, D. C. 20005

VI. DIRECTORIES

A. Hitchcock's Woodworking Directory and Handbook. Annual. $5.00

Hitchcock Publishing Company
Wheaton, Illinois 60188

Lists manufacturers and suppliers of over 800 products in the woodworking industry.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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INDUSTRY PROFILES

POULTRY FARM
(BROILER PRODUCTION)

I. P. No. 67374
S. I. C. 0133

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I.P. No. 67374
S.I.C. 0133
DECEMBER 1967

POULTRY FARM (BROILER PRODUCTION)

PRODUCT DESCRIPTION

Poultry farm devoted to the production of broilers. The broilers are sold live for meat at the age of nine weeks.

A. GENERAL EVALUATION OF PROSPECTS

There are so many large poultry farms in the United States that poultry farms of the capacity described in this profile cannot be operated at a profit. Only a very few small poultry farms remain in the United States and there are virtually none of the small size described here. Many countries that are endeavoring to develop industry have done little about the poultry industry and often poultry in these countries is small and the meat tough. There is a definite need for developing local poultry industry and for improving the breed. While this profile is intended for use in countries other than the United States, the cost of buildings, equipment, materials and labor are based on the average costs in the U. S. at the present time. The sales values set forth in this profile are higher than those presently prevailing in the U. S. since broiler sales prices today are lower than they have been in many years. A plant of the size set forth here would be a profitable investment in many countries and would be a means of upgrading the existing poultry stock.

B. MARKET ASPECTS

1. USERS

Hotels, restaurants, private homes, wherever food is consumed.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to consumers. The domestic market should comprise a radius of 15 miles. The size and quality of the broilers produced should eliminate domestic competition and no difficulty should be experienced in competing with imported products. Since this plant will produce only about 30,000 broilers a year, a relatively small population close to the poultry farm should be able to consume the output. This plant is too small to consider export.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $29,000.
The total fixed investment, plus working capital, is estimated at $29,000.
The annual gross profit, before taxes, is estimated at $2,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 6.9%.
(A gross profit on sales, before taxes, of 6.9%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 6.9%.

5. COST PER MAN EMPLOYED

One direct and one indirect worker, or a total of two workers, are employed.
The total fixed capital investment is estimated at $24,000.
Based on these figures, the fixed investment per man employed would amount to $12,000.

C. PRODUCTION REQUIREMENTS - POULTRY FARM

I.P. No. 67374
S.I.C. 0133

(BROILER PRODUCTION)

ANNUAL CAPACITY - 6,000 CHICKS AT ONE TIME: 30,000 BROILERS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - one acre	
Building - 48' x 96'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 24,000

Principal items :
- 12 Brooders
- 48 8' Automatic water units
- 58 Water troughs
- 10 Water fountains
- 120 Baby chick feeders
- 10 Grits and oyster shell boxes
- 300 Shipping crates

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 5,000

c. Total Capital Requirements $ 29,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Chicks	30,000	
Feed	135 tons	
Grits and oyster shells		
Chemicals, medicinals and insecticides		
Total direct materials		$ 16,800

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of vehicle	
Total supplies	$ 500

c. Availability of materials & supplies

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - Lights	
Fuel - none required	
Water - must be potable	
	$ 370

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 1,930

5. MANPOWER

a. Indirect labor	Number	Annual Cost
Owner	1	
Total indirect labor	1	$ 4,600
b. Direct labor		
Skilled workers	0	
Semi-skilled workers	0	
Unskilled workers (part-time)	1	
Total direct labor	1	$ 400

c. Training needs

Owner will train the part-time worker to assist in cleaning the building.

6. TRANSPORTATION

a. Own transport equipment

One delivery vehicle--car or truck.

b. External transport facilities

None required.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 16,800	
Direct labor	400	
Manufacturing overhead*	7,400	
Total manufacturing cost		$ 24,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 2,000
Sales expense		0
Freight-out, travel discounts Allowances & bad debts		400
Total annual costs		$ 27,000
Annual Gross Profit		$ 2,000
ANNUAL SALES REVENUE		$ 29,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

POULTRY FARM

PLANT

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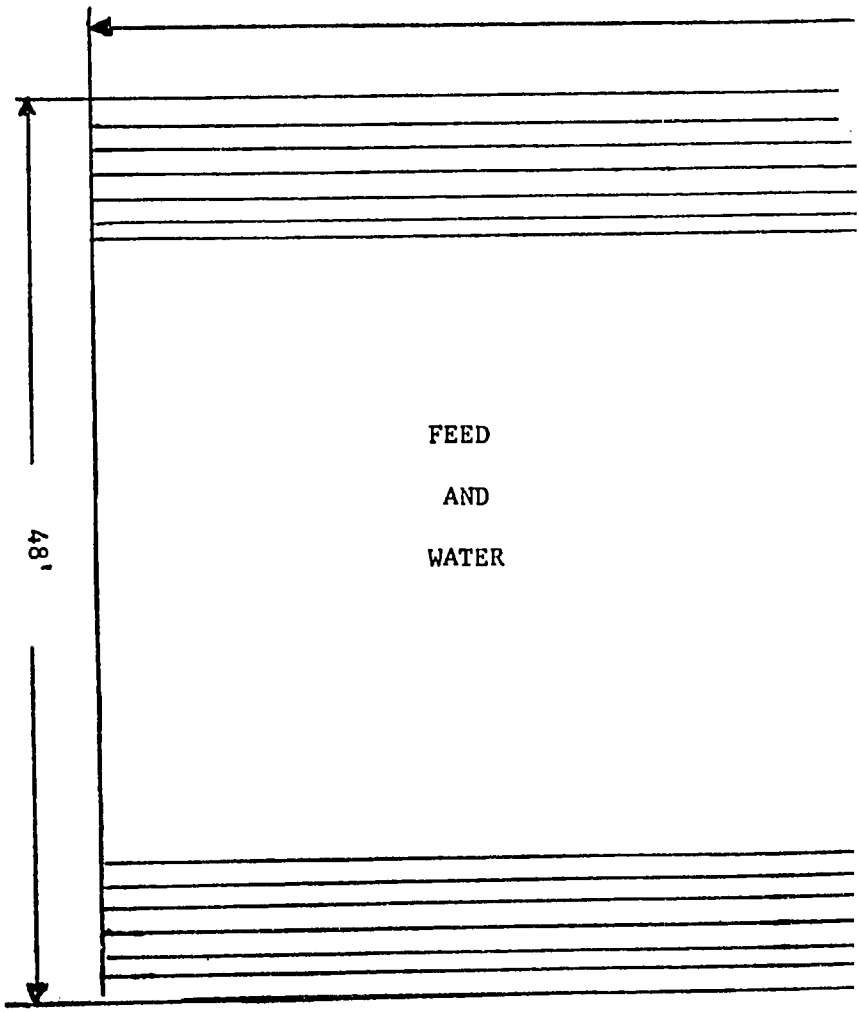

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I.P. NO. 67374
S.I.C. 0133

A Y O U T

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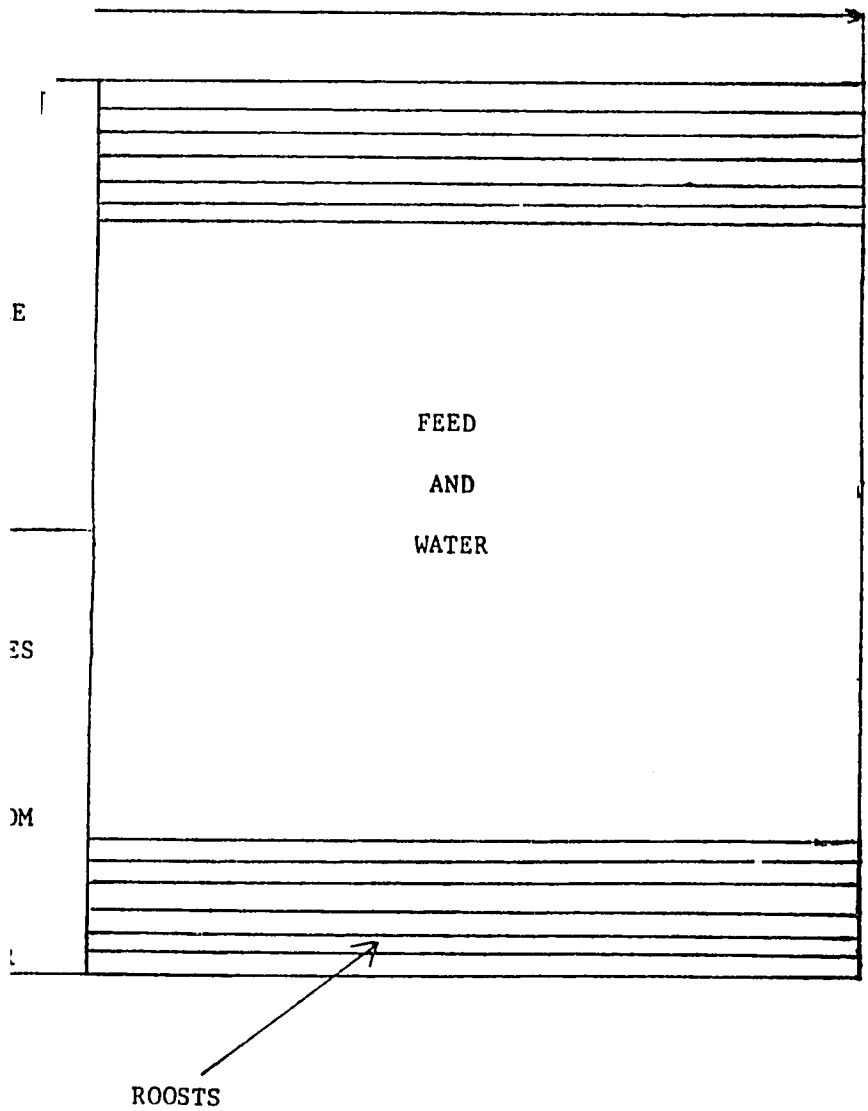

I.P. No. 67374
S.I.C. 0133

POULTRY FARM (BROILER PRODUCTION)

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Marketing Poultry Products. E. W. Benjamin and others. 5th Edition. 1960. 327 pp. Illus. $7.95

John Wiley & Sons, Inc.
605 Third Avenue
New York, New York 10016

B. Poultry Production. C. E. Bundy and R. V. Diggins. 1960. 370 pp. $8.04

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

Deals with the operation of poultry farming.

C. Commercial Broiler Production. Raymond T. Parhurst. 1967. 56 pp. $.40

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Good management practices in raising meat birds.

II. TECHNICAL AND TRADE PERIODICALS

A. Broiler Industry. Monthly. $3.00/year

Garden State Publishing Company
4411 Landis Avenue
Sea Isle City, New Jersey 08243

Deals exclusively with broiler industry.

B. Everybody's Poultry Magazine. Monthly. $.50/year.

Everybody's Poultry Magazine Publishing Company
Hanover, Pennsylvania 17331

Deals exclusively with the poultry industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S Patent Office, Washington, D.C. 20231. $.50 each.

A. Patent No. 3,188,212 June 8, 1965 6 p.
Method of handling poultry.

B. Patent No. 3,152,573 October 1964 3 p.
Method of raising poultry.

C. Patent No. 3,083,688 April 1963 11 p.
Apparatus and method for prevention of skin blister in domestic fowl.

D. Patent No. 3,076,745 February 1963 4 p.
Antibiotic method for promoting poultry growth.

V TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Broiler Council

Madison Building, Suite 614
1155 - 15th Street, N. W.
Washington, D. C. 20005

B. American Poultry and Hatchery Association
521 East 63rd Street
Kansas City, Missouri 64110

VI. DIRECTORI

A. Who's Who in the Egg and Poultry Industry. Annual. $15.00

Watt Publishing Company
Sandstone Building
Mount Morris, Illinois 61054

Firms manufacturing poultry equipment and supplies, egg and poultry producers, wholesalers, jobbers, brokers, exporters, trade associations, Federal agencies.

VII. ENGINEERING COMPANIES

The services of a private professional engineer are not likely to be needed to establish a poultry farm since the equipment needed to operate a broiler producing plant can usually be obtained, on lease, from the manufacturer. Manufacturers of equipment employ specialists familiar with the design and installation of their specialized products. These manufacturers usually give prospective customers the benefit of technical advice by their engineers or specialists in determining the suitability of their equipment for the enterprise in question.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

PEARL STARCH

I. P. No. 67375
S. I. C. 2046

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

PEARL STARCH

I.P. No. 67375
S.I.C. 2046
DECEMBER 1967

PRODUCT DESCRIPTION

Pearl starch made from corn, a roughly ground powder ready for further processing. It contains about 12 percent moisture.

A. GENERAL EVALUATION OF PROSPECTS

The prospects for this industry will depend upon two principal factors: (1) corn, the raw material required, should be available locally at a reasonable price; and (2) the local sales potential should be equal to the annual production of the plant since any over-production cannot usually enter world markets. The capital requirements for this industry are fairly low in comparison with the gross sales volume. Although nine skilled workers and nine semi-skilled workers are required to operate this plant, the training time required under good management should not exceed thirty days providing six skilled workers are hired when the plant begins operations.

B. MARKET ASPECTS

1. USERS

Other processing industries.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales of pearl starch and by-products would be made direct to other industries for further processing. The market needed to support this plant cannot be measured in terms of population because sales depend on the purchase of the product by other processing industries. A survey should be made to determine market potential. In some instances, it may be found that industries in the area are using a substitute for pearl starch and, if an adequate supply of this product were available locally and at low cost, they would switch to starch. This plant should be located at or near the industrial center of the country so that shipping distances and transportation costs remain a minor factor in pricing the product. No domestic competition should be encountered for this product unless other pearl starch plants already exist. Pearl starch is not usually an export item. This plant could meet any import competition should it exist.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $1,720,000.
The total fixed investment, plus working capital, is estimated at $539,800.
The annual gross profit, before taxes, is estimated at $172,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 10%.
(A gross profit on sales, before taxes, of 10%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 31.9%.

5. COST PER MAN EMPLOYED

Twenty-four direct and eight indirect workers, or a total of thirty-two workers, are employed.
The total fixed investment is estimated at $263,200.
Based on these figures, the fixed investment per man employed would amount to $8,225.

C. PRODUCTION REQUIREMENTS - PEARL STARCH

I.P. No. 67375
S.I.C. 2046

ANNUAL CAPACITY-THREE SHIFT-OPERATION: 350 DAYS PER YEAR: 14,000 TONS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - 3,600 square feet with 17,500 bushel silo	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 263,200

Principal items:

Steam generating equipment	Weighing and bagging equip.
2 steeping tanks	Unloading and loading equip.
Degerminating mill	Cleaners
Germ separator	Screens
Hex screen	Electromagnet
Buhr mill	Welding equip.
2 shakers	Chemical testing equipment
Reel	Hand tools
Centrifuge	Installation
Filter and press	
Drier	
2 conveyors	
Sulfur dioxide generator and column	

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 276,600
c. Total Capital Requirements	$ 539,800

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Shelled corn	875,000 bu.	
Sulfur	2 tons	
Paper bags	280 M	
Thread	2,656 lbs.	
Total direct materials		$1,150,000

b. Supplies	
Lubricants & hand tools	
Gas, oil and maintenance of truck	
Maintenance & spare parts	
Office supplies	
Total supplies	$ 5,200

c. Availability of materials & supplies

All materials and supplies, with the possible exception of nylon and sulfur, should be available locally.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 350 H.P. connected load	
Fuel - 14,000 tons of coal for production and heating	
Water - 20,000,000 gallons for production and sanitation	$ 82,950

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 23,850

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager & 2 supervisors	3	
Office	2	
Maintenance	2	
Truck driver	1	
Total indirect labor	8	$ 62,000
b. Direct labor		
Skilled workers	9	
Semi-skilled workers	9	
Unskilled workers	6	
Total direct labor	24	$ 13[illegible],500

c. Training needs

Manager and supervisors should be fully experienced. They should be able to train the other workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

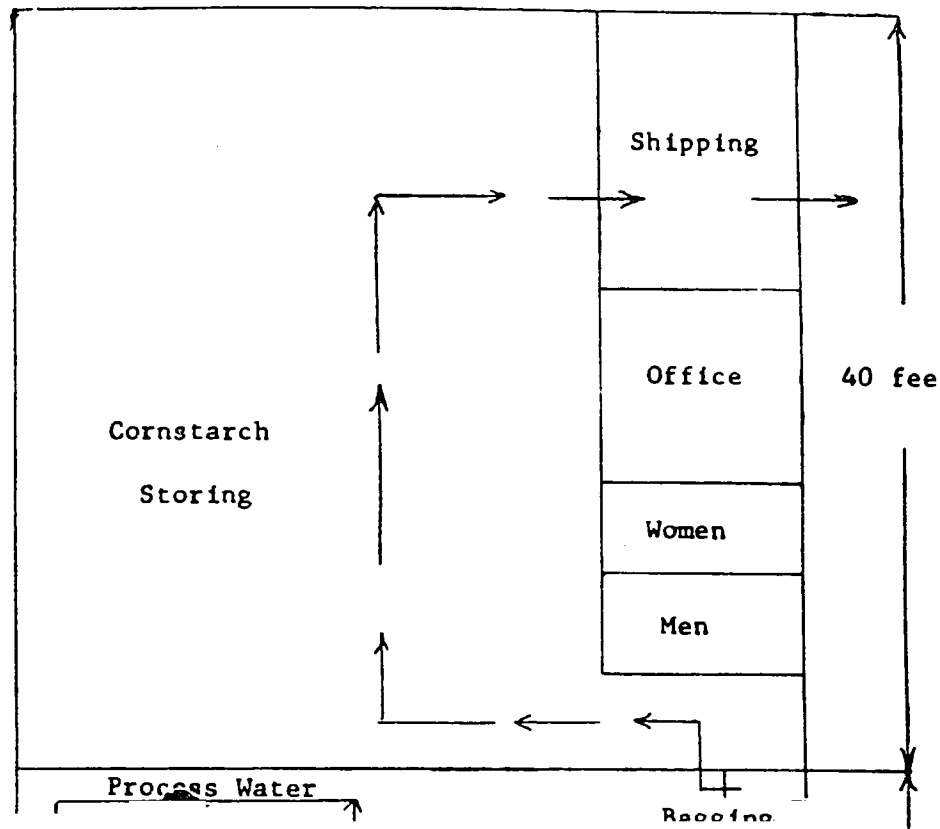
In and out shipments average about 80 tons per day.
Plant should be located on a railroad and on good highways.

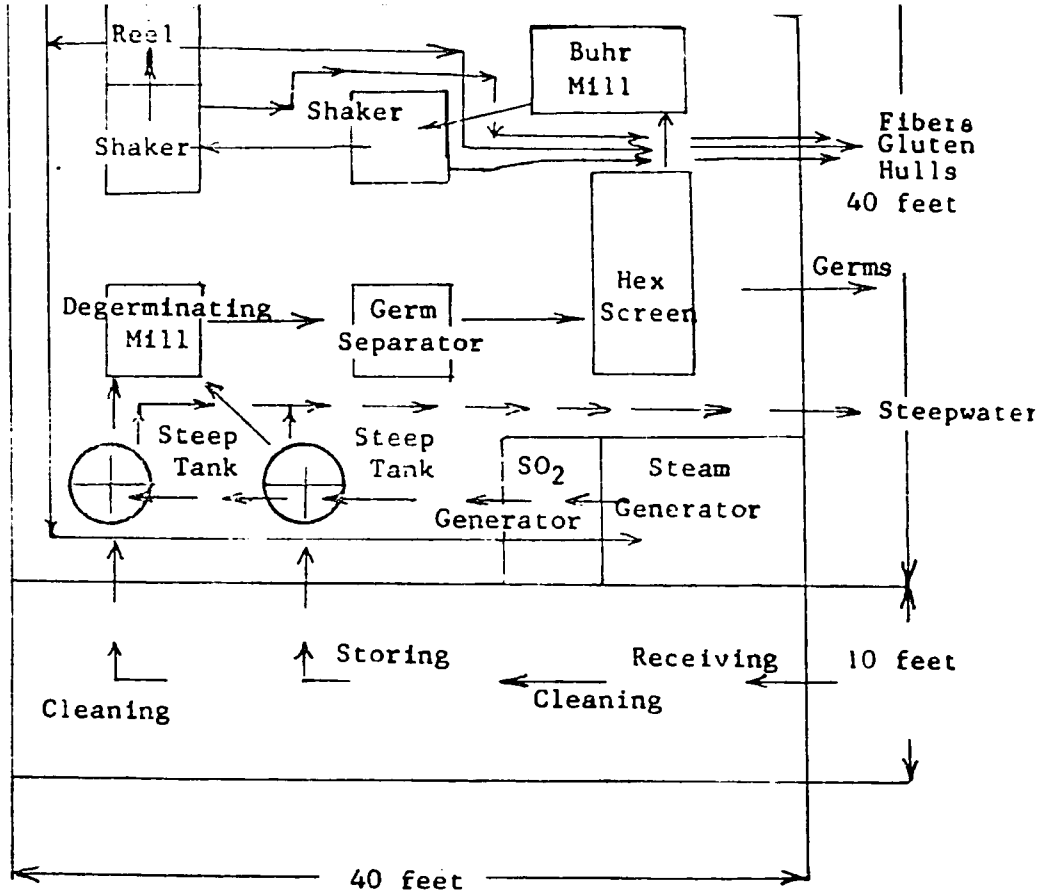
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$1,150,000	
Direct labor	136,500	
Manufacturing overhead*	174,000	
Total manufacturing cost		$1,460,500
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 37,500
Sales expense		$ 25,000
Freight-out, travel discounts Allowances & bad debts		$ 25,000
Total annual costs		$1,548,000
Annual Gross Profit		$ 172,000
ANNUAL SALES REVENUE		$1,720,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

PLANT LAYOUT AND WORKFLOW




Reel
Shaker
Shaker
Buhr Mill
Fibers
Gluten
Hulls
40 feet
Hex Screen
Germs
Degerminating Mill
Germ Separator
Steepwater
Steep Tank
Steep Tank
SO_2
Steam Generator
Generator
Storing
Receiving
10 feet
Cleaning
Cleaning
40 feet

I.P. No. 67375
S.I.C. 2046

PEARL STARCH

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Starch. R. L. Whistler and Charles L. Smart. 1964. $13.50

Academic Press, Inc.
111 Fifth Avenue
New York, New York 10003

Devoted to the starch industry.

B. Chemistry and Technology of Cereals as Food and Feed. S. A. Matz. 1959. $15.00

AVI Publishing Company, Inc.
P.O. Box 388
Westport, Connecticut 06880

Contains technical data on starch.

II. TECHNICAL AND TRADE PERIODICALS

A. Food Processing. Monthly. $7.00/year

Putman Publishing Company
111 East Delaware Place
Chicago, Illinois 60611

All kinds of food processing.

B. Cereal Chemistry. Bi-monthly. $25.00/year.

The American Association of Cereal Chemists
1955 University Avenue
St. Paul, Minnesota 55104

Scientific papers dealing with raw materials, processes, and products of the cereal industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

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Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

C. Improving Materials Handling in Small Plants. $.20

Small business management Series No. 4
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by Small Business Administration to assist in the development of management in small businses.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,251,717 May 1966 7 p.
Starch manufacturing process.

B. Patent No. 3,029,168 April 1962 9 p.
Production of starch from root crops.

C. Patent No. 2,974,086 1961 8 p.
Preparing starch from basic materials.

D. Patent No. 2,798,011 1957 5 p.
Process for manufacturing starch and by-product.

E. Patent No. 2,098,404 1937 5 p.
Manufacture of starch from corn by the wet method.

F. Patent No. 2,050,330 1936 8 p
Manufacture of starch from corn.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Corn Refiners Association
1001 Connecticut Avenue
Washington, D. C 20006

Publishes quarterly magazine, "Corn".

B. Corn Starch Industry Committee
1625 "K" Street, N. W.
Washington, D. C. 20006

VI. DIRECTORIES

No suitable directory available that is devoted to the corn starch industry.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

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INDUSTRY PROFILES

CHOCOLATE DIPPED PRODUCTS

I. P. No. 67376
S. I. C. 2071

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Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

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I.P. No. 67376
S.I.C. 2071
DECEMBER 1967

CHOCOLATE DIPPED PRODUCTS

PRODUCT DESCRIPTION

Fancy dipped chocolate caramel nuts, nougat center nut rolls, slo-pokes, coconut half-dipped square and round patties.

A. GENERAL EVALUATION OF PROSPECTS

The products produced in this plant are not the common variety of candy but are high quality specialities, packaged attractively and carrying an average price tag of $1.75 per pound. The fixed investment cost is unusually low when compared with the annual sales volume and the total capital requirements are also moderate. Many purchasers of these products will use them as gift packages. Gift-boxed chocolates lend themselves very well to the export market and the tourist trade. This company will handle the export shipment for the consumers buying these items as individual gifts for shipment abroad. The factory described in this profile could easily produce twice the amount of candies shown merely by adding a small amount of extra equipment. Therefore, if the sales volume proves substantial, this factory could show a profitable return to its investors.

B. MARKET ASPECTS

1. USERS

These products are usually sold in a sales room at the factory site. They are also sold to gift shops and high-quality specialty or department stores for resale to the public as gifts, both local and export, and for individual consumption.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales office at the factory, gift shops, stores and exporters will be the principal sales outlets. It is not feasible to estimate the market needed to support this plant in terms of population. Its products are of high quality and priced to match that quality. Only those with a high income can afford to buy these chocolates. The attractive packaging makes these candies a natural gift item for the local population and for tourists. Candies are fragile and care must be taken in transporting them. Their high value warrants careful handling and packaging so that nationwide distribution is possible. The fixed investment for this industry is only $23,000. It is conceivable that there could be stiff competition in the domestic market High quality must be maintained to meet competition and to meet the demands of the export market.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognised that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $150,000.
The total fixed investment, plus working capital, is estimated at $48,100.
The annual gross profit, before taxes, is estimated at $15,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 10.0%.
(A gross profit on sales, before taxes, of 10.0%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 31.0%.

5. COST PER MAN EMPLOYED

Six direct workers, and three indirect workers, or a total of nine workers, are employed.
The total fixed capital investment is estimated at $23,000.
Based on these figures, the fixed investment per man employed would amount to about $2,555.

C. PRODUCTION REQUIREMENTS - CHOCOLATE DIPPED PRODUCTS I.P. No. 67376
ANNUAL CAPACITY - ONE SHIFT OPERATION: 75,000 LBS. S.I.C. 2071

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES*,**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 1 acre	
Building - 25' x 50' Loft - over 1/2 of Building	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 23,000

Principal items:

2 - Gas fired booster burners
3 - 15 gallon stainless steel cooking kettles
1 - 40 quart Hobart mixer
2 - 3'x5' marble slabs for working table
40 - Baker's bun pans 18"x32"
1 - Chocolate tempering mill for dipping
200 - Masonite dipping boards
Packing tables
Scales
Heat sealing hand equipmemnt
Cold room compressor
Racks with casters and dollies

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 23,100
c. Total Capital Requirements	$ 48,100

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Chocolate	40,000 lbs.	
Nuts		
Caramel Paste	3,500 lbs.	
Sugar	3,000 lbs.	
Corn Syrup	4,100 lbs.	
Vegetable Hard Fat	1,200 lbs.	
Evaporated Milk Unsweetened	600 gals.	
Packaging Materials		
Total direct materials		$ 64,000

b. Supplies
Lubricants & hand tools
Cutting tools & abrasives
Maintenance & spare parts
Office supplies
Gas, oil & maintenance of truck
Total supplies $ 2,000

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 6 H.P. connected load	
Fuel - gas	
Water - Must be potable.	
	$ 1,000

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 2,300

5. MANPOWER

	Number	Annual cost
a. Indirect labor		
Manager	1	
Office	1	
Truck Driver	1	
Total indirect labor	3	$ 23,000
b. Direct labor		
Skilled workers	1	
Semi-skilled workers	2	
Unskilled workers	3	
Total direct labor	6	$ 28,300

c. Training needs

Manager should be fully experienced. He with one skilled worker should be able to train all workers and reach full production in 2 weeks.

6. TRANSPORTATION

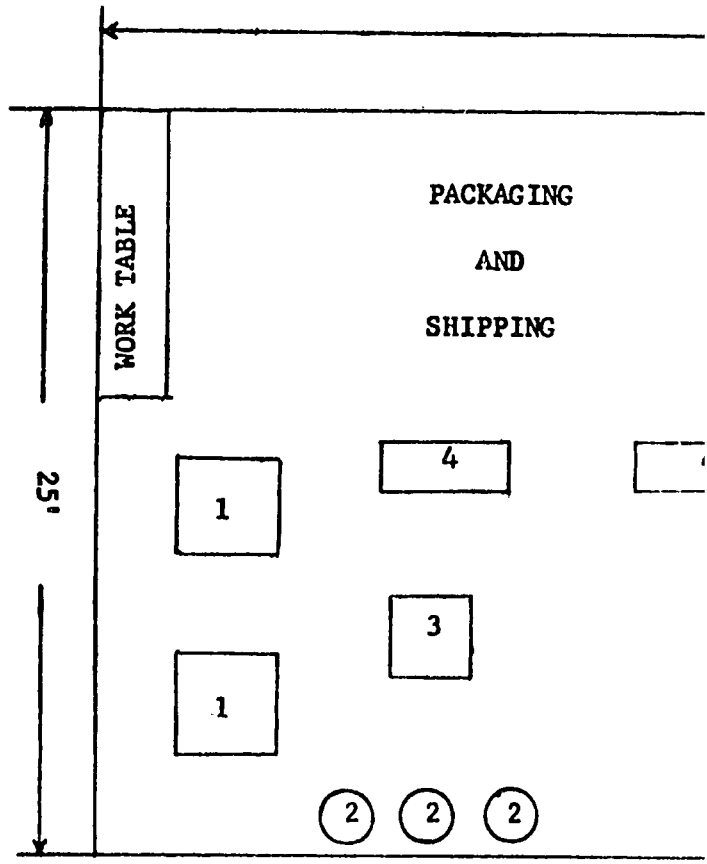
a. Own transport equipment
Truck

b. External transport facilities
In and out shipments average about .3 tons per day.
Good highways.

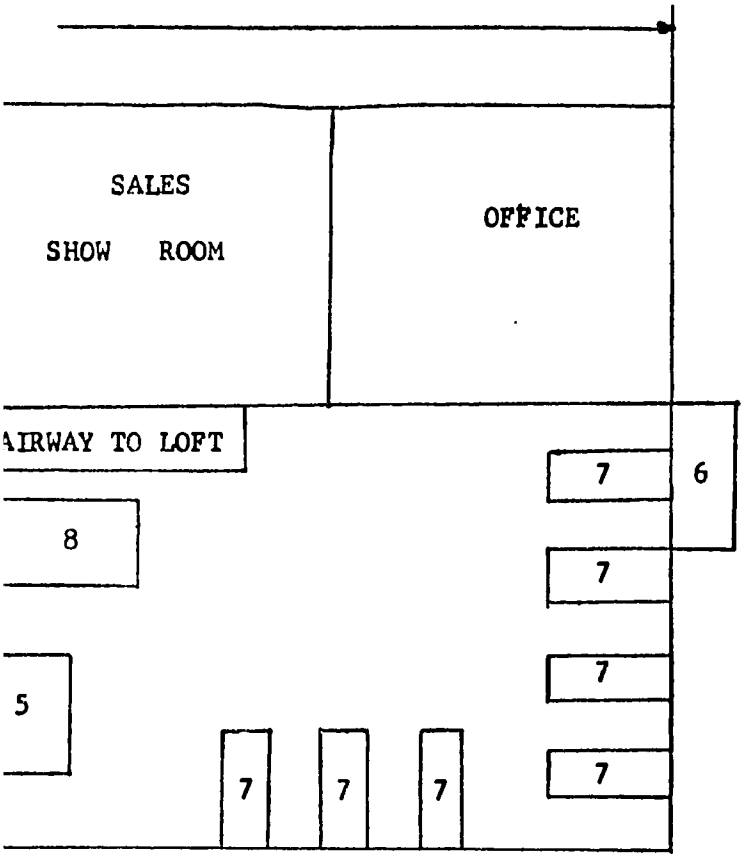
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 64,000	
Direct labor	28,300	
Manufacturing overhead*	28,300	
Total manufacturing cost		$ 120,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 6,400
Sales expense		$ 6,000
Freight-out, travel discounts Allowances & bad debts		$ 2,000
Total annual costs		$ 135,000
Annual Gross Profit		$ 15,000
ANNUAL SALES REVENUE		$ 150,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.



1. 2 - Gas Fired Booster Burners
2. 3 - 15 - 20 Gal. Stainless Steel handle cooking kettles
3. 1 - 40 qt. Hobart Mixer
4. 2 - 3x5 Marble Slabs for Working Tables



Chocolate Tempering Mill for Dipping (2 persons)
Cold Room Compressor Unit
Tables for Packing, celophaning, etc.
Heat Sealing Hand Equipment

I.P. No. 67376
S.I.C. 2071

CHOCOLATE DIPPED PRODUCTS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. An Encyclopedia of Candy and Ice Cream Making. Simon I. Leon. 1959. 454 pp, $12.00

Chemical Publishing Company
212 Fifth Avenue
New York, New York 10010

Detailed discussion and spectal qualities of chocolate liquor, cocoa, milk chocolate and methods of candy making.

B. Plant Layout and Materials Handling. James M. Apple. 2nd Edition. 1963. 447 pp. Illus. $9.00

The Ronald Press Company
15 East 26th Street
New York, New York 10010

II. TECHNICAL AND TRADE PERIODICALS

A. Manufacturing Confectioner. Monthly. $3.00/year.

The Manufacturing Confectioner Publishing Company
1031 South Boulevard
Oak Park, Illinois 60302

B. Candy Industry and Confectioners Journal. Fortnightly. $5.00/year.

Don Gussow, Publisher
777 Third Avenue
New York, New York

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington; D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small business men understand past decisions and to make better decisions in the future.

C. Starting and Managing a Small Business of Your Own. Wendell O. Matcalf. 49 pp. 1962. $.25. Vol I (2nd Editton) of the Starting and Managing Series of the Small Business Administration, Washington, D. C.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Pitfalls usually encountered when entering a new business. Sources of additional information given.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D.C. 20231. $.50 each.

A. Patent No. 2,868,158 January 15, 1959 5 p.
Machine for coating candy centers.

B. Patent No. 2,788,766 April 16, 1957 3 p.
Apparatus for coating or enrobing edibles.

C. Patent No. 2,785,650 March 19, 1957 8 p.
Apparatus for dipping an edible solid into a fluid confectionary material.

D. Patent No. 2,763,234 September 18, 1956 5 p.
Coating or enrobing machines.

E. Patent No. 2,725,831 December 16, 1955 5 p.
Method and means for coating edible centers or cores.

F. Patent No. 2,577,722 December 4, 1951 4 p.
Coating machines for candy products.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Confectioners Association of the U.S., Inc.
36 South Wabash Avenue
Chicago, Illinois 60603

B. Association of manufacturers of Confectionery and Chocolate, Inc.
527 Madison Avenue
New York, New York 10022

VI. DIRECTORIES

A. Candy Industry Catalog & Formula Book. Annually. $5.00
Don Gussow Publications
777 Third Avenue
New York, New York 10017

Lists 12,500 suppliers to the candy industry for raw materials, machinery, instruments, packing supplies and sanitary needs.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the :

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

FISH OIL AND FISH MEAL PLANT—EVAPORATION PROCESS (40 tons)

I. P. No. 67377
S. I. C. 2095

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67377
S.I.C. 2095
DECEMBER 1967

FISH OIL AND FISH MEAL PLANT--EVAPORATION PROCESS
(Processing 40 tons of raw fish per hour)

PRODUCT DESCRIPTION

Fish oil and fish meal derived from inedible fish and fish waste using an evaporation process.

A. GENERAL EVALUATION OF PROSPECTS

The availability, in most countries, of the principal raw material for this product and the constantly increasing demand for fish oil and fish meal for a growing number of uses provides a satisfactory prospect for this industry. Another favorable factor is that the production of palm fats and other liquid oils is not keeping pace with the increased demand for these products. These factors, together with this plant's export potential, provide excellent prospects for a profitable investment. This plant processes 40 tons of raw fish per hour.

Summary cost figures on plants capable of processing 50 to 60 tons of raw fish per hour are:

	50 Tons	60 Tons
Fixed investment	$1,150,000	$1,350,000
Total capital requirements	1,900,000	2,250,000
Materials	2,700,000	3,200,000
Annual Sales	4,000,000	4,800,000
Annual Gross Profits	400,000	480,000

B. MARKET ASPECTS

1. USERS

Manufacturers of margarine, animal feeds, fungicide sprays, soap, fertilizer, paints, lubricating oils, lower-grade cooking fats and shortening.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are generally made to large dealers in fish meal and fish oil who have representatives in all countries. Local sales are usually made directly to local industries and to wholesalers of animal feeds. Oil is shipped in drums and tank cars. Since these products are primary products used in a variety of other processing industries and as components in a great number of products, there is no method of estimating the market demand in terms of the local population. Fish oil and meal are easily transported. There will be a nationwide market for these items in countries that are increasing their livestock production, soil productivity or are improving or increasing the protein content of the people's diet. The production of this plant should be consumed locally but, if operated efficiently, should have no difficulty in exporting any percentage of the output not sold domestically.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $3,200,000.
The total fixed investment, plus working capital, is estimated at $1,550,000.
The annual gross profit, before taxes, is estimated at $320,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 10.0%.
(An annual gross profit on sales, before taxes, of 10.0%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 20.6%.

5. COST PER MAN EMPLOYED

Seventeen direct and seven indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $947,000.
Based on these figures, the fixed investment per man employed would amount to about $39,460.

C. PRODUCTION REQUIREMENTS-FISH OIL AND FISH MEAL PLANT-EVAPORATION PROCESS (Processing 40 Tons of Raw Fish Per Hour)

I.P. No. 67377
S.I.C. 2095

ANNUAL CAPACITY-ONE SHIFT OPERATION: 16,000 TONS MEAL; 8,000 TONS OIL

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 7 acres	
Building - 150′ x 200′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 947,000
Principal Items:	
Fish pump	
Dewatering system	
Measuring machine	
Drag chain	
Cookers	
Presser	
Screw conveyor	
Dryers	
Air pollution system	
Temperature control	
Screw conveyor operators	
Meal grinders	
Screw conveyor bagging and weighing	
b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 603,000
c. Total Capital Requirements	$1,550,000

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Raw fish	80,000 tons	
Bags		
Oil drums		
Total direct materials		$2,204,000
b. Supplies		
Lubricants & hand tools		
Gas, oil and maintenance of truck		
Maintenance & spare parts		
Office supplies		
Total supplies		$ 31,900

c. Availability of materials & supplies

All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 1050 H.P. connected load	
Fuel - 800,000 gal. Bunker C oil	
Water - production, sanitation and fire protection	$ 90,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 85,900

5. MANPOWER

	Number	Annual Cost
a. Indirect Labor		
Manager	1	
Supervisor	1	
Office	3	
Maintenance	1	
Truck driver	1	
Total indirect labor	7	$ 51,000
b. Direct Labor		
Skilled workers	5	
Semi-skilled workers	4	
Unskilled workers	8	
Total direct labor	17	$ 78,800

c. Training Needs

Manager should be fully experienced. With the help of 2 skilled workers he should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment.

Truck

b. External transport facilities.

In and out shipments 400 tons per day. Railroad essential.

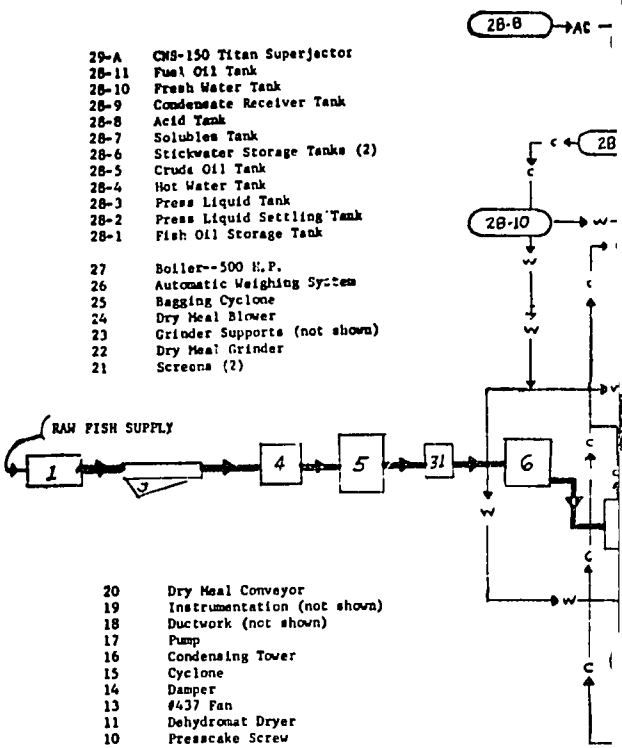
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$2,204,000	
Direct labor	78,800	
Manufacturing overhead*	259,300	
Total manufacturing cost		$2,542,100
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		160,900
Sales expense		127,000
Freight-out, travel discounts Allowances & bad debts		50,000
Total annual costs		$ 2,880,000
Annual Gross Profit		$ 320,000
ANNUAL SALES REVENUE		$ 3,200,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect Labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

FISH OIL AND FISH MEAL



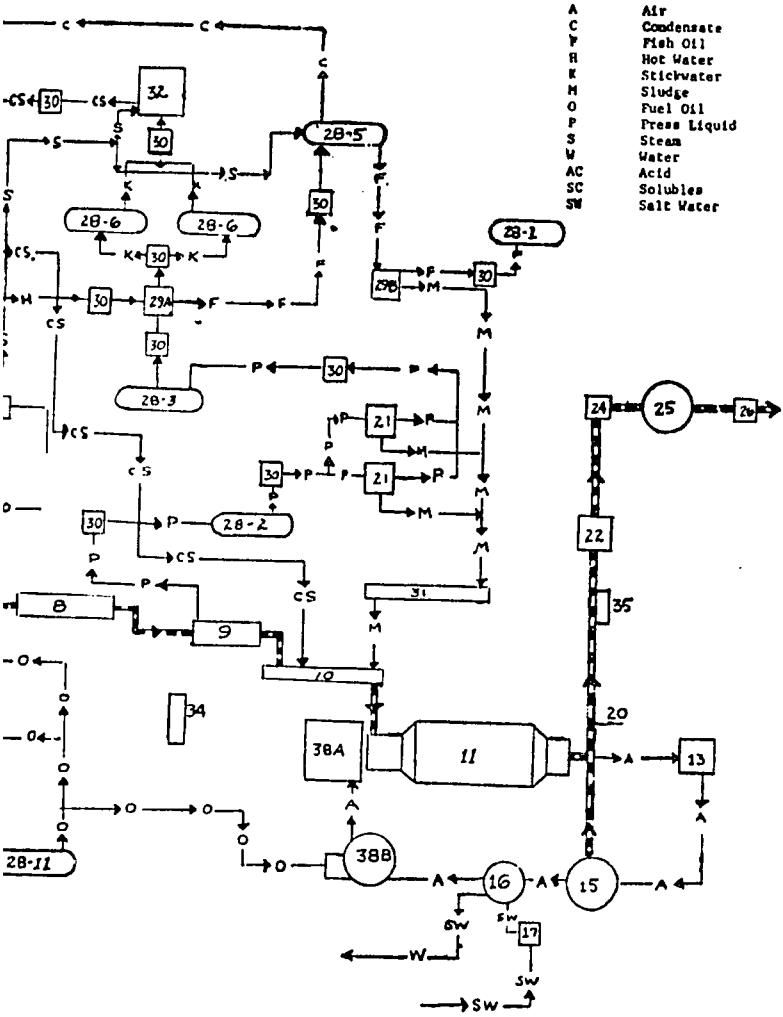
29-A	CNS-150 Titan Superjector
28-11	Fuel Oil Tank
28-10	Fresh Water Tank
28-9	Condensate Receiver Tank
28-8	Acid Tank
28-7	Solubles Tank
28-6	Stickwater Storage Tanks (2)
28-5	Crude Oil Tank
28-4	Hot Water Tank
28-3	Press Liquid Tank
28-2	Press Liquid Settling Tank
28-1	Fish Oil Storage Tank
27	Boiler--500 H.P.
26	Automatic Weighing System
25	Bagging Cyclone
24	Dry Meal Blower
23	Grinder Supports (not shown)
22	Dry Meal Grinder
21	Screens (2)
20	Dry Meal Conveyor
19	Instrumentation (not shown)
18	Ductwork (not shown)
17	Pump
16	Condensing Tower
15	Cyclone
14	Damper
13	#437 Fan
11	Dehydromat Dryer
10	Presscake Screw
9	Press
8	Predrainage Screw
7	Cooker
6	Cooker Feed Chute
5	Raw Box
4	Fish Measuring Machine
3	Dewatering Conveyor
2	Process Piping (not shown)
1	Fish Pump
35	Permanent M
34	Power Contr
33	boiler -- 5
32	Stickwater
31	Sludge Scre
30	Pumps (12)
29-B	CNS-66 Tita
38-D	Refractory
38-C	Ductwork (n
38-B	Incinerator
38-A	Feed Breach
37	Prebreaker
36	Air Compres

APORATION PROCESS (40 tons)

I.P. NO. 67377
S.I.C. 2095

LEGEND

Symbol	Item
→	Direction of Flow
▬	Raw Fish
▬	Cooked Fish and Meal
A	Air
C	Condensate
F	Fish Oil
H	Hot Water
K	Stickwater
M	Sludge
O	Fuel Oil
P	Press Liquid
S	Steam
W	Water
AC	Acid
SC	Solubles
SW	Salt Water



I. P. No. 67377
S. I. C. 2095

FISH OIL AND MEAL PLANT - EVAPORATION PROCESS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Fisheries By-Products Technology. Julius Brody. 1966. 350 pp. $13.50 outside U.S.

AVI Publishing Company
P.O. Box 670
Westport, Connecticut 06880

By-products obtained from fish scrap or from whole fish, fish meal, fish oil.

B. Industrial Fishery Technology, M. E. Stansby, 1963. $12.00

Reinhold Publishing Corporation
430 Park Avenue
New York, New York 10022

C. Fish Handling and Processing $8.00

British Information Services
845, Third Avenue
New York, New York 10022

II. TECHNICAL AND TRADE PERIODICALS

A. The Fishing Gazette. Monthly. $3.00/year.

Fishing Gazette Publishing Corporation
461 Eighth Avenue
New York, New York 10001

Contains facts and figures of the fishing trade for canners and processors.

B. Food Engineering. Monthly. $25.00/year

Food Engineering
Chestnut and 56th Streets
Philadelphia, Pennsylvania 19139

Devoted to coverage of the entire food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years : Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. 233 pp. $1.00

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Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U. S Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,249,442 — May 1966 — 6 p.
Method of processing fish.

B. Patent No. 31,041,174 — June 1962 — 2 p.
Process for treating oil containing animal material, such as fish and fish offal.

C. Patent No. 2,934,433 — April 1960 — 4 p.
Fish protein products - method of preparing same.

D. Patent No. 2,972,542 — 1961 — 2 p.
Preparing deodorized fish meal and oil.

E. Patent No. 2,909,984 — October 1959 — 10 p.
Apparatus for producing animal protein meals.

F. Patent No. 2,877,122 — 1959 — 7 p.
Method of dehydrating fish for manufacture of meal, oil and other products.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A, Essential Oil Association
2 Lexington Avenue
New York, New York 10010

B. American Feed Manufacturers Association, Inc,
53 W. Jackson Boulevard
Chicago, Illinois 60604

VI. DIRECTORIES

A. List of Fishery Associations in the United States and Alaska. Annually. Gratis.

Bureau of Commercial Fisheries, Branch of Reports
1801 North Moore Street
Arlington, Virginia 22209

VII. PROFESSIONAL ENGINEERING SERVICES

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

SLIPS, WOMEN'S, MISSES', & CHILDREN'S

I. P. No. 67378
S. I. C. 2341

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SLIPS, WOMEN'S MISSES', CHILDREN'S

I.P. No. 67378
S.I.C. 2341
DECEMBER 1967

PRODUCT DESCRIPTION

Women's, misses' and children's slips made from combed sateen.

A. GENERAL EVALUATION OF PROSPECTS

The amount of capital required to establish this plant is relatively modest. If it appears that the projected annual gross sales revenue can be achieved within the domestic market and if the factory is operated efficiently and managed well, the prospects for this industry should be good.

B. MARKET ASPECTS

1. USERS

Ladies, teenage girls and pre-adolescent girls will use this product.

2. SALES CHANNELS AND EXTENT OF MARKET

The plant will sell direct ro large stores and to wholesale houses for distribution to small retail outlets. The market for this product will depend, to a great extent, on the purchasing power of the local population. Competition will come from similar factories producing the same items and from that part of the population that does sewing in the home. Slips are seldom imported so competition from imported products will be negligible.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognised that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $215,000.
The total fixed investment, plus working capital, is esimated at $70,900.
The annual gross profits, before taxes, is estimated at $15,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 7.0%.
(A gross profit on sales, before taxes, of 7.0%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 21.1%.

5. COST PER MAN EMPLOYED

Twenty-two direct workers and five indirect workers, or a total of twenty-seven workers, are employed.
The total fixed capital investment is estimated at $32,000.
Based on these figures, the fixed investment per man employed would amount to about $1,185.

C. PRODUCTION REQUIREMENTS - SLIPS, WOMEN'S, MISSES', CHILDREN'S

I.P. No. 67378
S.I.C. 2341

ANNUAL CAPACITY - ONE SHIFT OPERATION: 72,000 SLIPS
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - about 8,000 sq. ft.	
Building - one story 30' x 80' Any suitable local material.	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 32,000

Principal items:

Cloth spreader
Cutting table
Marking drill
18 sewing machines
Steam iron
Working stands
Racks

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 38,900
c. Total Capital Requirements	$ 70,900

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Sateen combed	40,000 yds.	
Thread		
Trimming		
Boxes		
Total direct materials		$ 21,000

b. Supplies

Lubricants & hand tools
Gas, oil & maintenance of truck
Maintenance & spare parts
Office supplies

Total supplies $ 2,500

c. Availability of materials & supplies

All should be available locally. All available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - about 20 H.P. connected load	
Fuel - heating	
Water - sanitation & fire protection	$ 1,200

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation Equipment	4	
Total depreciation		$ 3,000

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Office	2	
Machine fixer	1	
Truck driver	1	
Total indirect labor	5	$ 36,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	18	
Unskilled workers	2	
Total direct labor	22	$ 109,200

c. Training needs

Manager, machine fixer, and two skilled workers should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

In and out shipments about one ton per day. Good highways.

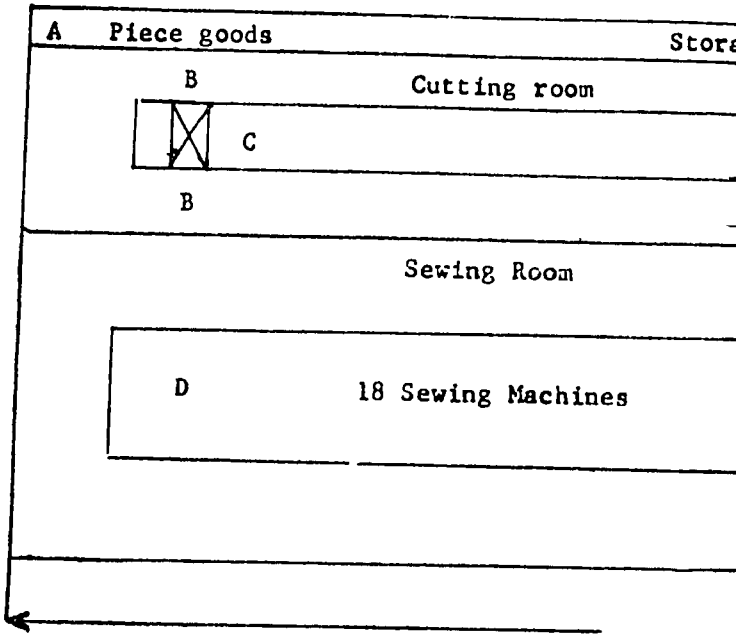
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 21,000	
Direct labor	109,200	
Manufacturing overhead*	42,700	
Total manufacturing cost		$ 172,900
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,100
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 5,000
Total annual costs		$ 200,000
Annual Gross Profit		$ 15,000
ANNUAL SALES REVENUE		$ 215,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

SLIPS, WOMEN'S

PLANT LAYO

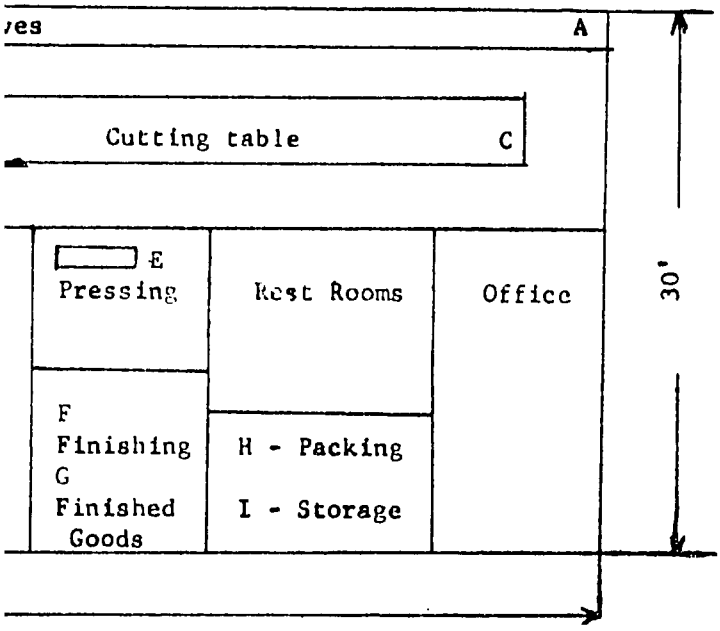


A - A.	Piece goo
B - B.	Cloth sprea
C - C.	Cutting Ta Cloth
D - D.	Sewing mac
E.	Steam iron,
F.	Finishing
G.	Finished goo
H.	Packing
I.	Storage

S', & CHILDREN'S

I.P. NO. 67378
S.I.C. 2341

RK FLOW



arking, cutting and assembly

ing

I.P. No. 67378
S.I.C. 2341

SLIPS, WOMEN'S MISSES', CHILDREN'S

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Apparel Manufacturing Analysis. Jacob Solinger. 1961. 800 pp. Illus. $25.00
John Wiley and Sons, Inc.
605 Third Avenue
New York, New York 10016
The nature and scope of apparel production.

B. Clothing Construction. E, A. Mansfield. 1953. 454 pp, Illue. $7.50
Houghton Mifflin Company
2 Park Street
Baston, Massachusetts 02108
Covers all types of clothing manufacture.

C. Plant Production Control. Charles E. Koepke. 3rd Edition. 1961. 373 pp. Illua. $8.95
John Wiley & Sons, Inc.
605 Third Avenue
New York, New York 10016
Scope of production control.

II. TECHNICAL AND TRADE PERIODICALS

A. Women's Wear Daily. $20.00/year
Fairchild Publications, Inc.
7 East 12th Street
New York, New York 10003
News and information concerning styles, markets, source of supplies, and management in the women's wear industry.

B. Femme-Lines, Bi-monthly. $4.00/year.
Earl Barron Publications
1440 Broadway
New York, New York 10018

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years : Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 p. $1.00.
Superintendent of Documents
U. S. Government Printing Office
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Insights and clues concerning the entire process of small business formation, growth, and decline

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).
Suprintendent of Documents
Washington, D. C. 20402
Points out major areas of financial and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U. S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. Design 203,653 February 1966 1 p.
Slip

B. Patent No. 3,149,342 September 1964 4 p.
Woman's slip.

C. Patent No 3,093,138 June 1963 3 p.
Ladies' slip.

D. Patent No 3,066,675 June 1962 2 p.
Slips.

E. Patent No. 3,066,308 December 1962 2 p.
Slip type undergarment.

F. Patent No. 3,039,114 June 1962 4 p.
Petticoat.

G. Patent No. 2,899,962 August 1959 3 p.
Basic undergarment and bouffant.

H. Patent No. 2,835,897 May 1958 4 p.
Combination outer and undergarment.

I. Patent No. 2,659,893 November 1953 4 p.
Combination undergarment.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. American Apparel Manufacturers Association, Inc.
2000 "K" Street, N. W.
Washington, D. C. 20006

VI. DIRECTORIES

A. Corset and Underwear Review Directory. Annual. $1.00
Haire Publishing Company.
111 Fourth Avenue
New York, New York 10003

B. Lingerie, Loungewear, Corset and Brassiere Directory. Semi-annual. Free.
Fairchild Publications, Directory Division
7 East 12th Street
New York, New York 10003

Both directories list manufacturers and their suppliers

C. Apparel Manufacturers Directory. Annual. $3.00
Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

List 5,000 suppliers of garment industry fabrics, trimings, machinery and equipment.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small. A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

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National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

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The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

POTTERY, EARTHENWARE

I. P. No. 67379
S. I. C. 3269

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

POTTERY, EARTHENWARE

I.P. No. 67379
S.I.C. 3269
DECEMBER 1967

PRODUCT DESCRIPTION

Flower pots and saucers in sizes three to twelve inches. Color : red clay. Produced by the soft mud method.

A. GENERAL EVALUATION OF PROSPECTS

Local sources of raw material situated not far from potential markets are essential for this industry's success. Such conditions are not uncommon. Flower pot making is an art that has long been practiced in many countries, although, in many instances, it is done with antiquated equipment. The sales revenue shown is not based on the saucer and pot selling as a unit since, generally, only about 25% of the sales are saucers. A comprehensive survey should be made to determine the sales potential and the amount of competition that would be encountered from small, inadequately mechanized plants.

B. MARKET ASPECTS

1. USERS

Florists, hospitals, private homes.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to florists and retail stores. The market needed for this product depends upon the climate : less pots would be sold in tropical countries. The per capita income would also influence sales. This product can be manufactured on a small-scale with a small investment. But this plant, with its modern equipment, should produce better-quality products. Moreover, the small manufacturers are not prepared to ship nationwide. Shipments made within short distances from this plant would equire a minimum of packaging. The pots are usually nested using paper, straw or excel..or as packing. But for long distance shipping the product's sales value merits, in addition to protective nesting, use of cartons or other protective packaging. Because of the fragility of earthenware pots, they are not a significant export item.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $300,000.
The total fixed investment, plus working capital, is estimated at $288,200.
The annual gross profit, before taxes, is estimated at $34,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 11.3%.
(A gross profit on sales, before taxes, of 11.3%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 11.8%.

5. COST PER MAN EMPLOYED

Twenty-six direct and six indirect workers, or a total of thirty-two workers, are employed.
The total fixed capital investment is estimated at $236,000.
Based on these figures, the fixed investment per man employed would amount to $7,375.

2

C. PRODUCTION REQUIREMENTS - POTTERY, EARTHENWARE

I.P. No. 67379
S.I.C. 3269

ANNUAL CAPACITY - ONE SHIFT OPERATION: 3,600,000 PIECES

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 10 acres including clay deposit & sand deposit if possible	
Building - one story 7,000 sq. ft. and office 500 sq. ft.	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 236,000

Principal items:
- Power shovel
- Dump truck
- Granulator
- Disintegrator & crusher
- Pug mill
- Automatic pot machine
- Molds for pot machine
- Tunnel dryers
- Cars for drying tunnel
- Pottery kilns
- Conveyors
- Delivery truck

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 52,200
c. Total Capital Requirements	$ 288,200

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Clay	19,000 tons	
Parting sand		
Packaging		
Total direct materials		$ 7,400

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 5,100

c. Availability of materials & supplies

Clay and sand must be available at plant. All should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 200 H.P. connected load	
Fuel - 4,500 tons of coal	
Water - about 1,000,000 gallons	
	$ 26,000

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 22,000

5. MANPOWER

a. Indirect labor	Number	Annual Cost
Manager	1	
Supervisor	1	
Office	2	
Truck Drivers	2	
Total indirect labor	6	$ 44,000
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	16	
Unskilled workers	8	
Total direct labor	26	$120,000

c. Training needs

Manager and supervisor must be fully experienced. With the help of two skilled workers, they should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own transport equipment

1 Dump truck and 1 Delivery truck required

b. External transport facilities

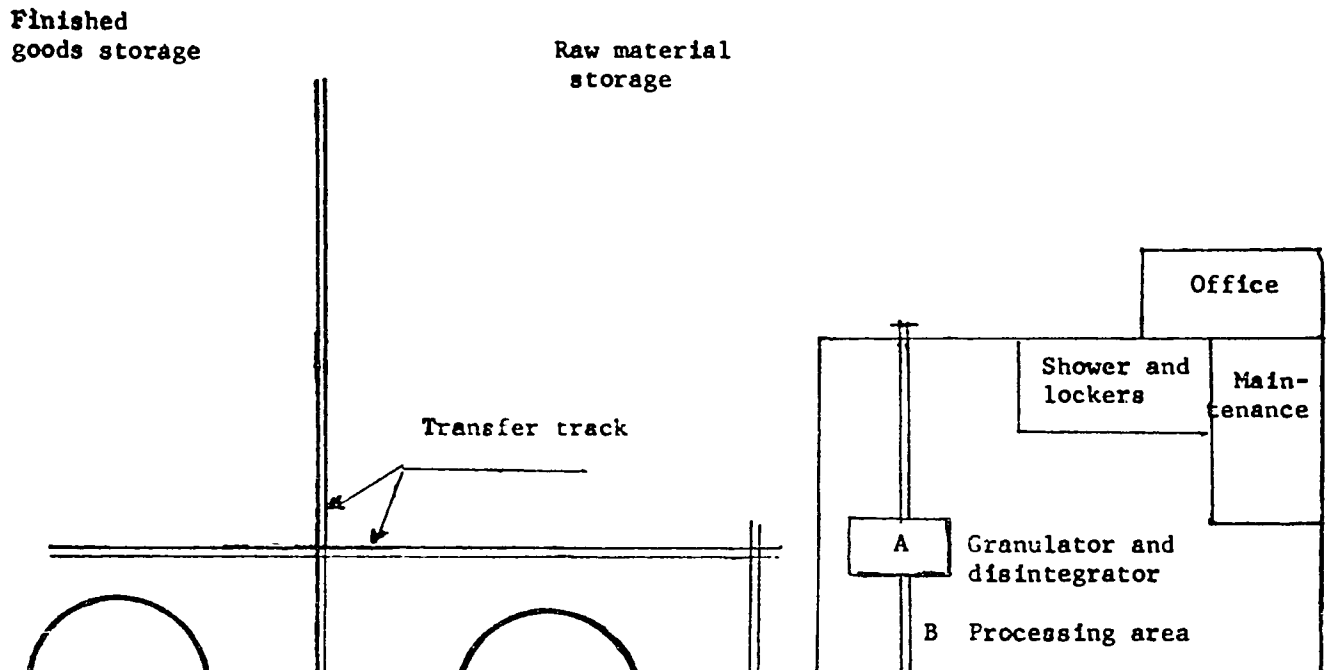
In and out shipments should amount to about 90 tons per day.
Good highway and railroad if possible.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

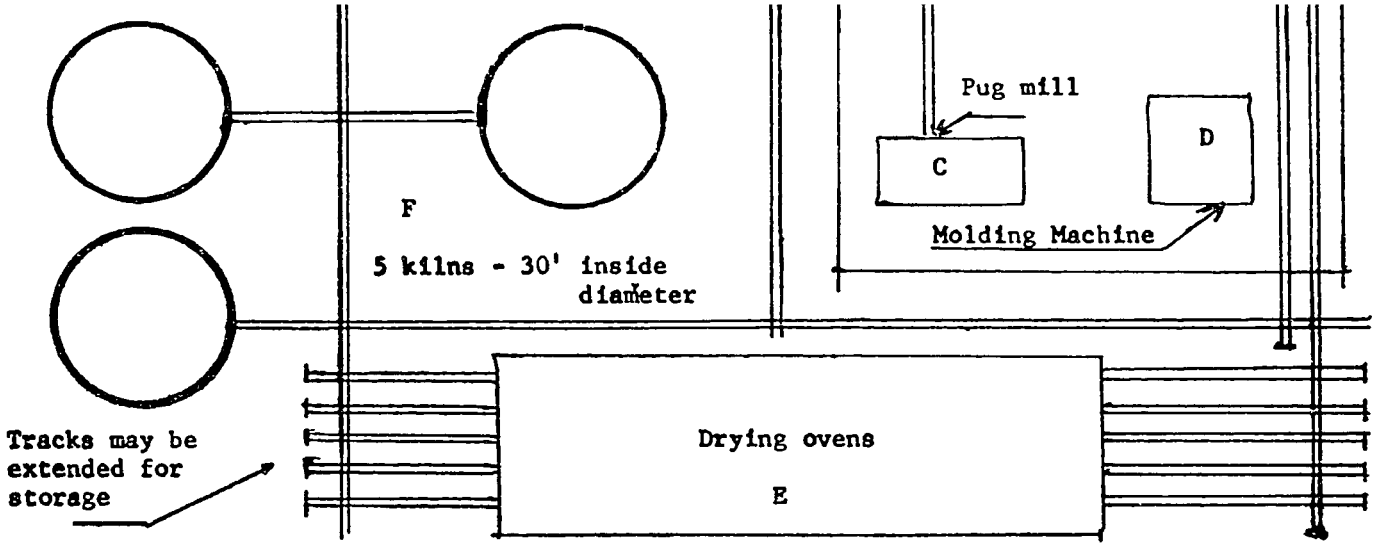
Direct materials	$ 7,400	
Direct labor	120,000	
Manufacturing overhead*	97,100	
Total manufacturing cost		$ 224,500
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		23,500
Sales expense		12,000
Freight-out, travel discounts Allowances & bad debts		6,000
Total annual costs		$ 266,000
Annual Gross Profit		$ 34,000
ANNUAL SALES REVENUE		$ 300,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

PLANT LAYOUT AND WORK FLOW



POTTE



Building height - 20 feet

A. Granulator and disintegrator
B. 2-roll grinder
C. Pug mill
D. Molding Machine
E. Drying ovens
F. 5-kilns

THENWARE

I.P. No. 57379
S.I.C. 3269

POTTERY EARTHENWARE

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Applied Clay Mine Minerology. Ralph E. Grim. 1962. 250 pp. Illus. $14.50
McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

Deals with the composition of clay materials.

B. Modern Ceramics: Some Principles and Concepts. J. E. Hove and W. C. Riley. 1965. 409 pp. $14.50
John Wiley & Sons, Inc.
605 Third Avenue
New York, New York 10016

II. TECHNICAL AND TRADE PERIODICALS

A. Ceramic Age. Monthly. $4.00
Francis Tatnall, Editor and Publisher
2800 Euclid Avenue
Cleveland, Ohio 44115

Covers news on progress in the industry, including materials, supplies, engineering, machinery and management.

B. Ceramic Industry. Monthly. $4.00
Cahners Publishing Company
8 South Wabash Avenue
Chicago, Illinois 60603

New trends and developments in the ceramic industry.

III BUSINESS MANAGEMENT MATERIALS

A. Improving Materials Handling in Small Plants. $.20
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.
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Insights and clues concerning the entire process of small business formation, growth, and decline.

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Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. 2,995,796. 1961. 15 p.
Apparatus for shaping ceramic articles.

B. Patent No. 2,964,822. 1960. 6 p.
Process for the manufacture of ceramic objects.

C. Patent No. 2,902,740. 1959. 7 p.
Apparatus for making ceramic articles.

D. Patent No. 2,939,209. 1958. 6 p.
Method for making ceramicware gift items.

E. Patent No 2,676,892, 1954. 18 p.
Method of making ceramic articles.

F. Patent No. 2,547,294. 1951. 20 p.
Apparatus for making potteryware.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Clay Pot Manufacturers Association
Box 84
Jackson, Missouri 63755

B. U. S. Potters Association
104 E. 4th Street
East Liverpool, Ohio 43920

VI. DIRECTORIES

A. Ceramic Data Book Buyers Directory. Annual. $3.50
Cahners Publishing Company, Inc.
5 South Wabash Street
Chicago, Illinois 60603

3,000 ceramics equipment and raw materials manufacturers and suppliers.

VII. PROFESSIONAL ENGINEERING SERVICES

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INDUSTRY PROFILES

GLAZED FRUIT AND FRUIT PEEL

I. P. No. 67380
S. I. C. 2071

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I. P. No. 67380
S. I. C. 2071
DECEMBER 1967

GLAZED FRUIT AND FRUIT PEEL

PRODUCT DESCRIPTION

Glazed peel of orange and grapefruit, stripped and diced.

A. GENERAL EVALUATION OF PROSPECTS

This plant should be located where citrus fruit is grown commercially since the peel of citrus fruit can be procured at a very low cost at the plant where the juice is extracted. The peel is usually sold as animal food or fertilizer by the ton, thus providing a low-cost raw material for this plant. Where an annual sales volume of $68,000 is available, this business should represent a profitable investment.

B. MARKET ASPECTS

1. USERS

This product is usually sold to industries that produce fancy packages of glazed fruit peel, candy and nuts as gift packages.

2. SALES CHANNELS AND EXTENT OF MARKET

This plant would maintain a sales exhibit or show room and sell direct to the public. However, a large percentage of the product would be sold to industries noted above. Since the fixed investment and the cost of raw materials are relatively low for this business, local competition could develop. Industries using glazed fruit and fruit peel are usually located in urban areas. Although this product is fragile and must be handled with care, its high value permits nationwide distribution. This product would not usually be exported directly by the factory but would be sold to tourists who would ultimately ship it or carry it home as gifts. The market depends, therefore, on the amount of tourism enjoyed by the country. A feasibility study including a survey of market potential should be carried out before investing in this industry.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $68,000.
The total fixed investment, plus working capital, is estimated at $36,700.
The annual gross profit, before taxes, is estimated at $7,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 10.3%.
(A gross profit on sales, before taxes, of 10.3%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 19%.

5. COST PER MAN EMPLOYED

Four direct and three indirect workers, or a total of seven workers, are employed.
The total fixed capital investment is estimated at $25,000.
Based on these figures, the fixed investment per man employed would amount to about $3,570.

C. PRODUCTION REQUIREMENTS - GLAZED FRUIT AND FRUIT PEEL

I.P. No. 67380
S.I.C. 2071

ANNUAL CAPACITY -ONE SHIFT OPERATION : 65 TONS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - one acre	
Building - one story 30′ x 60′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 25,000

Principal items:

4 30-gallon Stainless Steel Steam Jacketed Kettle, 40 P.S.I., 1 25-gallon Stainless Steel Steam 2/3 Jacketed Kettle, 100 P.S.I., 1 one-HP Stainless Steel Centrifugal Pump, 1 Long Stem Thermomter, 60 Draining Screens 18 x 36, 3 Screen racks for Draining, 6 Galvanized Drip Pans, 100 2-1/2 Gallon Screw-type Jars, 1 20-HP Steam Boiler, 100 P.S.I.

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 11,700
c. Total Capital Requirements	$ 36,700

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Grapefruit and orange strips & diced peels	60 tons	
Sugar	12-1/2 tons	
Packaging		
Total direct materials		$ 9,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance for truck	
Total supplies	$ 1,300

c. Availability of materials & supplies

Raw material found in tropical and semi-tropical areas. Supplies should be available locally.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 2 H.P. connected load	
Fuel - any local fuel	
Water - must be potable	
	$ 500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 2,100

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Office	1	
Truck Driver	1	
Total indirect labor	3	$ 20,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	1	
Unskilled workers	1	
Total direct labor	4	$ 20,600

c. Training needs

The manager should be fully experienced. He, with the two skilled workers should be able o tr ai ı w rkers and reach full production in 15 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

In and out shipments about 1/2 ton per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

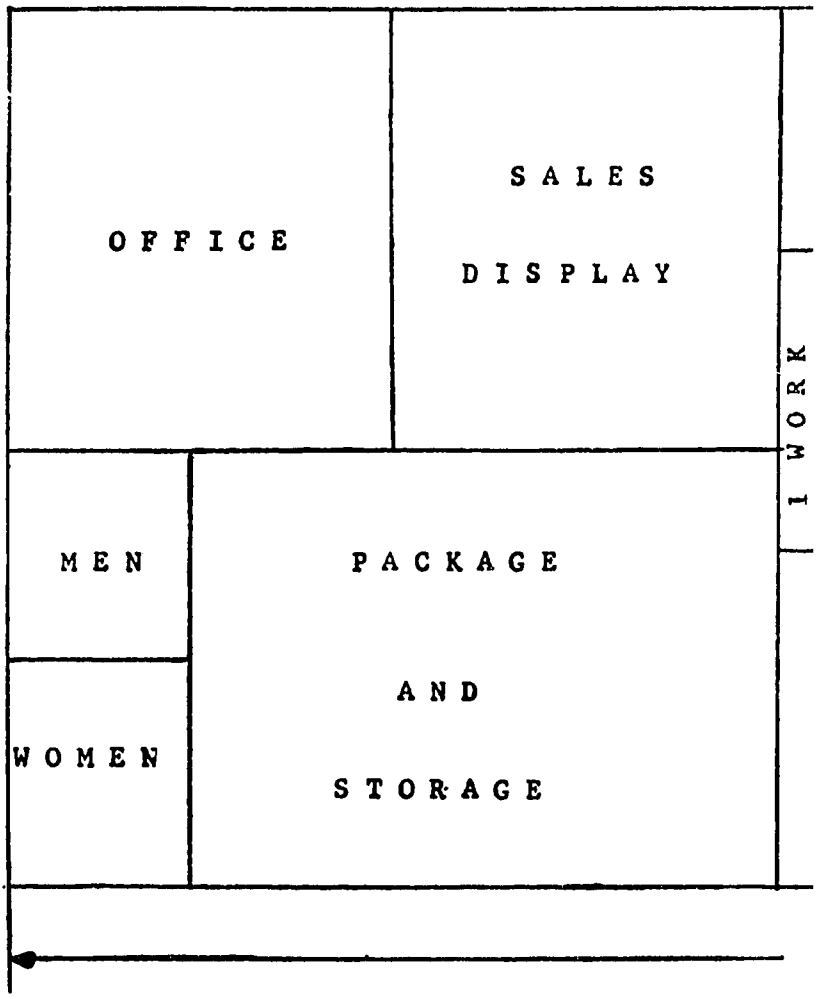
Direct materials	$ 9,000	
Direct labor	20,600	
Manufacturing overhead*	23,900	
Total manufacturing cost		$ 53,500
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 3,500
Sales expense		$ 3,000
Freight-out, travel discounts Allowances & bad debts		$ 1,000
Total annual costs		$ 61,000
Annual Gross Profit		$ 7,000
ANNUAL SALES REVENUE		$ 68,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

GLAZED

PL

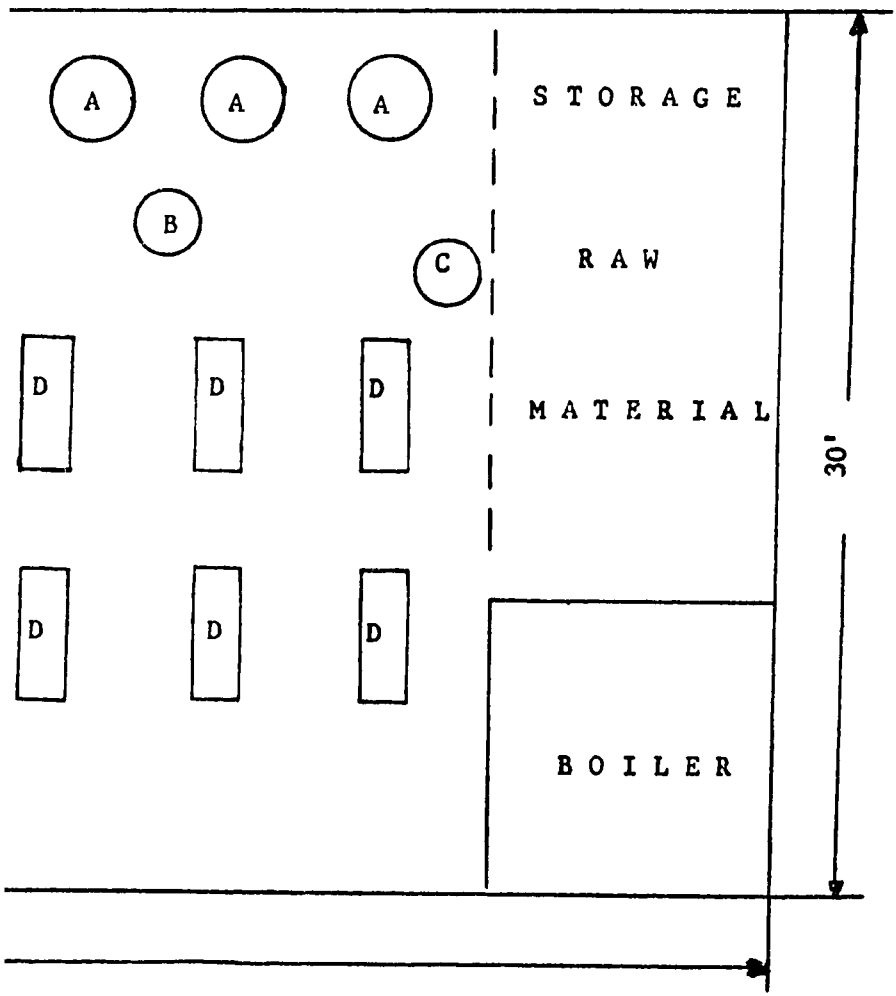


A - 4 30 gallon stainless ste
B - 1 25 Gallon stainless ste
C - 1 Stainless steel centrifu
D - 6 Racks for draining s

ND FRUIT PEEL

I.P. NO. 67380
S.I.C. 2071

LAYOUT



kettles 40 - PSI
kettle 100 - PSI
1 H.P.

I.P. No. 67380
S.I.C. 2071

GLAZED FRUIT AND FRUIT PEEL

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Cane Sugar Handbook. George P. Meade. 9th Edition. 1963. 845 pp. Illus. $24.50

John Wiley & Sons, Inc.
605 Third Aveune
New York, New York 10016

B. Quality Control and Reliability. Norbert L. Enrick. 1966. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N.Y. 10013

The 24 chapters of this book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

II. TECHNICAL AND TRADE PERIODICALS

A. Food Processing. Monthly. $7.00/year.

Putman Publishing Company
111 East Delaware Place
Chicago, Illinois 60611

B. Confectionews. Weekly.

National Confectioners Association
36 South Wabash Avenue
Chicago, Illinois 60603

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Infights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small business men understand past descisions and to make better decisions in the future.

C. Profitable Small Plant Layout. John R. Immer. 48 pp. Illus. 1964. No. 21 (2nd Edition) in the Small Business Management Series of the Small Business Administration, Washington, D. C.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

How to move materials through the shop econon.ically and efficiently.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each

A. Patent No. 3,192,052 June 29, 1965 4 p
Relates to a method and apparatus for the coating of agricultural products.

B. Patent No. 2,917,272 December 15, 1959 8 p.
Apparatus for dispensing heavy consistency fluid.

C. Patent No 3,044,437 July 17, 1962 5 p.
Apparatus for candying fruit and the like.

D. Patent No. 2,889,801 June 9, 1959 6 p.
Apple-coating machine.

E. Patent No. 2,870,736 January 27, 1959 6 p.
Method and apparatus for coating fruit items.

F. Patent No. 2,785,650 March 19, 1957 8 p.
Apparatus for dipping an edible solid into a fluid confectionary material.

G. Patent No. 2,763,234 September 18, 1956 5 p.
Coating or enrobing machines.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Fruit and Syrup Manufactures Association, Inc.
41 West 57th Street
New York, New York 10019

VI. DIRECTORIES

A. Directory of Food Processors. Annually. $3.00

Mid-Atlantic Food Processors Association
P O. Box 738
Easton, Maryland 21601

Lists food processors and products produced.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED CRANBERRIES

I. P. No. 67381
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

251

CANNED CRANBERRIES

I.P. No 67381
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned cranberries, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned cranberries normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh fruits, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufacturered product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $180,000.
The total fixed investment, plus working capital, is estimated at $143,100.
The annual gross profit, before taxes, is estimated at $9,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.0%.
(A gross profit on sales, before taxes, of 5.0%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 6.3%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $128,000.
Based on these figures, the fixed investment per man employed would amount to about $5,325.

C. PRODUCTION REQUIREMENTS CANNED CRANBERRIES

I.P. No. 67381
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION: 12 WEEKS: 860,000 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 128,000

Principal Items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P - 120 P.S.I., Scalder, Abrasive Peeler, Sorter & Grader, Fruit Washer.

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 15,100
c. Total Capital Requirements	$ 143,100

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Cranberries	478 tons	
Cans	860,000	
Additives		
Cartons and Labels		
Total direct materials		$ 100,600
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil and maintenance of truck		
Total supplies		$ 1,800

c. Availability of materials & supplies

Cranberries must be available locally. Cartons and Labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,000

5. MANPOWER

	Number	Annual Cost
a. Indirect Labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 6,900
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 20,900

c. Training Needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in fifteen day.

6. TRANSPORTATION

a. Own transport equipment.

Truck

b. External transport facilities.

During the canning season the input at this plant will amount to about 6.6 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 100,600	
Direct labor	20,900	
Manufacturing overhead*	20,100	
Total manufacturing cost		$ 141,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		12,400
Sales expense		12,000
Freight-out, travel discounts Allowances & bad debts		5,000
Total annual costs		$ 171,000
Annual Gross Profit		$ 9,000
ANNUAL SALES REVENUE		$ 180,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect Labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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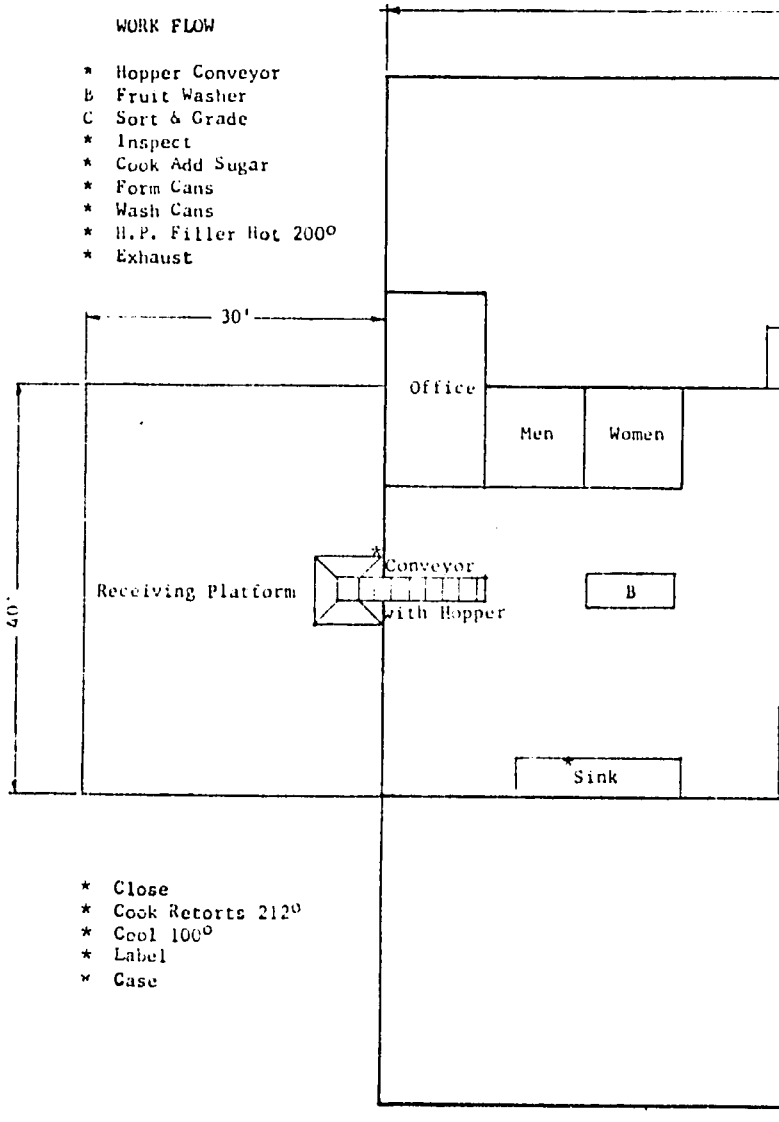

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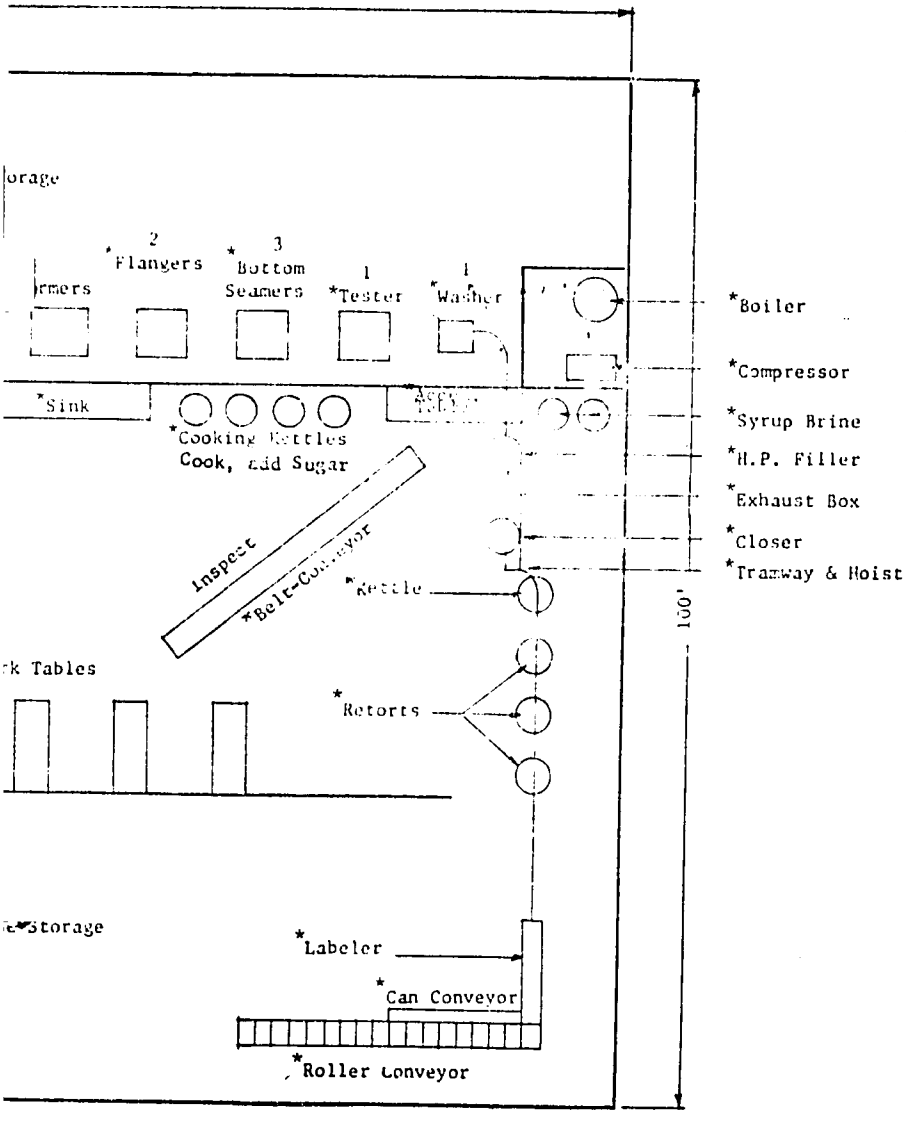
BERRIES

I. P. NO 67381
S. I. C. 2033



l for canning all products.

ly for this product.

I. P. No. 67381
S. I. C. 2033

CANNED CRANBERRIES

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th. ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing, and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N.Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

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Washington, D. C. 20006

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

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GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED GREEN PEAS

I. P. No. 67382
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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CANNED GREEN PEAS

I. P. No. 67382
S. I. C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned green peas, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned green peas normally would be nationwide. If a plant is efficiently managed and operation it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors, should be conducted to determine existing competition and sales potential.

3 RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4 SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $150,000.
The total fixed investment, plus working capital, is estimated at $142,600.
The annual gross profit, before taxes, is estimated at $8,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.3%.
(A gross profit on sales, before taxes, of 5.3%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.6%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $130,000.
Based on these figures, the fixed investment per man employed would amount to about $5,400.

C. PRODUCTION REQUIREMENTS CANNED GREEN PEAS — I.P. No. 67382
ANNUAL CAPACITY - ONE SHIFT OPERATION: 14 WEEKS: 997,500 CANS — S.I.C. 2033

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 130,000

Principal items:
Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Cleaning Reel, Washer, Grader, Blancher, Abrasive Peeler, Dry Clean Blower

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 12,600
c. Total Capital Requirements	$ 142,600

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Green peas	368 tons	
Cans	997,500	
Additives		
Labels and cartons		
Total direct materials		$ 65,200

b. Supplies

Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 2,000

c. Availability of materials & supplies

Green peas must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 15-1/2 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,700

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,200

5. MANPOWER

	Number	Annual Cost
a Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 8,000
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 24,500

c. Training needs

The manager and the inspector should be fully experienced. They with two skilled workers, should be able to train all workers and reach full production in about fifteen days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at the plant will amount to about 4.4 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES

REVENUE		
Direct materials	$ 65,200	
Direct labor	24,500	
Manufacturing overhead*	21,900	
Total manufacturing cost		$ 111,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		13,400
Sales expense		12,000
Freight-out, travel discounts Allowances & bad debts		5,000
Total annual costs		$ 142,000
Annual Gross Profit		$ 8,000
ANNUAL SALES REVENUE		$ 150,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
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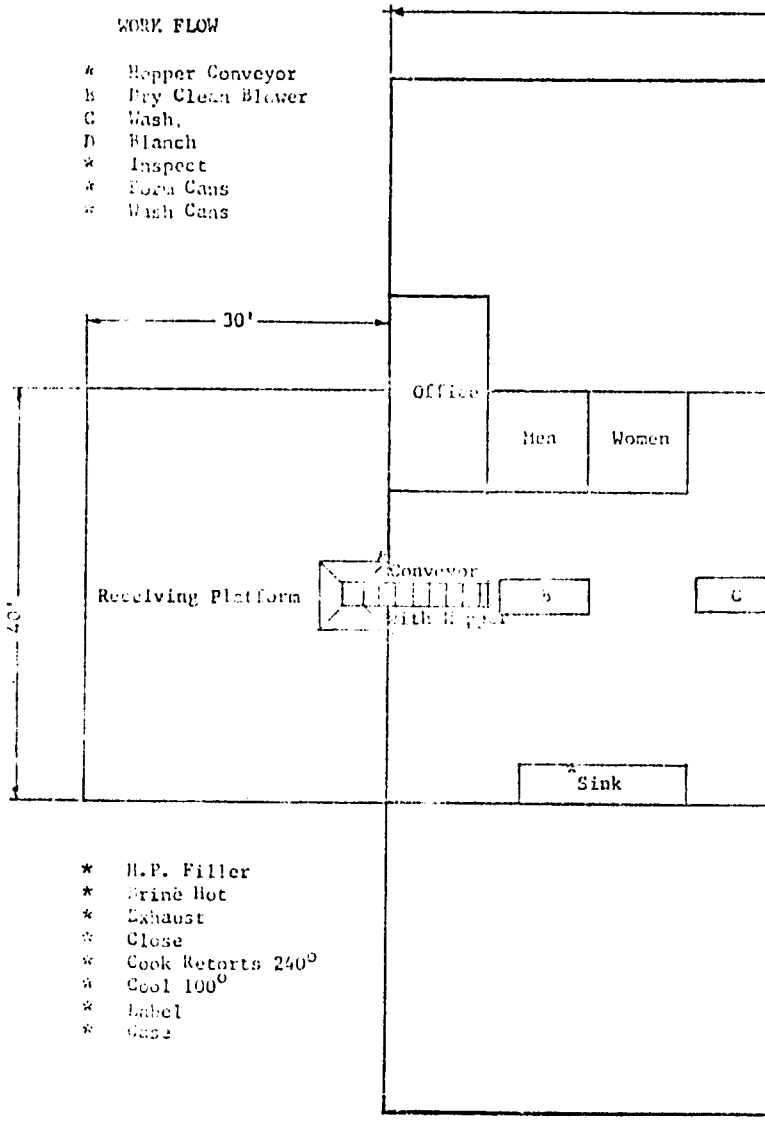

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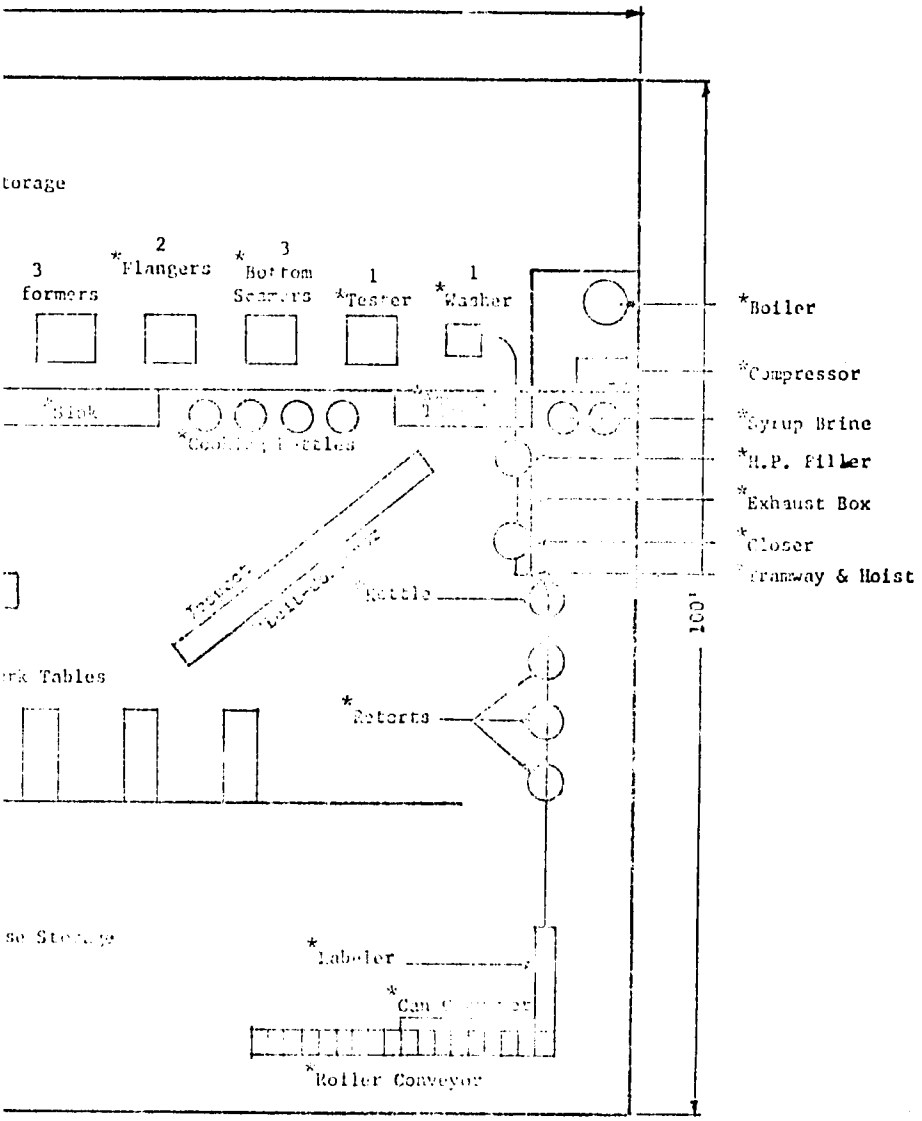
I. P. NO. 67382
S. I. C. 2033



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ally for this product.

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I.P. No. 67382
S.I.C. 2033

CANNED GREEN PEAS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

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Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

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Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED SLICED PINEAPPLE

I. P. No. 67383
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED SLICED PINEAPPLE

I. P. No. 67383
S. I. C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned sliced pineapple, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commerial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2 SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned sliced pineapple normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh fruits, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $150,000.
The total fixed investment, plus working capital, is estimated at $139,500.
The annual gross profit, before taxes, is estimated at $8,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.3%.
(A gross profit on sales, before taxes, of 5.3%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.7%.

5. COST PER MAN EMPLOYED

Thirty direct workers and four indirect workers, or a total of thirty-four workers, are employed.
The total fixed capital investment is estimated at $127,000.
Based on these figures, the fixed investment per man employed would amount to about $3,730.

C. PRODUCTION REQUIREMENTS - CANNED SLICED PINEAPPLE

I.P. No. 67383
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION - 10 WEEKS: 712,500 CANS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$127,000

Principal Items :

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Scalder, Abrasive Peeler, Grader, Fruit Washer, Slicer.

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 12,500
c. Total Capital Requirements	$139,500

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Pineapple	480 tons	
Cans	712,500	
Additives		
Cartons and Labels		
Total direct materials		$ 70,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,800

c. Availability of materials & supplies

Pineapple must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 12-3/4 H.P. connected load	
Fuel - oil	
Water - must be potable	$ 1,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 9,900

5. MANPOWER

a. Indirect labor	Number	Annual Cost
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 5,700
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	25	
Total direct labor	30	$ 25,400

c. Training needs

The manager and inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in fifteen days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 8 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 70,000	
Direct labor	25,400	
Manufacturing overhead*	18,900	
Total manufacturing cost		$ 114,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,700
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 5,000
Total annual costs		$ 142,000
Annual Gross Profit		$ 8,000
ANNUAL SALES REVENUE		$ 150,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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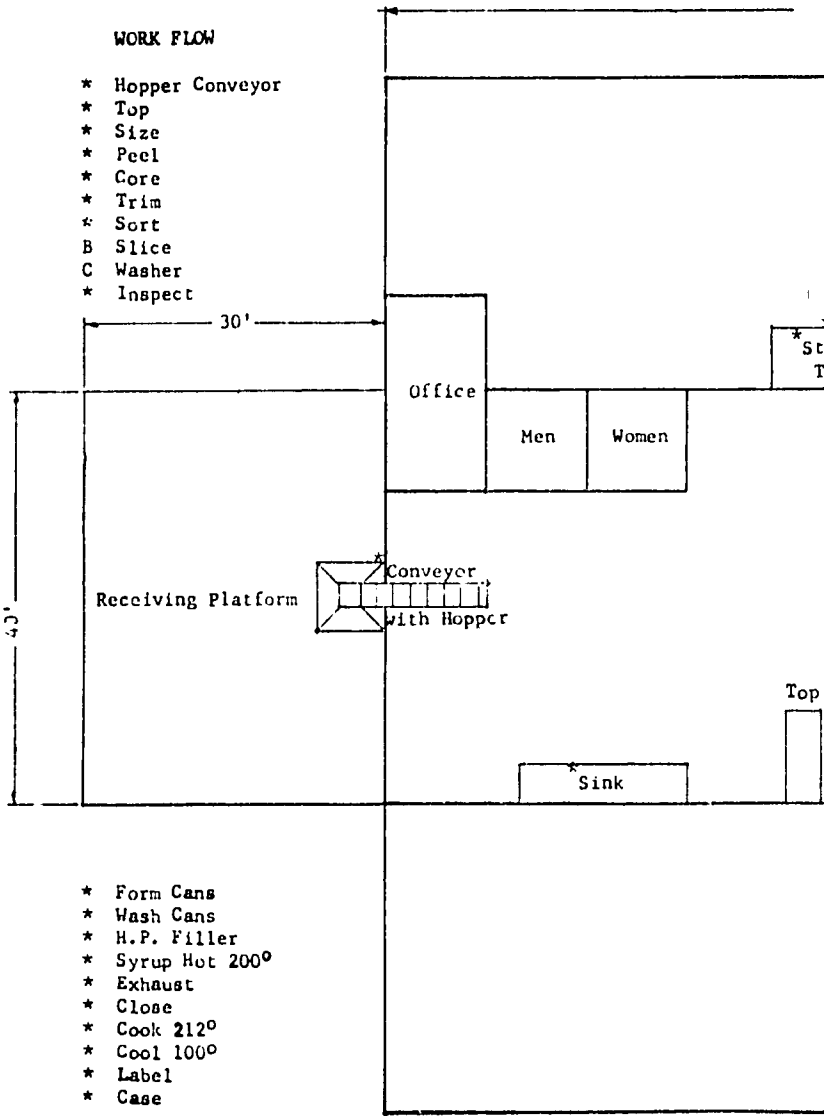

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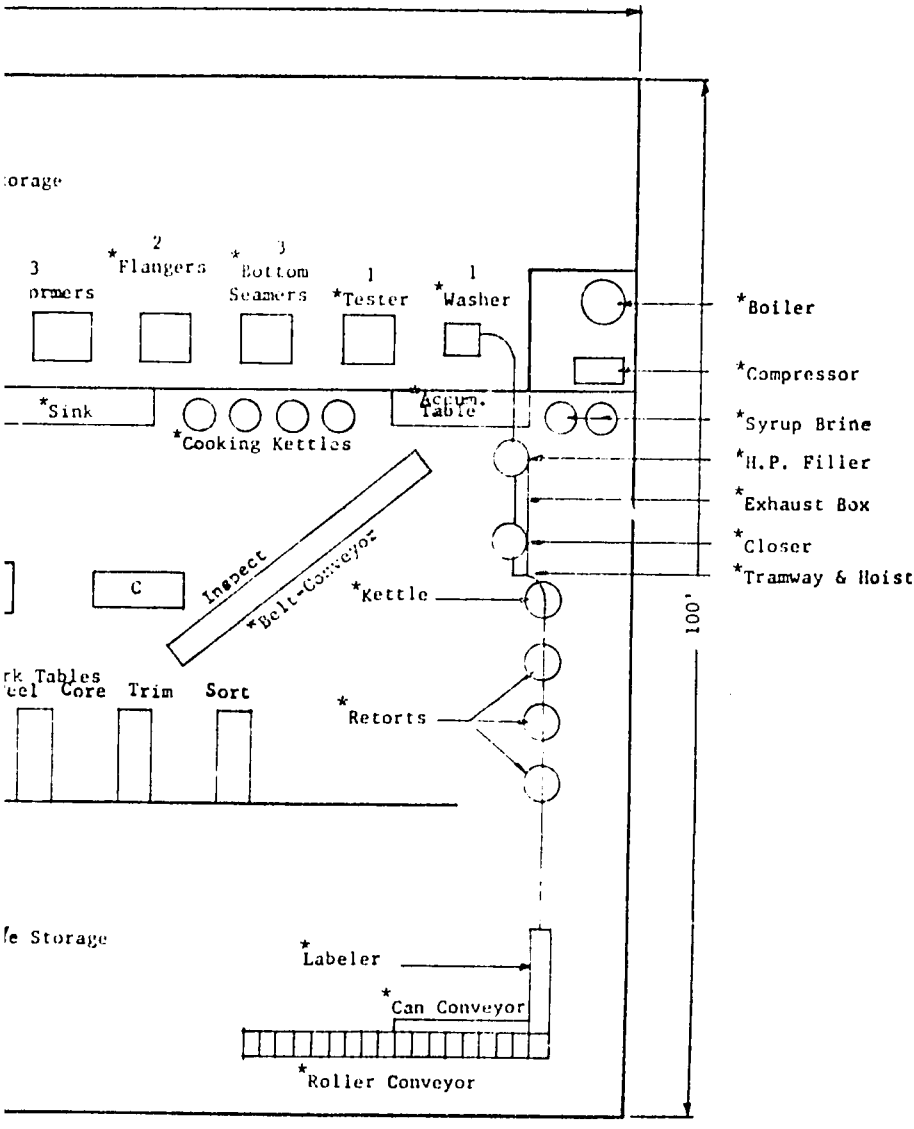

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I. P. No. 67383
S.I.C. 2033

CANNED SLICED PINEAPPLE

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Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED LIMA BEANS

I. P. No. 67384
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED LIMA BEANS

I.P. No. 67384
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned lima beans, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned lima beans normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors, should be conducted to determine existing competition and sales potential.

3 RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $120,000.
The total fixed investment, plus working capital, is estimated at $144,000.
The annual gross profit, before taxes, is estimated at $6,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.0%.
(A gross profit on sales, before taxes, of 5.0%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 4.2%.

5. COST PER MAN EMPLOYED

Seventeen direct workers and four indirect workers, or a total of twenty-one workers, are employed.
The total fixed capital investment is estimated at $134,000.
Based on these figures, the fixed investment per man employed would amount to about $6,400.

C. PRODUCTION REQUIREMENTS - CANNED LIMA BEANS

I.P. No. 67384
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION - 10 WEEKS : 712,500 CANS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 134,000

Principal items :

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H. P. Filler, 2 Syrup or Brine Kettles, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Cleaning Reel, Washer, Grader, Blancher, Abrasive Peeler, Wash Reel

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 10,000
c. Total Capital Requirements	$ 144,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Lima beans	230 tons	
Cans	712,500	
Additives		
Labels & Cartons		
Total direct materials		$ 50,700

b. Supplies

Lubricants & hand tools	
Cutting tools and abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance for truck	
Total supplies	$ 1,800

c. Availability of materials & supplies

Lima beans must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 16-1/2 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,600

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,600

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 5,700
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	12	
Total direct labor	17	$ 15,000

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in fifteen days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 6 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

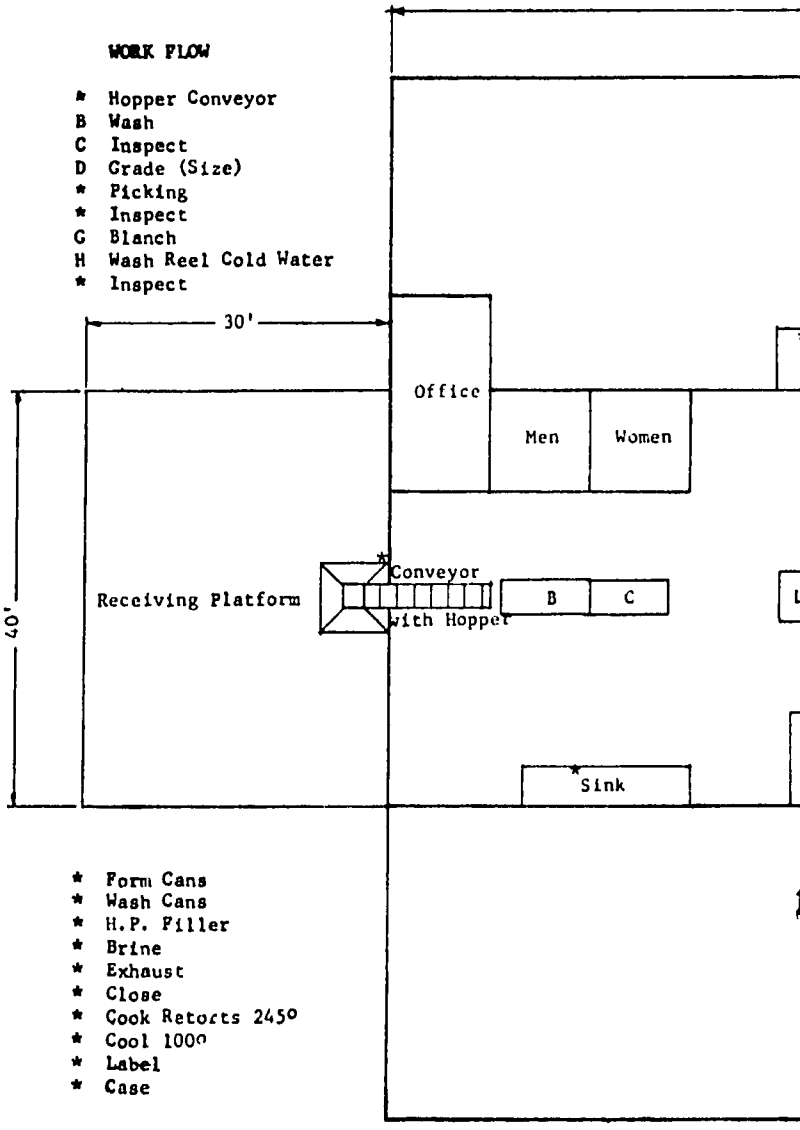
Direct materials	$ 50,700	
Direct labor	15,000	
Manufacturing overhead*	19,700	
Total manufacturing cost		$ 85,400
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,600
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 114,000
Annual Gross Profit		$ 6,000
ANNUAL SALES REVENUE		$ 120,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CAN

PLA



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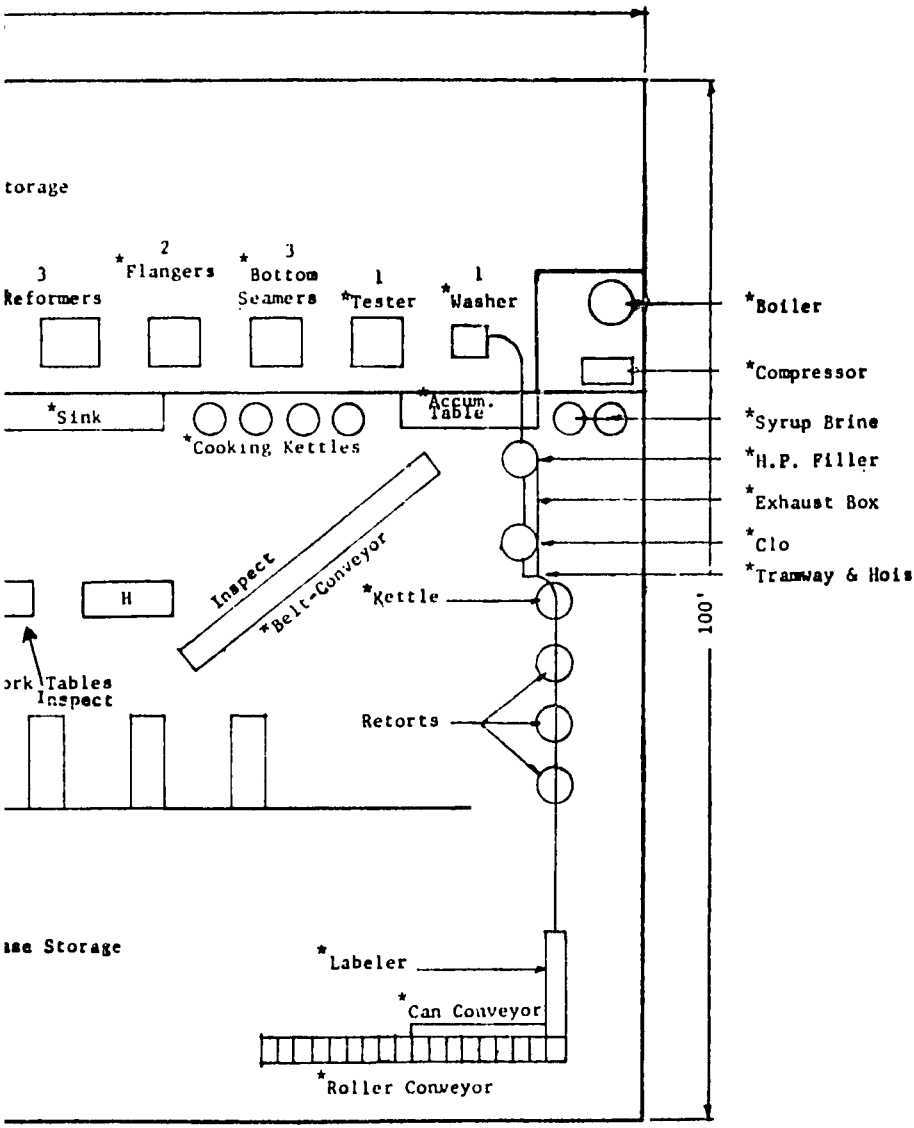
BEANS

I. P. NO. 67384
S. I. C. 2033



:d for canning all products.

ılly for this product.

I.P. No. 67384
S.I.C. 2033

CANNED LIMA BEANS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967, 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N.Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par I, $3.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, the enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival Kurt B. Mayer and Sidney Goldstein. (Small Business Administration). 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Admininistration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232 770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3.071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professonal engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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NDUSTRY PROFILES

ASSORTED NUTS, PROCESSED AND PACKAGED

I. P. No. 67385
S. I. C. 2071

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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ASSORTED NUTS, PROCESSED AND PACKAGED

I. P. No. 67385
S.I.C. 2071
DECEMBER 1967

PRODUCT DESCRIPTION

Various kinds of nuts, whole and shelled, salted, processed and packaged in various ways including bags, boxes, cans and glass jars. Popcorn is also processed in bags and in a variety of other packages.

A. GENERAL EVALUATION OF PROSPECTS

In addition to processing popcorn and nuts that are grown locally, various kinds of nuts can be imported in bulk for further processing, then packaged for resale in retail stores, gift shops and at the factory salesroom. Nuts are used in the preparation of many foods and candies or can be consumed without elaborate processing. In countries where an annual sales volume of $150,000 can be achieved, this plant should prove a profitable investment.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, bakeries, candy stores; and wherever food is prepared.

2. SALES CHANNELS AND EXTENT OF MARKET

This plant would maintain a salesroom to exhibit and sell fancy packaged nuts and popcorn to the public. In addition, it would sell to retail steres, gift shops, candy shops and large users such as the military and other institutions. Nuts are found in ordinary and fancy food recipes. Some types of nuts are cheap--such as peanuts--while others are expensive. The sales will depend upon a relatively high per capita income. Since nuts are usually exported in the shell and processed locally, this plant would not expect to make any sales overseas unless large quantities of nuts were grown in the country in which case an export business of nuts in the shell would be possible. There should be little competition from imported packaged and processed nuts.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $ 150,000.
The total fixed investment, plus working capital, is estimated at $ 77,700.
The annual gross profit, before taxes, is estimated at $ 14,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 9.3%.
(A gross profit on sales, before taxes, of 9.3%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 18.0%.

5. COST PER MAN EMPLOYED

Four direct workers and three indirect workers, or a total of seven workers, are employed.
The total fixed capital investment is estimated at $53,000.
Based on these figures, the fixed investment per man employed would amount to about $ 7,570.

C. PRODUCTION REQUIREMENTS - ASSORTED NUTS, PROCESSED AND PACKAGED

I. P. No. 67385
S.I.C. 2071

ANNUAL CAPACITY - ONE SHIFT OPERATION: 300 TONS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 1/2 acre	
Building - one story 50′ x 100′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 53,000

Principal items:

Peanut Roaster
Nut Roaster
Popcorn Machine - Wet
Popcorn Machine - Dry
Bag Filling Machine
Heat Sealing Machine
Slicing and Dicing Machine
Vacuum Packing Machine
Scales

b. Working Capital (30-60 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 24,700
c. Total Capital Requirements	$ 77,700

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Pistachio	The amounts of each kind of nut will vary according to the locations, the sales demand and the local supply.	
Pignalia		
Cashews		
Almonds		
Pecans		
English Walnuts		
Black Walnuts		
Peanuts		
Popcorn		
Cans and jars		
Total direct materials		$ 61,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,700

c. Availability of materials & supplies

Assorted nuts should be available locally. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 4 1/2 H.P. connected load	
Fuel - oil, Roasting and Heat	
Water - must be potable	$ 900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation Equipment	4	
Total depreciation		$ 4,300

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Office	1	
Truck driver	1	
Total indirect labor	3	$ 23,000
b. Direct labor		
Skilled workers	1	
Semi-skilled workers	1	
Unskilled workers	2	
Total direct labor	4	$ 18,200

c. Training needs

Manager must be fully experienced. He with one skilled worker should be able to train all workers and reach full production in about 15 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

In and out shipments amount to about 1 ton per day.
Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 61,000	
Direct labor	18,200	
Manufacturing overhead*	29,900	
Total manufacturing cost		$ 109,100
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 11,900
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 3,000
Total annual costs		$ 136,000
Annual Gross Profit		$ 14,000
ANNUAL SALES REVENUE		$ 150,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

ASSORTED NI

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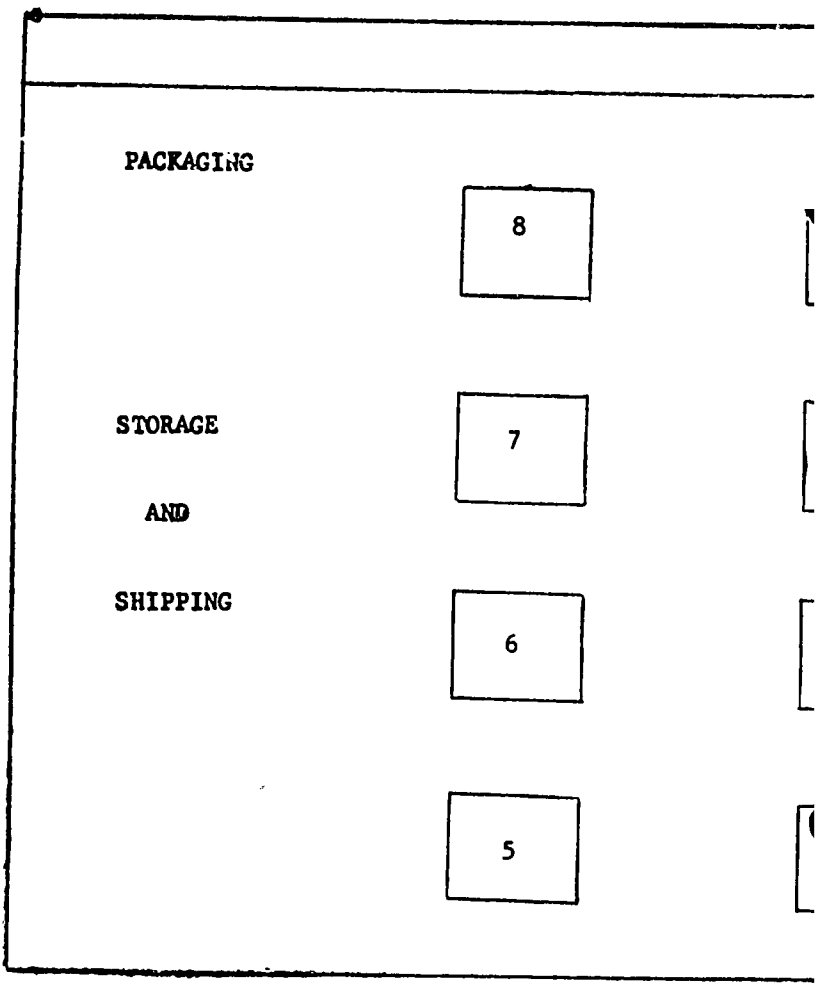
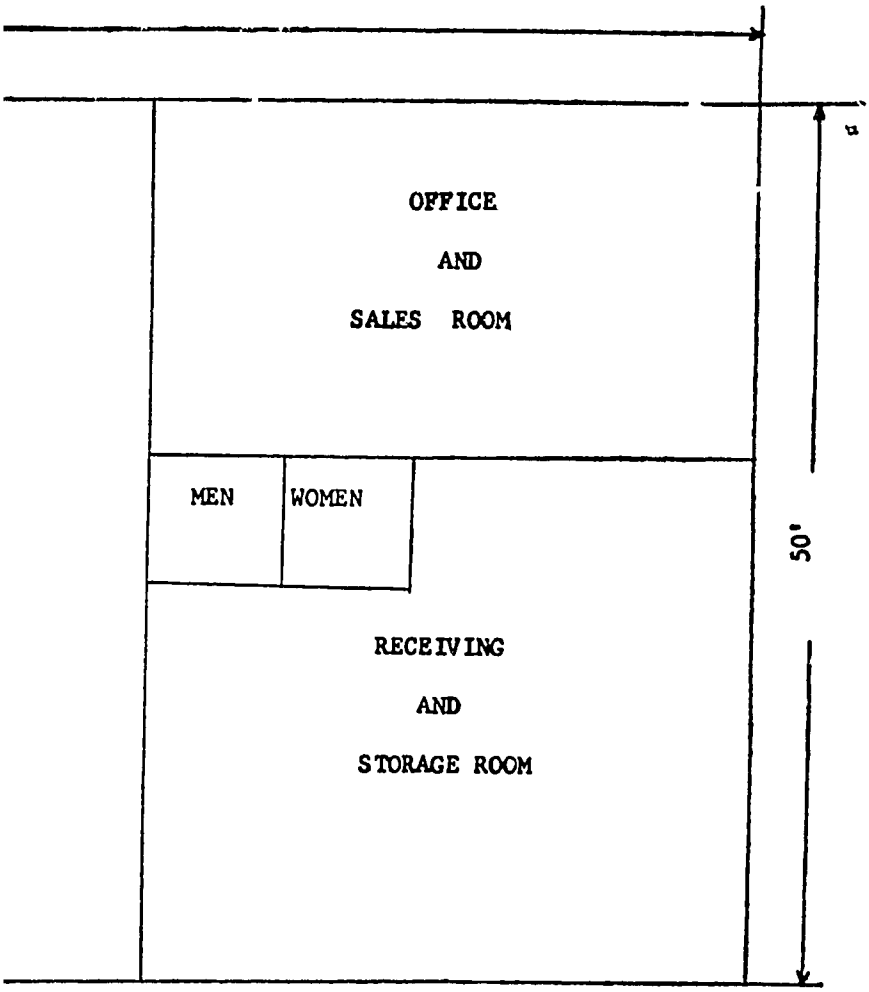


1. Nut Roaster
2. Peanut Roaster
3. Popcorn Machine Dry
4. Popcorn Machine Wet

SED AND PACKAGED

I.P. NO. 67385
S.I.C. 2071

AYOUT



5. Slicing & Dicing Machine
6. Bag Filling Machine
7. Heat Sealing Machine
8. Vacuum Packing Cans & Jars

I.P. No. 67385
S.I.C. 2071

ASSORTED NUTS, PROCESSED AND PACKAGED

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Peanuts: Production, Processing, Products. Dr. Joseph Guy Woodroof. 1966. 285 pp. $14.50 U.S. price - $15.50 outside U.S. price

AVI Publishing Bompany
P.O. Box 388
Westport, Connecticut 06881

B. Quality Control and Reliability. Norbert L. Enrick 1966. 5th ed. 254 p. $7.50

The Industrial [illegible] ss
93 Worth Street
New York, New York 10013

II. TECHNICAL AND TRADE PERIODICALS

A. Peanut Journal and Nut World. Monthly. $3.00/year U S., $6 00/year outside U. S.

Peanut Journal Publishing Company
Drawer 347
Suffolk, Virginia 23434

Serves those concerned with the production and marketing of peanuts and other nuts.

B. Peanuts Research. Quarterly. Gratis.

National Peanut Council
400 Bender Building
1120 Connecticut Avenue, N. W.
Washington, D. C. 20036

Lists technical papers, research projects, and bulletins available and where obtainable.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make betters decisions in the future.

C. Improving Materials Handling in Small Plants. $.20

Small Business Management Series No. 4
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by Small Business Administration to assist in the development of management in small business.

V. REPRESENTATIVE U. S. PATENTS

Available U. S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,314,800 April 18, 1967 4 p.
Process for coating hot dry roasted peanuts and a resulting product

B. Patent No. 3,191,357 June 29, 1965 28 p.
Apparatus for packaging confections.

C. Patent No. 3,149,976 September 22, 1964 10 p.
Method of roasting peanuts and other bean products.

D. Patent No. 3,099,568 July 30, 1963 4 p.
Confection packaging.

E. Patent No. 3,083,106 March 6, 1963 24 p.
Package and method of farming same.

F. Patent No. 3,063,843 November 13, 1962 3 p.
Preparing and packaging of nut meats.

G. Patent No. 3,062,660 November 6, 1962 2 p.
Treating raw nut meats.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Peanut and Nut Salters Association
4500 College Avenue
College Park, Maryland 20740

B. National Pecan Shellers and Processors Association
333 North Michigan Avenue
Chicago, Illinois 60601

C. National Confectioners Association
36 South Wabash Avenue
Chicago, Illinois 60603

VI. DIRECTORIES

A. Directory of Food Processors, Annually. $3.00

Mid-Atlantic Food Processors
P. O. Box 738
Easton, Maryland 21601

Lists food processors and products produced.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Address orders to: U.S. Department of Commerce
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Springfield, Virginia 22151

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GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED SQUASH

I. P. No. 67386
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67386
S.I.C. 2033
NOVEMBER 1967

CANNED SQUASH

PRODUCT DESCRIPTION

Canned squash, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned squash normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors, should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $74,000.
The total fixed investment, plus working capital, is estimated at $138,400.
The annual gross profit, before taxes, is estimated at $4,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.4%.
(A gross profit on sales, before taxes, of 5.4%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 3.0%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $132,000.
Based on these figures, the fixed investment per man employed would amount to $5,500.

C. PRODUCTION REQUIREMENTS - CANNED SQUASH

I.P. No. 67386
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION: 5 WEEKS : 356,000 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 132,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H. P. Filler 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P - 120 P.S.I., Cleaning Reel Washer, Grader, Blancher, Abrasive Peeler, Breaker, Press, Pulper

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 6,400
c. Total Capital Requirements	$ 138,400

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Squash	500 tons	
Cans	356,000	
Additives		
Labels and Cartons		
Total direct materials		$ 26,300

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 1,700

c. Availability of materials & supplies

Squash must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 17-1/4 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	19	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,400

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 3,100
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 8,700

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a Own transport equipment

Truck.

b. External transport facilities

During the canning season the input at the plant will amount to about 16.6 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

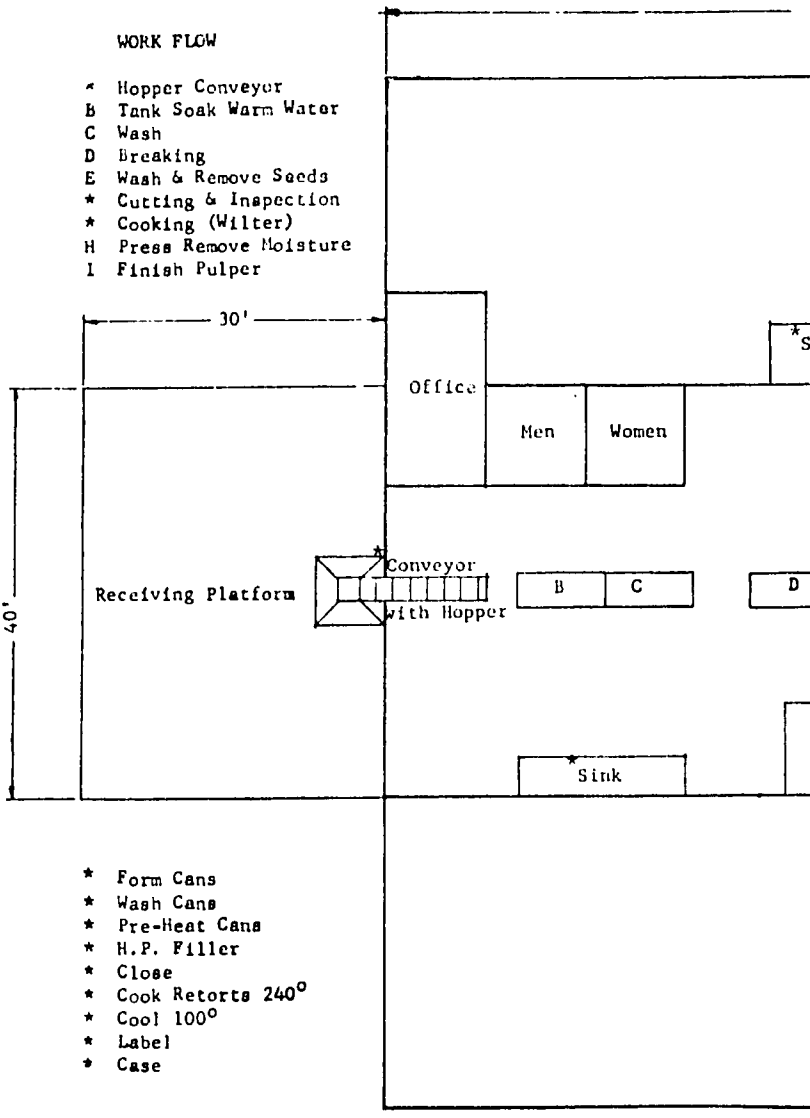
Direct materials	$ 26,300	
Direct labor	8,700	
Manufacturing overhead*	16,100	
Total manufacturing cost		$ 51,100
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 9,900
Sales expense		$ 7,000
Freight-out, travel discounts Allowances & bad debts		$ 2,000
Total annual costs		$ 70,000
Annual Gross Profit		$ 4,000
ANNUAL SALES REVENUE		$ 74,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CAN

PLANT



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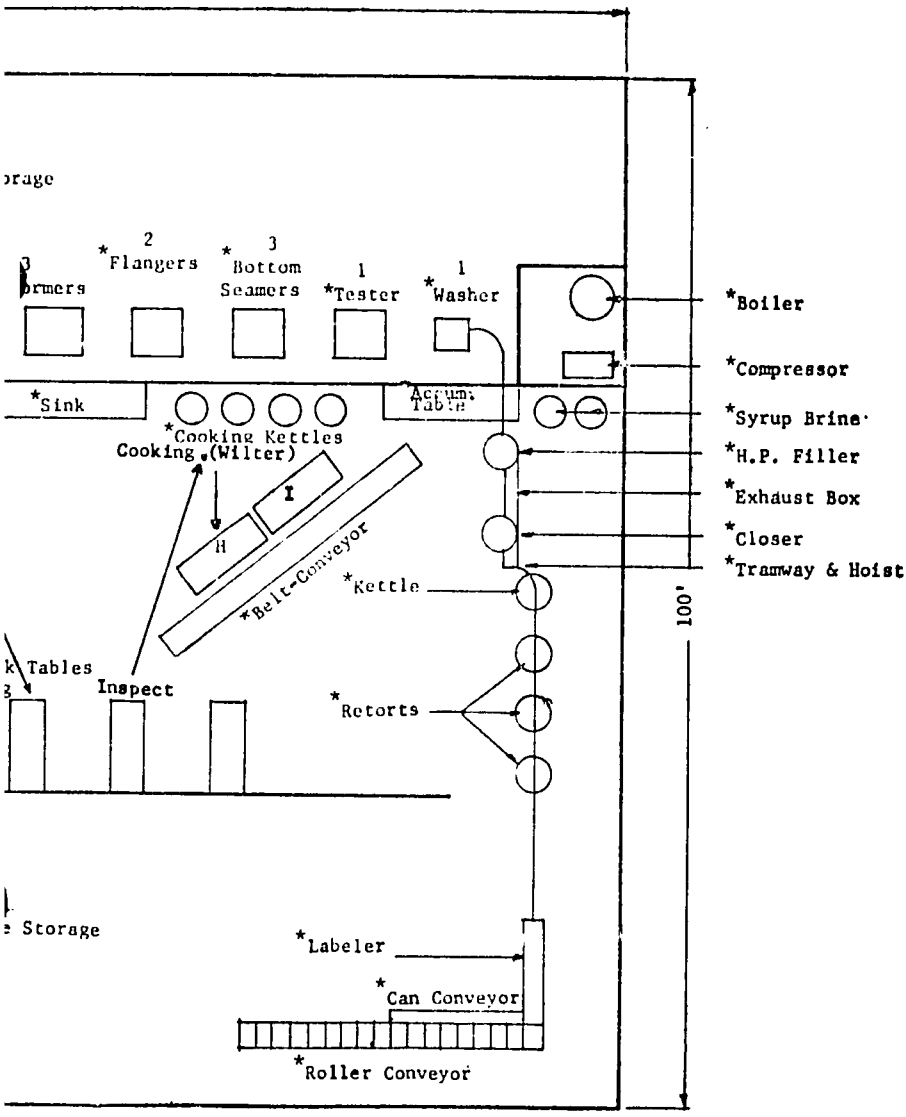

for canning all products.

y for this product.

I.P. No. 67386
S.I.C. 2033

CANNED SQUASH

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products fruits, vegetables, meats, milk, soups, juices, etc in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U. S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th Edition. 254 pp. $7.50

The Industrial Press
93 Worth Street
New York, New York 10013

The 24 chapters of the book are divided into three main sections: (1) Basic quality control applications; (1) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years : Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S Patent Office, Washington, D.C. 20231. $.50 each.

A. Patent No. 3,272,636. Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770. Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475. January 1963 7 p.
Sterlizing method for canned foodstuff.

D. Patent No. 2,794,326. June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582. May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D. C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N. W.
Washington, D C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

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Westminster, Maryland 21157

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INDUSTRY PROFILES

CANNED PLUMS

I. P. No. 67387
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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CANNED PLUMS

I.P. No. 67387
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned plums, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned plums normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh fruits, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognised that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4 SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $124,000.
The total fixed investment, plus working capital, is estimated at $138,300.
The annual gross profit, before taxes, is estimated at $7,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.7%.
(A gross profit on sales, before taxes, of 5.7%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.1%.

5. COST PER MAN EMPLOYED

Twenty direct workers, and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $128,000.
Based on these figures, the fixed investment per man employed would amount to about $5,300.

C. PRODUCTION REQUIREMENTS - CANNED PLUMS
ANNUAL CAPACITY - ONE SHIFT OPERATION: 8 WEEKS: 570,000 CANS

I.P. No. 67387
S.I.C. 2033

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 128,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, 3 Retorts (4 crates), 30 Crates, 10 Crate Dollies, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H P.- -120 P S.I., Scalder, Abrasive Peeler, Grader, Fruit Washer, Washer.

b. Working Capital (15 Days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 10,300
c. Total Capital Requirements	$ 138,300

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Plums	200 tons	
Cans	570,000	
Additives		
Cartons & labels		
Total direct materials		$ 60,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil & maintenance of truck	
Total supplies	2 1,800

c. Availability of materials & supplies

Plums must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable.	
	$ 1,400

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,000

5. MANPOWER

	Number	Annual cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 4,600
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 13,900

c. Training needs

The manager and inspector should be fully experienced. They, with two skilled workers should be able to train all workers and reach full production in fifteen days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season, the input of this plant will amount to about 4.2 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 60,000	
Direct labor	13,900	
Manufacturing overhead*	17,800	
Total manufacturing cost		$ 91,700
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,300
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 3,000
Total annual costs		$ 117,000
Annual Gross Profit		$ 7,000
ANNUAL SALES REVENUE		$ 124,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNED

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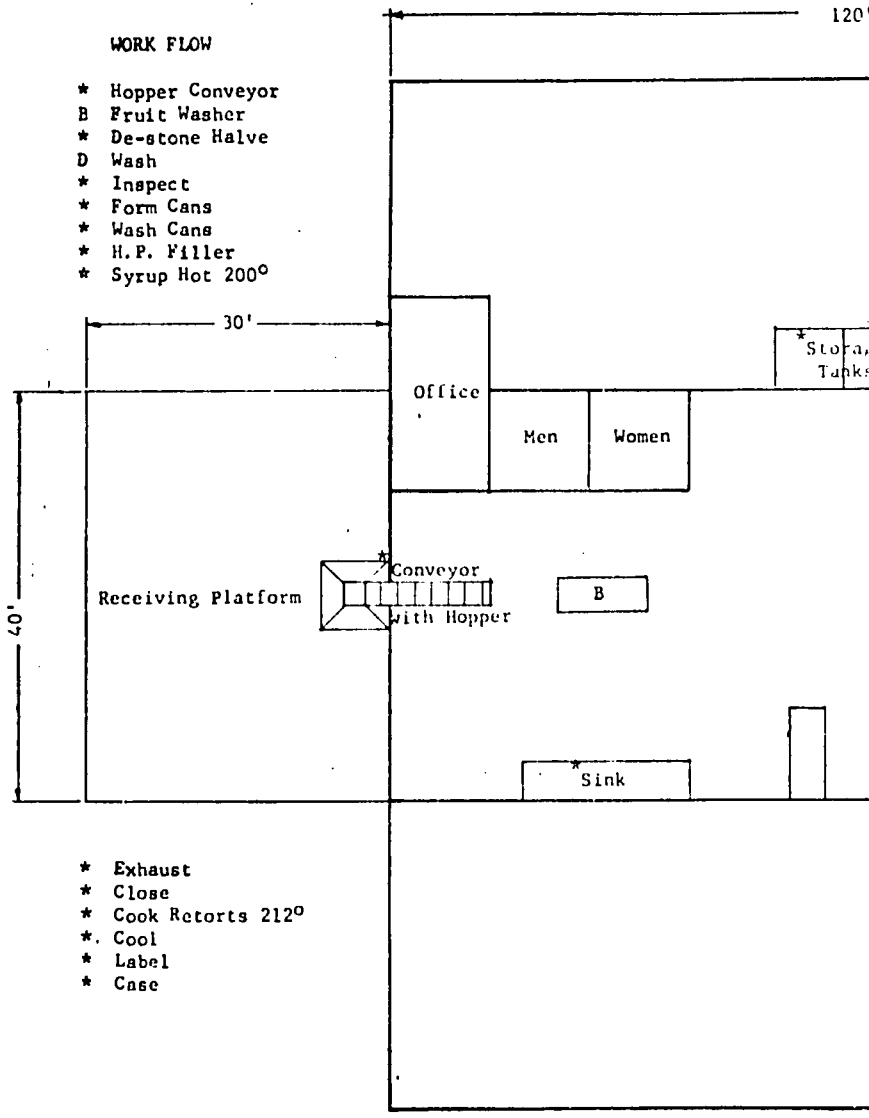

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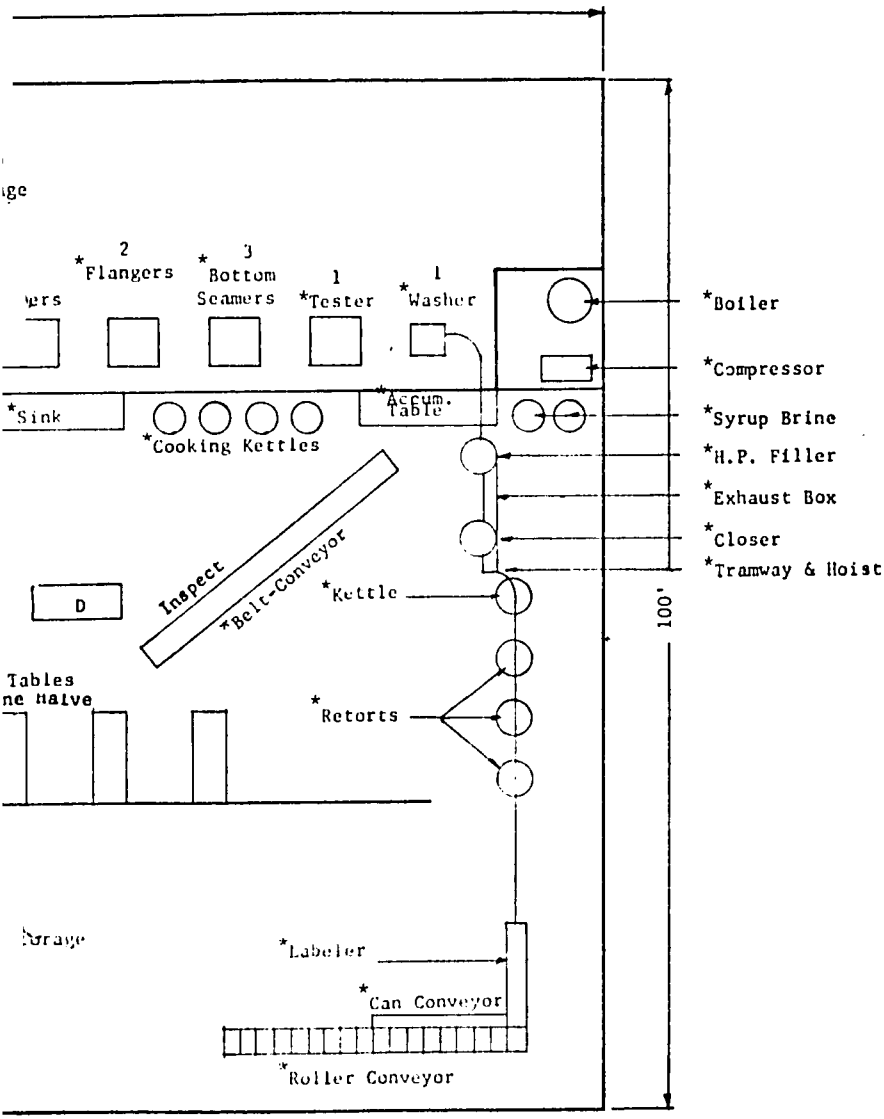

for canning all products.

y for this product.

I.P. No. 67387
S.I.C. 2033

CANNED PLUMS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N.Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly. $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D.C. 20231. $.50 each.

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B. Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food material.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,475 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D C. 20036

B Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries. $25.00. Annual.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the :

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

FOOD PROCESSING, GENERAL

I. P. No. 67388
S. I. C. 2000

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included long with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

FOOD PROCESSING, GENERAL

The operation of a small commercial canning plant for only a few weeks each year is not considered to be economically practical. The fixed investment required to establish a relatively small commercial canning plant with a minimum amount of machinery and equipment, using the maximum amount of hand labor possible that is consistent with quality and competitive costs, ranges from about $120,000 to $150,000, depending upon the products to be canned. In order to derive an adequate return on the investment, most commercial canning plants are equipped to operate all year by selecting and canning products that are harvested at different seasons of the year and canning such products as dry beans, pork and beans, etc., during the winter months.

The increased cost of plant and equipment for full-time operation is approximately 25 per cent, depending upon the products selected for canning, while profits are increased substantially. If an adequate volume of raw materials is available, the profits could be further enhanced by operating two or three shifts per day.

Persons who are interested in establishing a canning plant will profit from the advice of competent people who are fully experienced in the modern methods of the canning industry. Each of the profiles on food canning (listed on p. 6-7 of this profile) contain information on how to secure such advice under the heading, "Professional Engineering Services." The technical institutes and trade associations listed in the profiles usually are willing to provide assistance in many ways. They can provide information as to what companies sell the type of food machinery required. Such companies that sell cans maintain engineering departments able to design canning plants and are willing to assist in the design and layout of canning plants.

A comprehensive survey should be conducted to determine what products are available for canning during the spring, summer, fall and winter months. After selecting the products to be canned and after determining that a market exists for all products selected, the results of the survey should be submitted to the companies whose advice relative to plant layout and machinery and equipment cost is being sought.

The plant layout and equipment shown in all canning profiles contains certain equipment that is basic to all commercial canning plants. It will be needed for practically any product canned. These basic items of machinery and equipment include :

1. Hopper Conveyor
2. 2 Soaking Tanks
3. 2 Sinks
4. 4 Cooking Kettles
5. 5 Work Tables for sorting, trimming, inspecting
6. 1 Belt Conveyor
7. 1 Accumulation Table
8. 1 H. P. Filler
9. 2 Kettles with Pump for syrup or brine
10. 1 Exhaust Box
11. 1 Closer
12. 1 Tramrail with 1/2-ton Hoist
13. 3 Retorts
14. 30 Crates
15. 10 Crate Dollies
16. 1 Labeler
17. 1 Can Conveyor
18. 1 Roller Conveyor
19. 1 Lift Truck with Pallets
20. 1 Compressor
21. 1 Boiler 100 H. P. - 120 P.S.I.
22. 3 Can Reformers
23. 2 Can Flangers
24. 3 Can Bottom Seamers
25. 1 Can Tester
26. 1 Can Washer

In recent years a large number of can manufacturing plants have been established all over the world and round cans are now available in many countries that formerly imported flat cans. Where round cans are available locally, the last five items listed above (numbers 22 through 26 inclusive) will not be needed. This will reduce the cost of machinery and equipment about $7,000 and reduce the labor costs as well.

The following pieces of equipment are included under the heading, "Other Tools and Equipment," in each of the canning profiles and they will be required regardless of the length of time the plant operates.

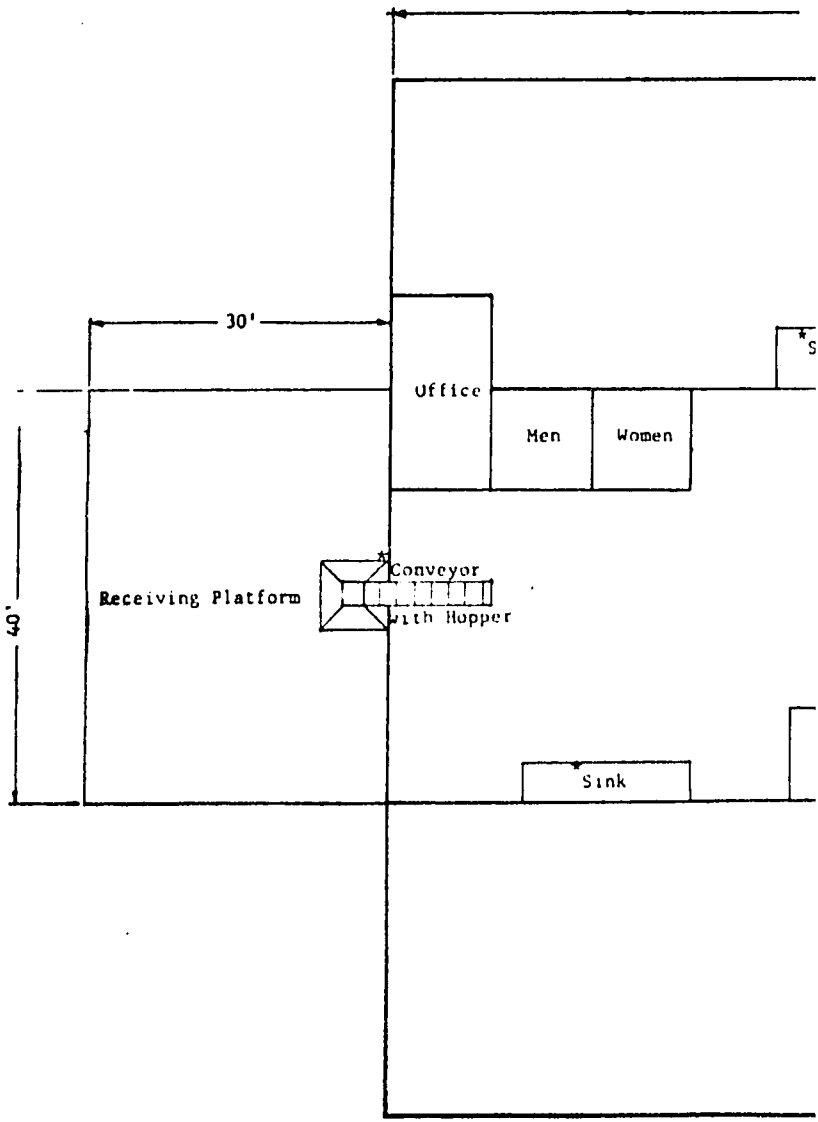
Thermometer
Density tester
Pails and Pans
Hand tools
Sanitation tools and equipment

In addition to the basic equipment listed above, other equipment is necessary to prepare fruits and vegetables for canning, as indicated below :

Equipment	Product or Products
1. Dry Cleaning Reel	Greens, Beets, Carrots and Hominy
2. Dry Cleaner (Vibrator-Blower)	Berries, Dry and Lima Beans, Greens, Corn, Hominy, Onions, Peas
3. Soak Washer	Apples, Berries, Cherries, Peaches, Tomatoes
4. Reel Washer	Apples, Apricots, Peaches, Pears, Greens, Potatoes, Onions, Squash, Pumpkin
5. Fruit Washer (Conv.)	Corn, All Berries
6. Blancher with Water Reel	Practically all products
7. Scalder (Steam Conv.)	Corn, Berries, Onions
8. Abrasive Peeler	Sweet Potatoes, Carrots, Beets, Onions
9. Vegetable Slicer & Dicer	Carrots, Beets, Spinach, Pineapple
10. Apple Peeler & Corer	Sliced Apples, Applesauce
11. Bean Snipper	Green Beans, Whole and Cut
12. Bean Grader	Green Beans, Whole and Cut
13. Bean Cutter	Cut Beans, Okra
14. Miscellaneous Belt Conveyors (Transfer System)	All Products
15. Chopper	Applesauce, Pineapple, Pumpkin, Squash
16. Grader	Apricots, Berries, Peaches, Beets, Carrots, Onions
17. Extractor	Tomatoes, Pineapple
18. Meat Cutter	Meats
19. Chip Reel	Apples
20. Pulper	Pumpkin, Squash
21. Press	Apples
22. Fume	Berries, Dry Beans
23. Pitting	Cherries
24. Husker	Corn
25. De-silker	Corn
26. Rod Shaker	Corn
27. Mixer	Corn

(please turn to page 6)

PLAN



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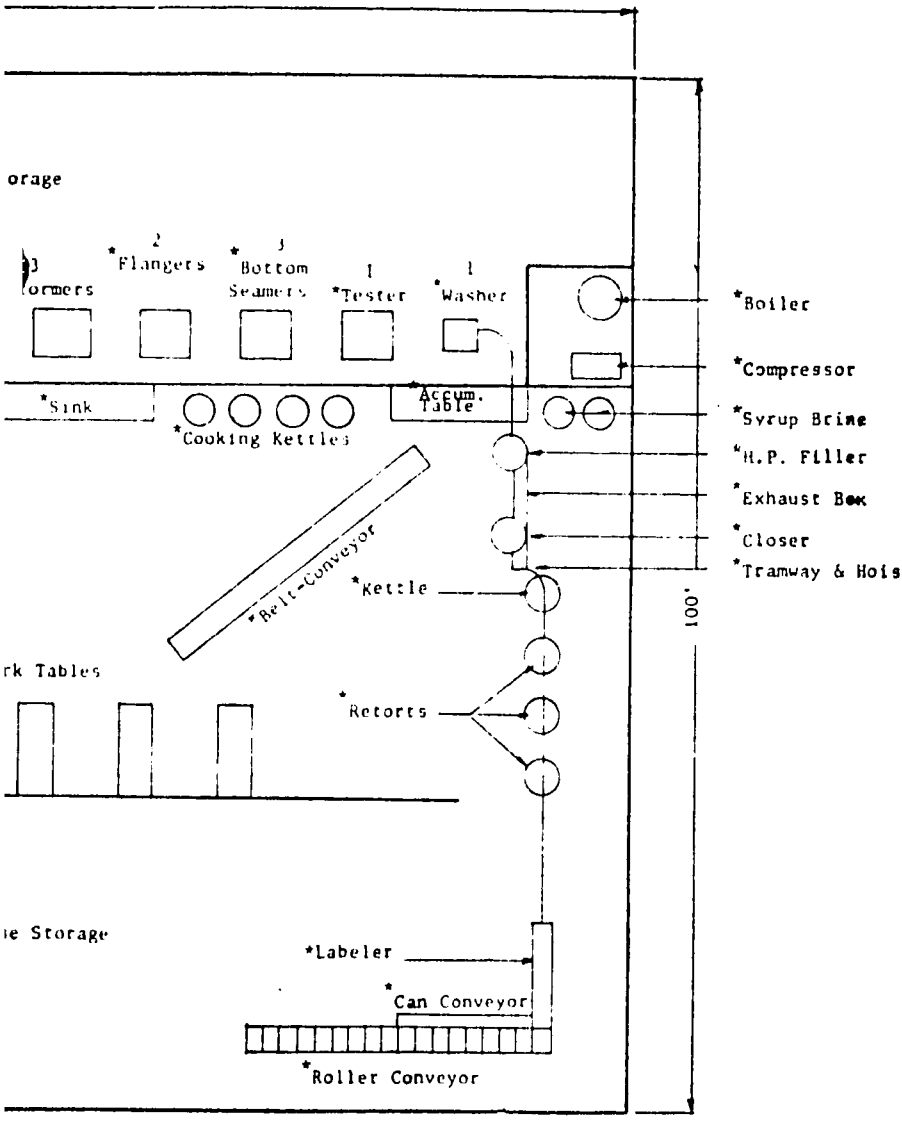
NG, GENERAL

I. P. NO. 67388
S. I. C. 2000



ed for canning all products.

28.	Cream-maker	Corn
29.	Micerator	Corn
30.	Steam Vacuum	All products
31.	Pump	Tomato juice, Applesauce, Soups
32.	Inspection Belt	Wax Beans, Green Beans, Red Raspberries, Corn
33.	Drain Belt	Spinach, Kale
34.	Breaker	Squash, Pumpkin
35.	Two Mixing Kettles	Soups, Corn, Cream Style
36.	Eliminator	Berries

In selecting equipment for the plant--other than the basic equipment listed on page 2 and illustrated on page 4-5 of this profile--full consideration should be given to all operations required, including hand operations. Duplication of equipment or purchase of unnecessary equipment should be avoided. In order to arrive at the most efficient plant layout, all factors must be weighed carefully.

There are a great many alteranatives and factors to be considered when establishing a commercial canning factory. Some of these are noted on the last page of each profile. Other factors include, but are not limited to, the following:

Are fruits and vegetables grown in the area that are available for canning in the spring, summer and fall months. If so, is the quality of the produce suitable for canning?

Would it be possible to contract with farmers in the area to grow an adequate volume of these products and deliver them to the plant at a cost that will be consistent with profitable operation? What products would be available for canning during the winter?

Will an ample supply of potable water be available at all times and at a reasonable cost? This is a very important consideration.

The original investment, as well as the cost of production will be less if only one size of can is used. Can size 303 is popular and holds about one pound net weight of most products.

The type of boiler purchased will depend upon the kind of fuel available locally. The type of motors purchased with the machinery will depend upon local power characteristics.

Here is a selected list of Industry Profiles in the food processing industry available from the U. S. Department of Commerce. Its use will facilitate choosing profiles of products available for canning in a country during various seasons of the year. See back page of this profile for complete instructions on how to order one or more Industry Profiles.

MAJOR GROUP 20--FOOD AND KINDRED PRODUCTS	IDENTIFYING NUMBER	S.I.C. NUMBER
Meat Canning Plant	67292	2011
Cream of Celery Soup, Ready to Serve, Canned	67343	2032
Cream of Asparagus Soup, Ready to Serve, Canned	67344	2032
Tomato Soup, Canned Ready to Serve	67365	2032
Pea Soup, Canned	67366	2032
Pork and Beans, Canned	67367	2032
Bean Soup, Ready to Serve, Canned	67393	2032
Cream of Corn Soup, Ready to Serve, Canned	67394	2032
Cream of Mushroom Soup, Ready to Serve, Canned	67395	2032
Cherries, Canned	67326	2033
Asparagus, Canned	67327	2033
Beets, Canned	67328	2033

MAJOR GROUP 20--FOOD AND KINDRED PRODUCTS	INDENTIFYING NUMBER	S.I.C. NUMBER
Peaches, Canned	67329	2033
Hominy, Canned	67330	2033
Okra, Canned	67331	2033
Sweet Potatoes, Canned	67332	2033
Strawberries, Canned	67333	2033
Sliced Apples, Canned	67334	2033
Blueberries, Canned	67335	2033
Apricots, Canned	67336	2033
Corn, Cream Style, Canned	67337	2033
Dry Beans, Canned	67338	2033
Spinach, Canned	67339	2033
Wax Beans, Canned	67340	2033
Blackeyed Peas, Canned	67341	2033
Tomatoes, Canned	67342	2033
Cauliflower, Canned	67351	2033
Pumpkin, Canned	67352	2033
Whole Kernel Corn, Canned	67353	2033
Green Beans, Canned	67354	2033
Onions, Canned	67355	2033
Apple Sauce, Canned	67356	2033
Pears, Canned	67357	2033
Red Raspberries, Canned	67364	2033
Cranberries, Canned	67381	2033
Green Peas, Canned	67382	2033
Sliced Pineapple, Canned	67383	2033
Lima Beans, Canned	67384	2033
Squash, Canned	67386	2033
Plums, Canned	67387	2033
Carrots, Canned	67389	2033
Kale Greens, Canned	67390	2033
Broccoli, Canned	67391	2033
Tomato Juice, Canned	67392	2033

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED CARROTS

I. P. No. 67389
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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CANNED CARROTS

I. P. No. 67389
S. I. C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned carrots, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned carrots normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $144,000.
The total fixed investment, plus working capital, is estimated at $147,000.
The annual gross profit, before taxes, is estimated at $8,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.6%.
(A gross profit on sales, before taxes, of 5.6%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 5.5%.

5. COST PER MAN EMPLOYED

Seventeen direct workers and four indirect workers, or a total of twenty-one workers, are employed.
The total fixed capital investment is estimated at $135,000.
Based on these figures, the fixed investment per man employed would amount to $6,400.

C. PRODUCTION REQUIREMENTS - CANNED CARROTS
ANNUAL CAPACITY - ONE SHIFT OPERATION - 12 WEEKS : 860,000 CANS

I.P. No. 67389
S.I.C. 2033

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital — Cost

Land - 2 acres
Building - one story 100′ x 120′
Equipment, furniture & fixtures
Prodn. tools & equipment
Other tools & equipment
Furniture & fixtures
Transportation equipment
Total fixed capital — $ 135,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Dry Clean Reel, Washer, Scalder, Abrasive Peel, Grader, Slicer

b. Working Capital (15 days)

Direct materials
Direct labor
Manufacturing overhead
Administrative costs
Sales costs
Freight-out, discounts, bad debts & allowances
Sales revenue
Training costs
Total working capital — $ 12,000

c. Total Capital Requirements — $ 147,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Carrots	550 tons	
Cans	860,000	
Additives		
Labels and cartons		
Total direct materials		$ 69,500

b. Supplies

Lubricants & hand tools
Cutting tools & abrasives
Maintenance & spare parts
Office supplies
Gas, oil and maintenance for truck
Total supplies — $ 1,800

c. Availability of materials & supplies

Carrots must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER — Annual Cost

Electric Power - 14-1/2 H.P. connected load
Fuel - oil
Water - must be potable

$ 1,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,700

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 6,900
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	12	
Total direct labor	17	$ 18,000

c. Training Needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 7.7 tons per day.

Good highways.

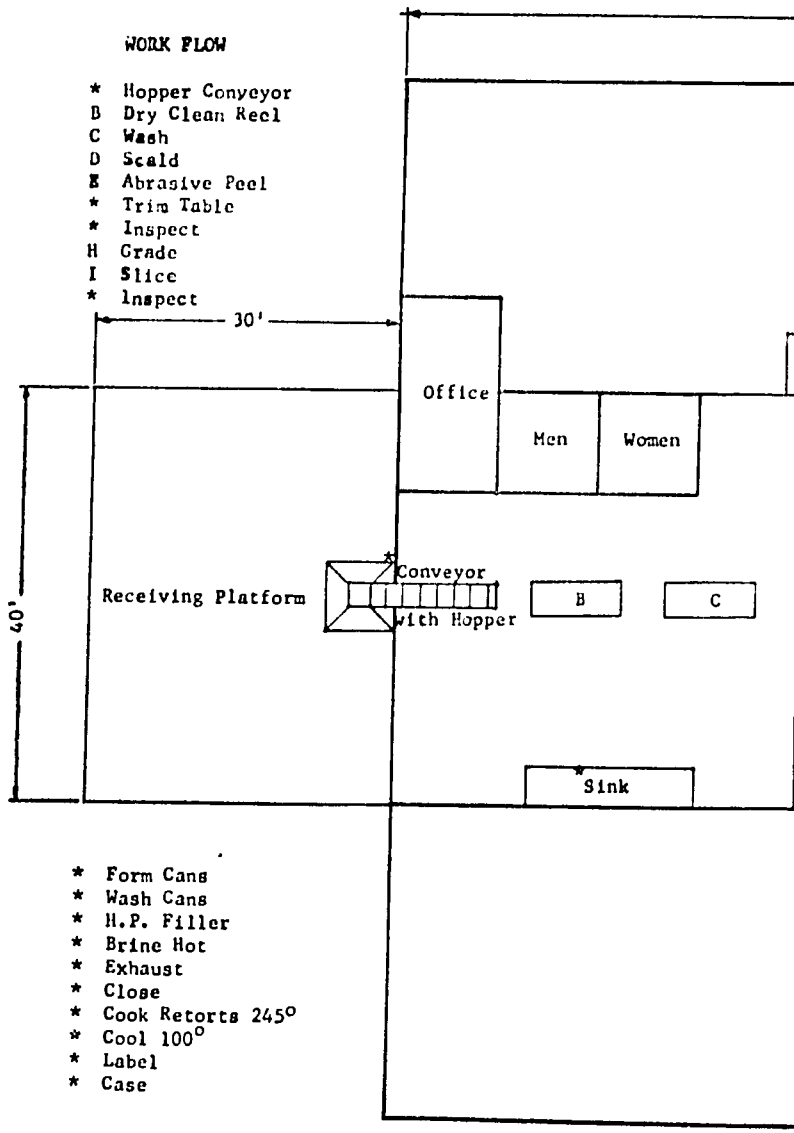
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 69,500	
Direct labor	18,000	
Manufacturing overhead*	20,900	
Total manufacturing cost		$ 108,400
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,600
Sales expense		11,000
Freight-out, travel discounts Allowances & bad debts		$ 4,000
Total annual costs		$ 136,000
Annual Gross Profit		$ 8,000
ANNUAL SALES REVENUE		$ 144,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CAN

PL



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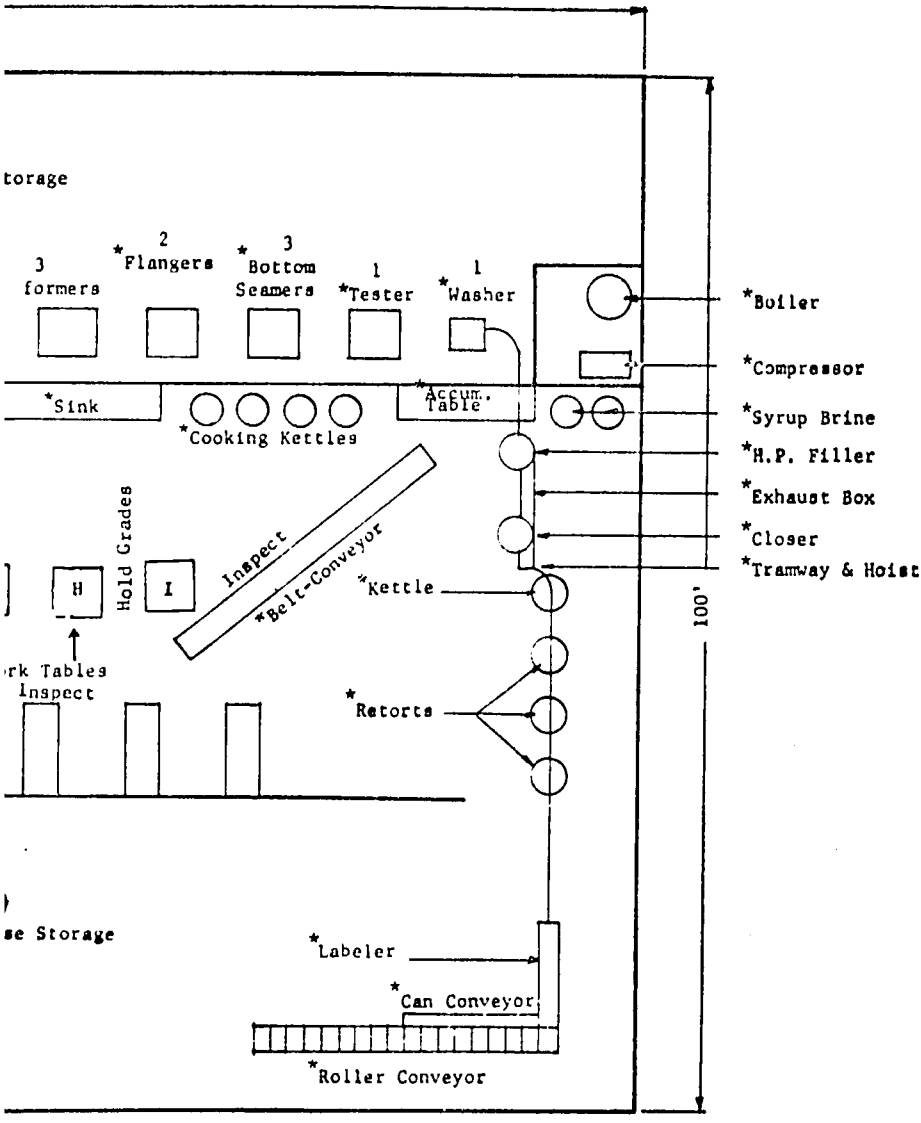

ed for canning all products,

ally for this product.

I.P. No. 67389
S.I.C. 2033

CANNED CARROTS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic Act, General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring and enforcement of regulations.

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Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

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The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective cutsomers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

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Clearinghouse for Federal Scientific and
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GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED KALE GREENS

I. P. No. 67390
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED KALE GREENS

I. P. No. 67390
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned kale greens, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned kale greens normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors, should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $95,000.
The total fixed investment, plus working capital, is estimated at $139,000.
The annual gross profit, before taxes, is estimated at $5,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.2%.
(A gross profit on sales, before taxes, of 5.2%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 4.0%.

5. COST PER MAN EMPLOYED

Eighteen direct workers and four indirect workers, or a total of twenty-two workers, are employed.
The total fixed capital investment is estimated at $ 131,000.
Based on these figures, the fixed investment per man employed would amount to about $6,000.

C. PRODUCTION REQUIREMENTS - CANNED KALE GREENS

I.P. No. 67390
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT-OPERATION: 8 WEEKS : 570,000 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 131,000

Principal items:
Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Dry Clean Reel, Washer, Blancher, Wash Reel, Drain Belt

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 8,000
c. Total Capital Requirements	$ 139,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Kale	158 tons	
Cans	570,000	
Additives		
Labels & Cartons		
Total direct materials		$ 38,500

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance for truck	
Total supplies	$ 1,800

c. Availability of materials & supplies

Kale greens must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 14-1/4 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,300

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,300

5. MANPOWER

a. Indirect labor	Number	Annual Cost
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 4,600
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	13	
Total direct labor	18	$ 12,600

c. Training needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 3.3 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 38,500	
Direct labor	12,600	
Manufacturing overhead*	18,000	
Total manufacturing cost		$ 69,100
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 9,900
Sales expense		$ 8,000
Freight-out, travel discounts Allowances & bad debts		$ 3,000
Total annual costs		$ 90,000
Annual Gross Profit		$ 5,000
ANNUAL SALES REVENUE		$ 95,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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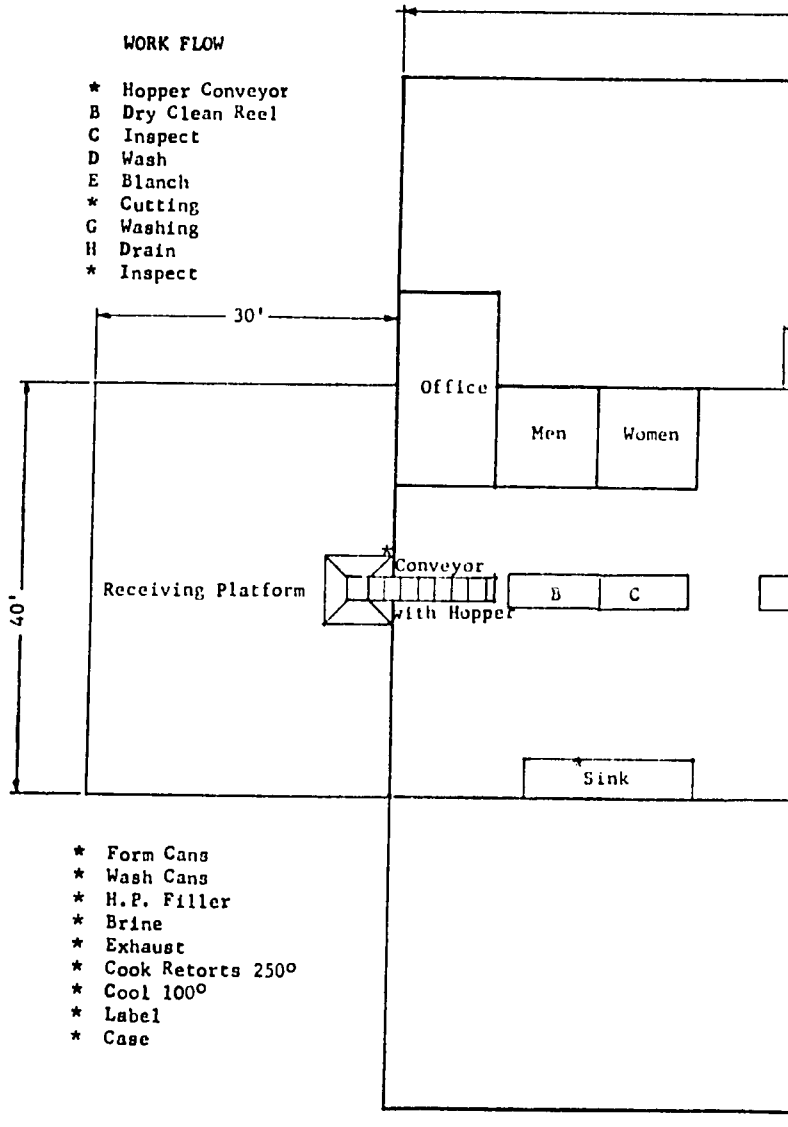

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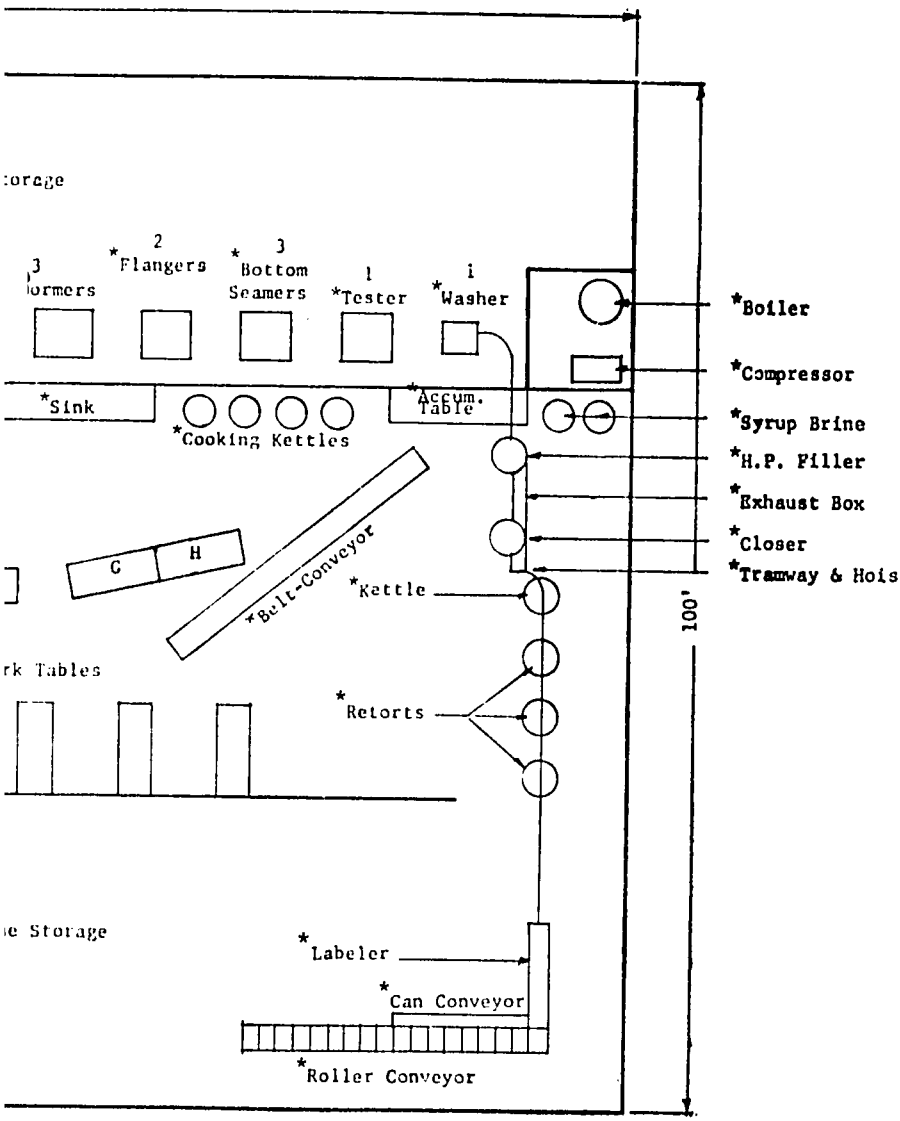
GREENS

I. P. NO. 67390
S. I. C. 2033



:d for canning all products.

ılly for this product.

CANNED KALE GREENS

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute detail, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P. O. Box 866
Westminster, Maryland 21157

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INDUSTRY PROFILES

CANNED BROCCOLI

I. P. No. 67391
S. I. C. 2033

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CANNED BROCCOLI

I. P. No. 67391
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned broccoli, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned broccoli normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned vegetables. Consumption of canned vegetables will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $ 175,000.
The total fixed investment, plus working capital, is estimated at $ 142,700.
The annual gross profit, before taxes, is estimated at $ 9,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.1%.
(A gross profit on sales, before taxes, of 5.1%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 6.3%.

5. COST PER MAN EMPLOYED

Twenty direct workers and four indirect workers, or a total of twenty-four workers, are employed.
The total fixed capital investment is estimated at $128,000.
Based on these figures, the fixed investment per man employed would amount to about $ 5,325.

C. PRODUCTION REQUIREMENTS CANNED BROCCOLI

I.P. No. 67391
S.I.C. 2033

ANNUAL CAPACITY -ONE SHIFT OPERATION : 14 WEEKS : 997,500 CANS

NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 128,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Washer, Blancher, Wash Reel

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 14,700
c. Total Capital Requirements	$ 142,700

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Broccoli	665 tons	
Cans	997,500	
Additives		
Labels and cartons		
Total direct materials		$ 90,300

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance for truck	
Total supplies	$ 1,900

c. Availability of materials & supplies

Broccoli must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13-1/2 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,000

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 8,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	15	
Total direct labor	20	$ 24,400

c. Training Needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 8 tons per day. Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 90,300	
Direct labor	24,400	
Manufacturing overhead*	21,800	
Total manufacturing cost		$ 136,500
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,500
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 5,000
Total annual costs		$ 166,000
Annual Gross Profit		$ 9,000
ANNUAL SALES REVENUE		$ 175,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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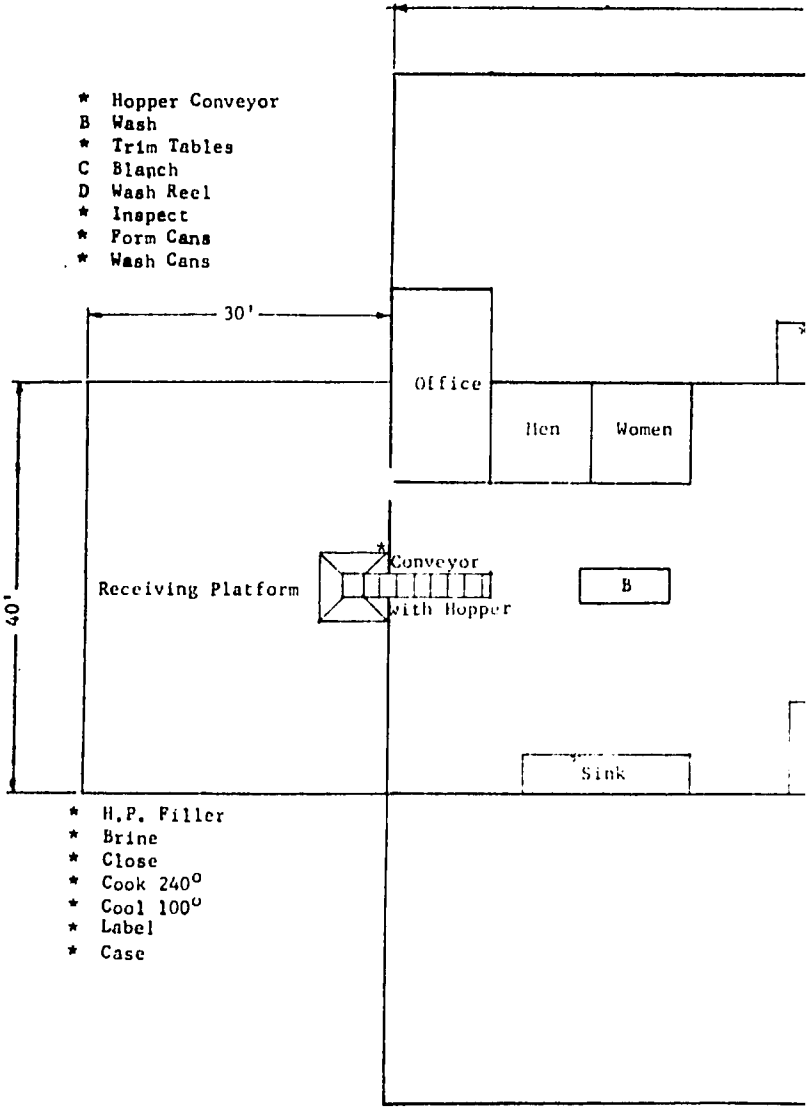

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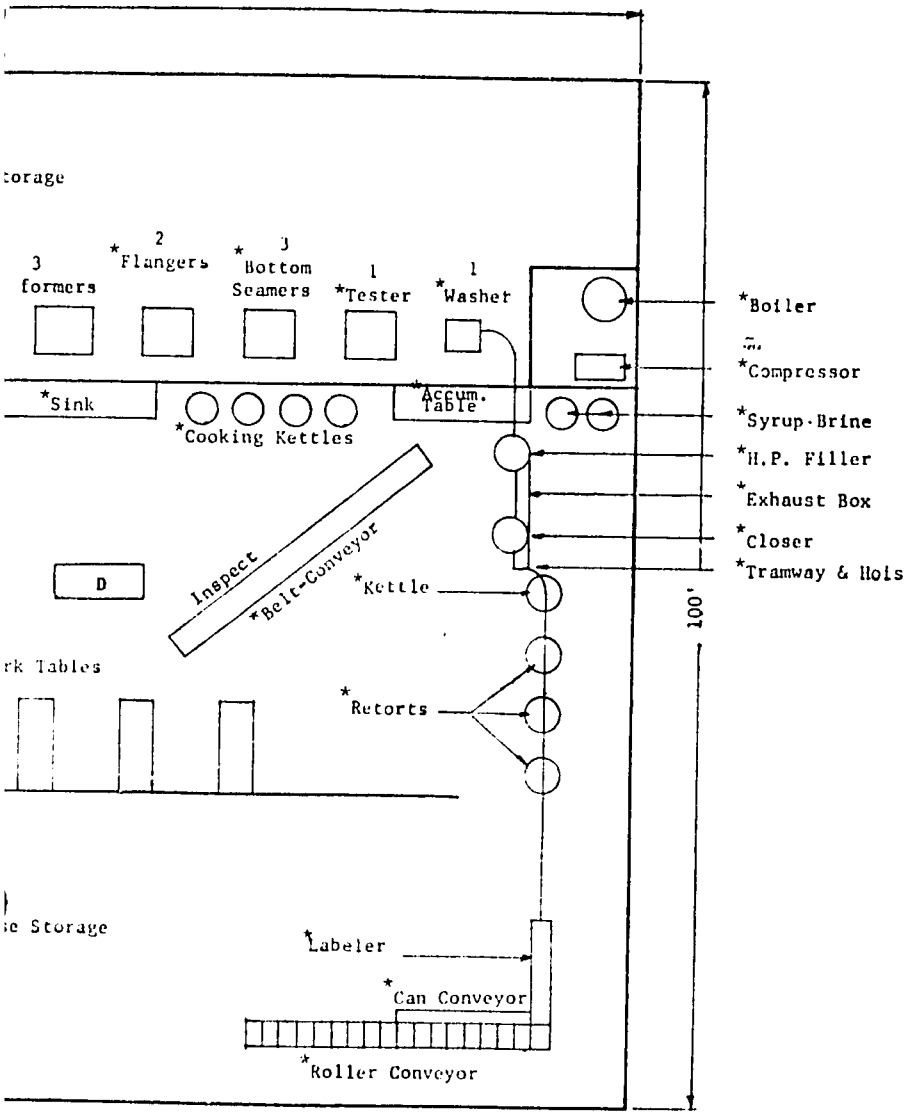

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I.P. No. 67391
S.I.C. 2033

CANNED BROCCOLI

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National Society of Professional Engineers
2029 K Street, N.W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

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The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

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Clearinghouse for Federal Scientific and
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GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED TOMATO JUICE

I. P. No. 67392
S. I. C. 2033

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED TOMATO JUICE

I.P. No. 67392
S.I.C. 2033
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned tomato juice, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned tomato juice normally would be nationwide If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned fruits. Consumption of canned fruits will vary primarily with the climate, the availability of fresh juice, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors, should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognised that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $165,000.
The total fixed investment, plus working capital, is estimated at $139,200.
The annual gross profit, before taxes, is estimated at $9,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 5.5%.
(A gross profit on sales, before taxes, of 5.5%, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 6.5%.

5. COST PER MAN EMPLOYED

Twenty-five direct workers and four indirect workers, or a total of twenty-nine workers, are employed.
The total fixed capital investment is estimated at $125,000.
Based on these figures, the fixed investment per man employed would amount to about $4,300.

C. PRODUCTION REQUIREMENTS - CANNED TOMATO JUICE

I.P. No. 67392
S.I.C. 2033

ANNUAL CAPACITY - ONE SHIFT OPERATION: 16 WEEKS: 1,140,000 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100′ x 120′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 125,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Fruit Washer, Chopper, Punch Juice Extractor

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 14,200
c. Total Capital Requirements	$ 139,200

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Tomatoes	864 tons	
Cans	1,140,000	
Additives		
Labels and Cartons		
Total direct materials		$ 68,300
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil & maintenance for truck		
Total supplies		$ 2,000

c. Availability of materials & supplies

Tomatoes must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 2,100

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation Equipment	4	
Total depreciation		$ 9,700

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 9,100
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	20	
Total direct labor	25	$ 34,200

c. Training needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 9 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 68,300	
Direct labor	34,200	
Manufacturing overhead*	22,900	
Total manufacturing cost		$ 125,400
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 12,600
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 156,000
Annual Gross Profit		$ 9,000
ANNUAL SALES REVENUE		$ 165,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect Labor (2b-3-4-5a)

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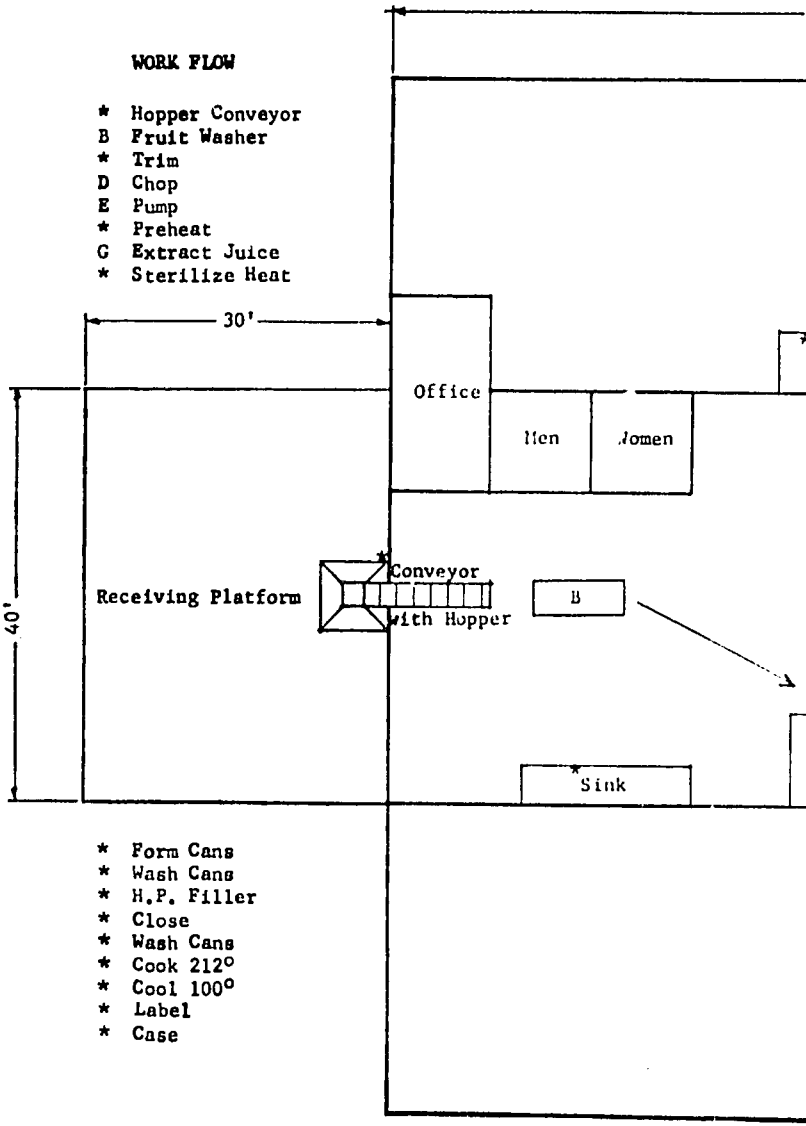

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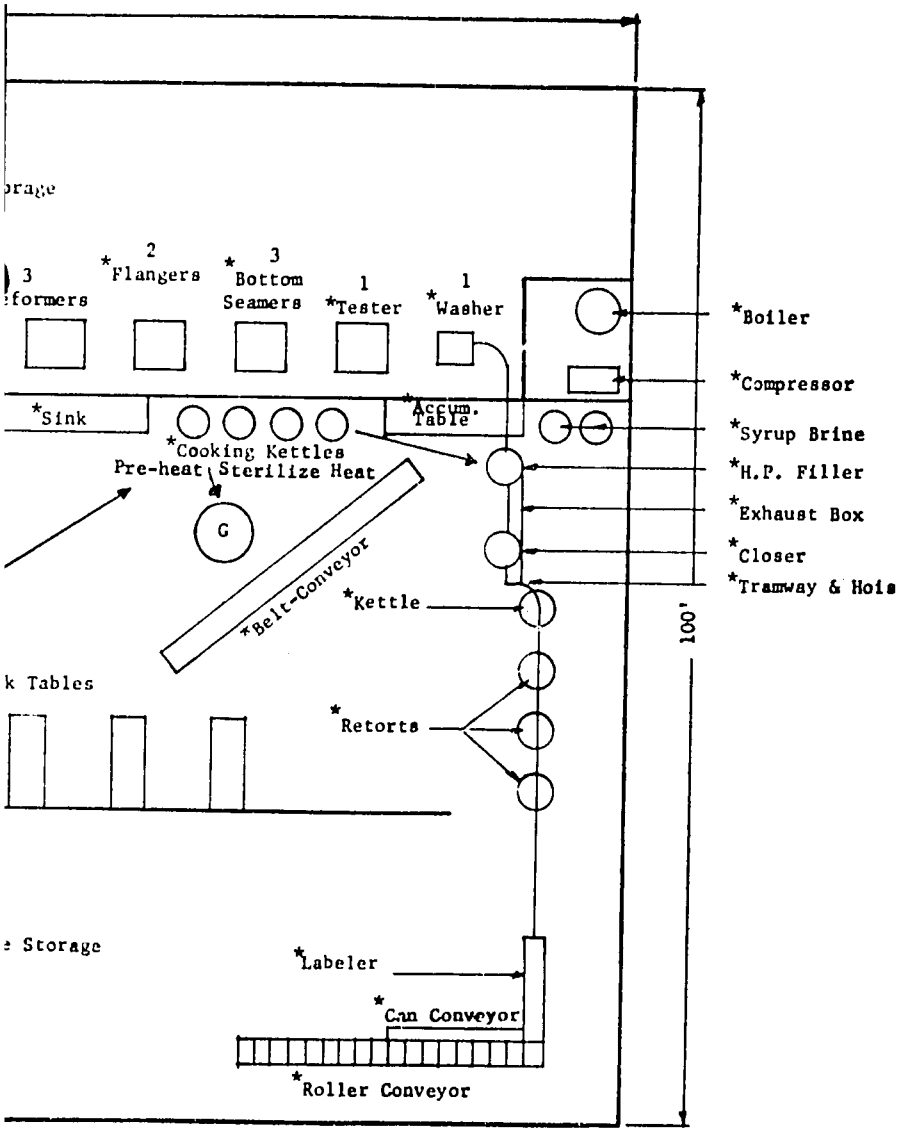

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I.P. No. 67392
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CANNED TOMATO JUICE

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INDUSTRY PROFILES

CANNED BEAN SOUP, READY TO SERVE

I. P. No. 67393
S. I. C. 2032

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CANNED BEAN SOUP, READY TO SERVE

I.P. No. 67393
S.I.C. 2032
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned bean soup, ready to serve, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned bean soup normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned soups. Consumption of canned soups will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $160,000.
The total fixed investment, plus working capital, is estimated at $140,800.
The annual gross profit, before taxes, is estimated at $9,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.6%.
(A gross profit on sales, before taxes, of 5.6% while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 6.4%.

5. COST PER MAN EMPLOYED

Fifteen direct workers and four indirect workers, or a total of nineteen workers, are employed.
The total fixed capital investment is estimated at $126,000.
Based on these figures, the fixed investment per man employed would amount to $6,500.

C. PRODUCTION REQUIREMENTS - CANNED BEAN SOUP, READY TO SERVE

I.P. No. 67393
S.I.C. 2032

ANNUAL CAPACITY - ONE SHIFT OPERATION : 16 WEEKS : 1,140,000 CANS
NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital

	Cost
Land - 2 acres	
Building - one story, 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 126,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Dry Clean Blower, Inspection Belt, Fume, Blancher, Meat Cutter, 2 Mixing Kettles

b. Working Capital (15 days)

Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 14,800

c. Total Capital Requirements $ 140,800

2. MATERIALS AND SUPPLIES

1. Direct Materials	Annual Requirements	Annual Cost
Dried beans	90.0 tons	
Bacon, raw	15.0 ,,	
Onions	19.4 ,,	
Salt	6.6 ,,	
Sugar	4.0 ,,	
Wheat flour	6.6 ,,	
Pepper	225 lbs.	
Water	107,000 gals.	
Cans	1,140,000	
Cartons and labels		
Total direct materials		$ 74,200

b. Supplies

Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 2,400

c. Availability of materials & supplies

Beans must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 2,600

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 9,800

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 9,100
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	10	
Total direct labor	15	$ 21,500

c. Training needs

The manager and the inspector should be fully experienced. They, with two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck.

b. External transport facilities

During the canning season the input at this plant will amount to about 1.5 tons per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct Materials	$ 74,200	
Direct labor	21,500	
Manufacturing overhead*	23,900	
Total manufacturing cost		$ 119,600
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 14,400
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 5,000
Total annual costs		$ 151,000
Annual Gross Profit		$ 9,000
ANNUAL SALES REVENUE		$ 160,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNED BEAN SO

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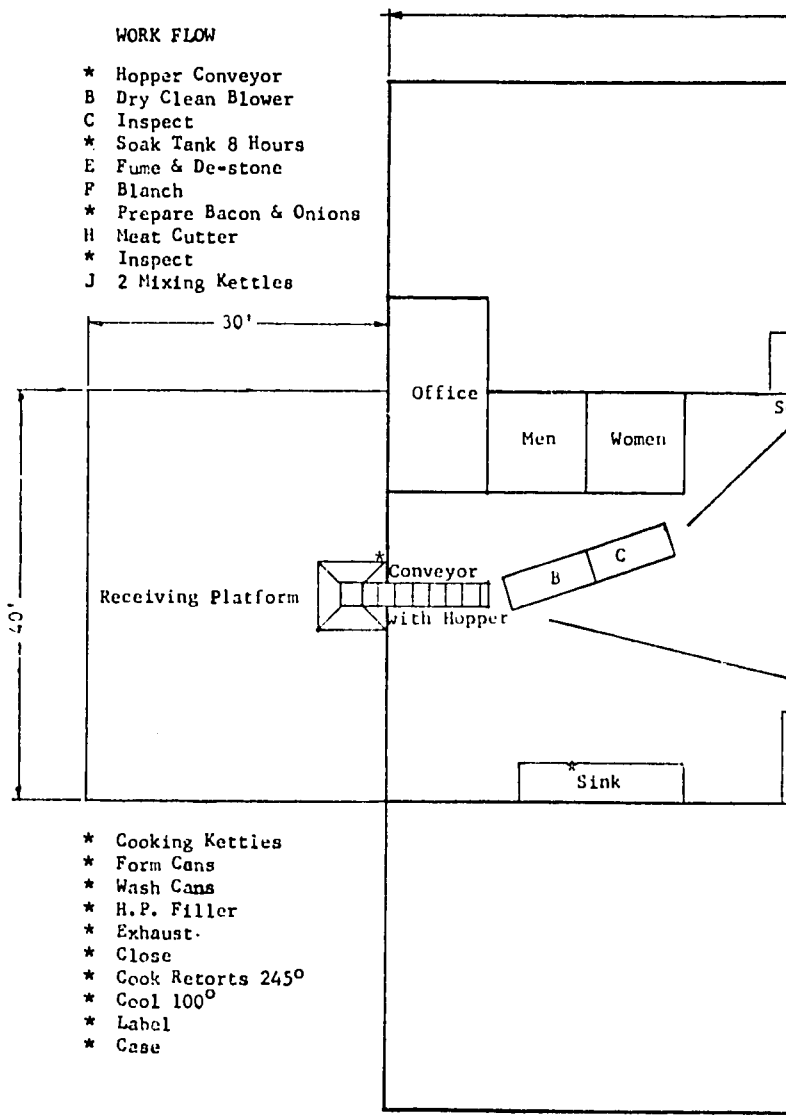

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TO SERVE

I. P. NO. 67393
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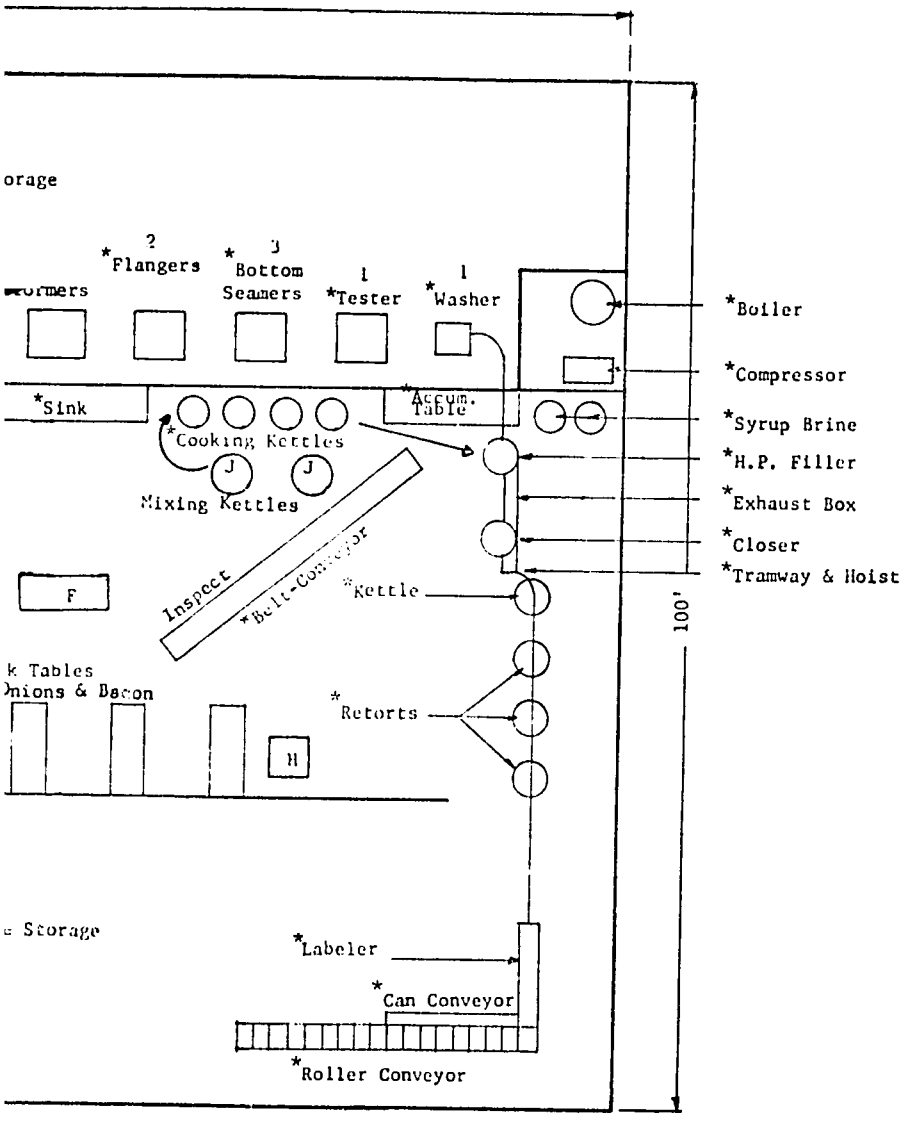

ed for canning all products.

ally for this product.

I. P. No. 67393
S. I. C. 2032

CANNED BEAN SOUP, READY TO SERVE

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U. S. Government Printing Office
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National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend professional engineers in private practice who are willing and able to provide appropriate consulting services.

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The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED CREAM OF CORN SOUP, READY TO SERVE

I. P. No. 67394
S. I. C. 2032

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67394
S.I.C. 2032
NOVEMBER 1967

CANNED CREAM OF CORN SOUP, READY TO SERVE

PRODUCT DESCRIPTION

Canned cream of corn soup, ready to serve, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned cream of corn soup normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned soups. Consumption of canned soups will vary primarily with the climate, the availability of fresh vegetables, the level of income and the degree of urbanization of the population. A comprehensive survey related to these, as well as other, factors should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufacturered product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)
The annual gross sales revenue is estimated at $120,000.
The total fixed investment, plus working capital, is estimated at $139,300.
The annual gross profit, before taxes, is estimated at $6,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.0%.
(A gross profit on sales, before taxes, of 5.0%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 4.3%.

5. COST PER MAN EMPLOYED

Fifteen direct workers and four indirect workers or a total of nineteen workers, are employed.
The total fixed capital investment is estimated at $129,000.
Based on these figures, the fixed investment per man employed would amount to $6 800

C. PRODUCTION REQUIREMENTS CANNED CREAM OF CORN SOUP, READY TO SERVE

I.P. No. 67394
S.I.C. 2032

ANNUAL CAPACITY - ONE SHIFT OPERATION: 10 WEEKS: 712,500 CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story, 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 129,000

Principal Items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Husker, Inspection Belt, Trimmer, Washer, Cutter, De-silker with Washer, Creammaker, 2 Mixing Kettles.

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 10,300
c. Total Capital Requirements	$ 139,300

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Sweet corn	500 tons	
Water	23,375 gals.	
Whole Milk	7,775 gals.	
Wheat flour	8 tons	
Butter	554 lbs.	
Salt	1-1/4 ton	
White pepper	100 lbs.	
Chopped onions	4 tons	
Cans	712,500	
Cartons and Labels		
Total direct materials		$ 51,300
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil and maintenance of truck		
Total supplies		$ 1,900

c. Availability of materials & supplies

Corn must be available locally. Labels and cartons should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 14-3/4 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 1,900

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 10,100

5. MANPOWER

	Number	Annual Cost
a. Indirect Labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck driver	1	
Total indirect labor	4	$ 5,700
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	10	
Total direct labor	15	$ 13,400

c. Training Needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment.

Truck

b. External transport facilities.

During the canning season the input at the plant will amount to about 8 tons per day.

Good highways.

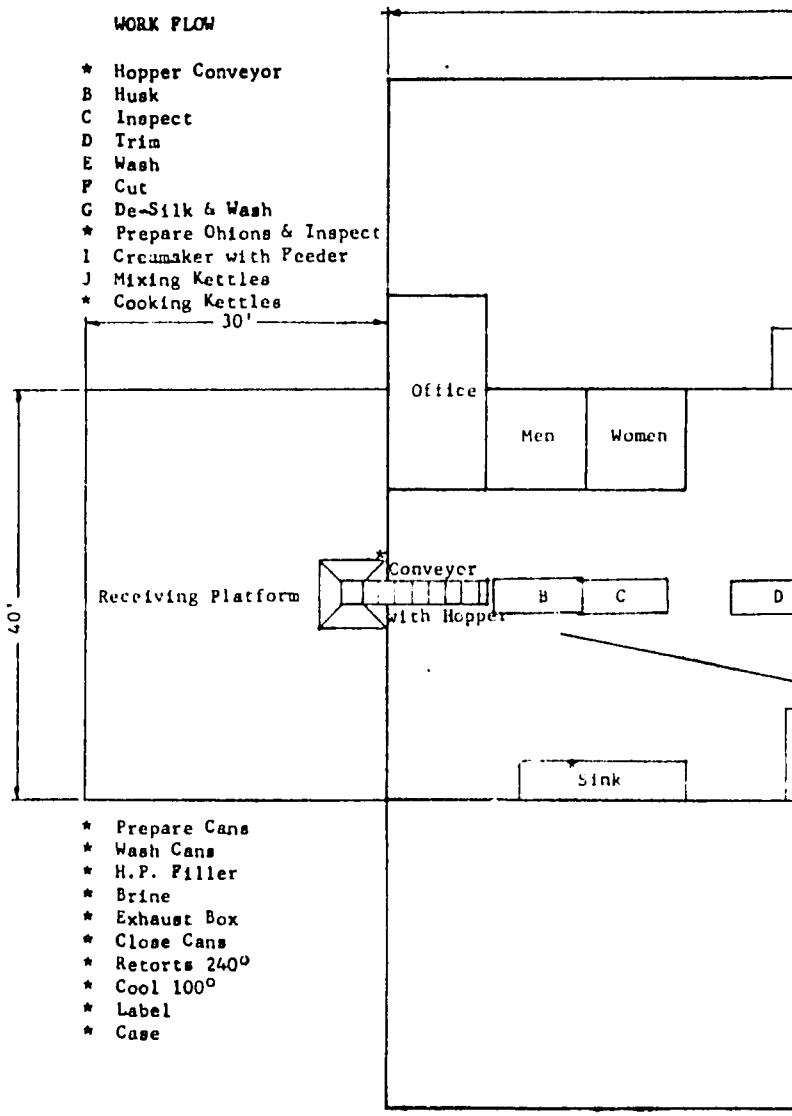
7. TOTAL ANNUAL COSTS AND SALES

REVENUE		
Direct materials	$ 51,300	
Direct labor	13,400	
Manufacturing overhead*	19,600	
Total manufacturing cost		$ 84,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		12,700
Sales expense		12,000
Freight-out, travel discounts Allowances & bad debts		5,000
Total annual costs		$ 114,000
Annual Gross Profit		$ 6,000
ANNUAL SALES REVENUE		$ 120,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect Labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

PLAN



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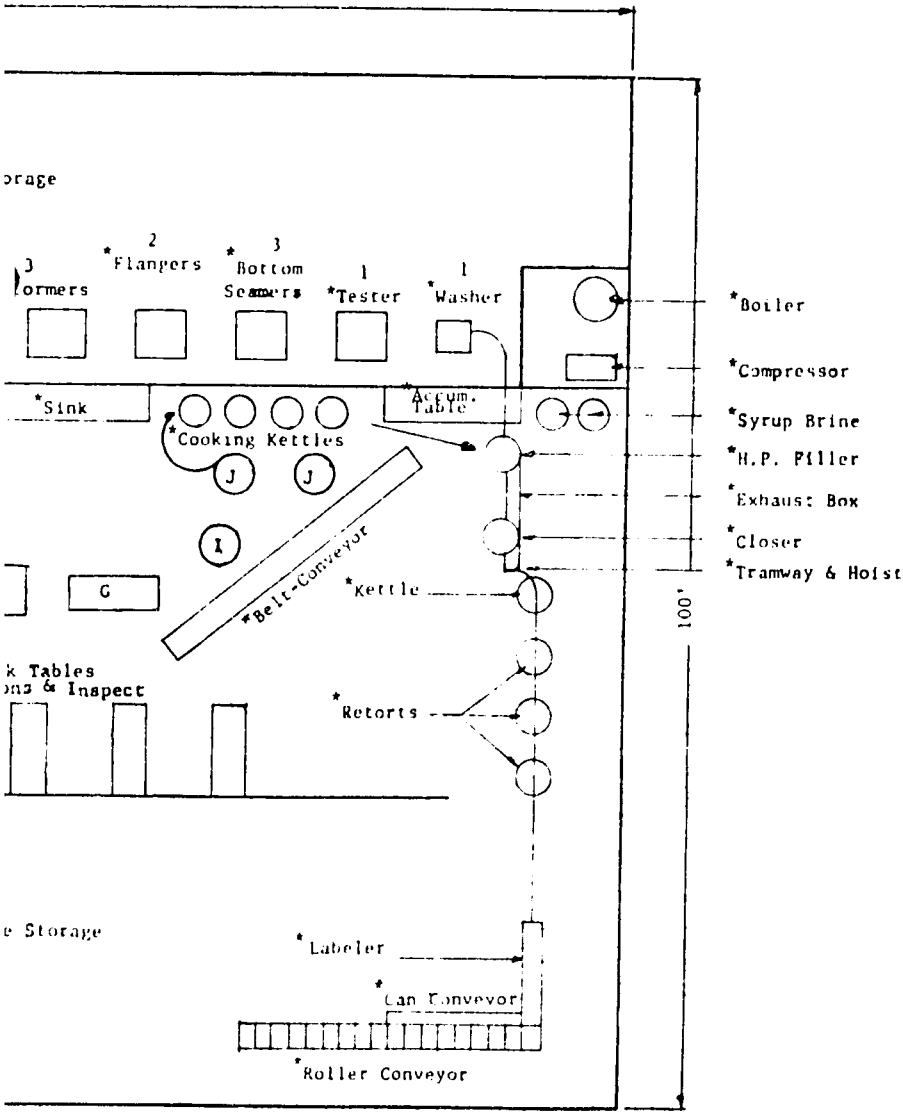
SOUP, READY TO SERVE

I. P. NO. 67394
S. I. C. 2032



ed for canning all products.

ally for this product.

I. P. No. 67394
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CANNED CREAM OF CORN SOUP, READY TO SERVE

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INDUSTRY PROFILES

CANNED CREAM OF MUSHROOM SOUP, READY TO SERVE

I. P. No. 67395
S. I. C. 2032

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CANNED CREAM OF MUSHROOM SOUP, READY TO SERVE

I. P. No. 67395
S. I. C. 2032
NOVEMBER 1967

PRODUCT DESCRIPTION

Canned cream of mushroom soup, ready to serve, 303 cans, size 303 x 406, net weight one pound.

A. GENERAL EVALUATION OF PROSPECTS

Although a few small canning plants, including some cooperatives, are equipped to can only one or two products, it is now customary in the commercial canning industry, to operate the plant all year in order to derive maximum profits on the capital investment. This is accomplished by canning several products that are harvested at different seasons of the year. It is, therefore, suggested that several products be selected for canning that are grown in the area where the canning plant is to be located. These selections should include products that are harvested in the spring, summer, and fall months, that will keep the plant busy during these seasons. For the winter months, it is recommended that such products as dry beans and pork and beans be canned. Under this method a full annual operation for the plant would be assured. The plant layout, as shown in this profile, is designed for the purpose of canning several seasonal products, thereby providing year round operation for the plant. A feasibility survey should be conducted to determine what products are available for canning at various seasons during the year, in what quantity, and at what cost.

B. MARKET ASPECTS

1. USERS

Homes, restaurants, hotels, institutions, military, wherever food is served.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales are usually made to wholesalers for distribution to small retail stores and to large users, such as military. The extent of the market for canned cream of mushroom soup normally would be nationwide. If a plant is efficiently managed and operated it should have no difficulty in competing with imported canned soups. Consumption of canned soups will vary primarily with the climate, the availability of fresh vegetables, the level of income, and the degree of urbanization of the population. A comprehensive survey related to these, as well as other factors, should be conducted to determine existing competition and sales potential.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $186,000.
The total fixed investment, plus working capital, is estimated at $141,800.
The annual gross profit, before taxes, is estimated at $10,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 5.4%.
(A gross profit on sales, before taxes, of 5.4%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 7.0%.

5. COST PER MAN EMPLOYED

Fifteen direct workers and four indirect workers, or a total of nineteen workers, are employed.
The total fixed capital investment is estimated at $126,000.
Based on these figures, the fixed investment per man employed would amount to $6,600.

C. PRODUCTION REQUIREMENTS CANNED CREAM OF MUSHROOM SOUP, READY TO SERVE

I.P. No. 67395
S.I.C. 2032

ANNUAL CAPACITY - ONE SHIFT OPERATION: 20 WEEKS: 1,425,000 CANS
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - 2 acres	
Building - one story 100' x 120'	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 126,000

Principal items:

Conveyor with Hopper, 2 Sinks, 5 Work Tables, 2 Soak Tanks, Belt Conveyor, 4 Cooking Kettles, Accumulation Table, 3 Can Reformers, 2 Can Flangers, 3 Can Bottom Seamers, Can Tester, Can Washer, H.P. Filler, 2 Syrup or Brine Kettles, Exhaust Box, Closer, Tramway & Hoist, Auxiliary Kettle, Labeler, Can Conveyor, Roller Conveyor, Lift-Truck with Pallets, Compressor, Platform Scales, Boiler 100 H.P. - 120 P.S.I., Washer, Inspection Belt, Wash Reel, Blancher, 2 Mixing Kettles

b. Working Capital (15 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 15,800
c. Total Capital Requirements	$ 141,800

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Mushrooms	15.3 tons	
Evaporated milk	13,175 gals.	
Wheat flour	6.0 tons	
Butter	5.8 ,,	
Salt	5.8 ,,	
Fresh onions	780.0 lbs.	
Pepper, white	157.0 lbs.	
Cans	1,425,000	
Labels and cartons		
Water		
Total direct materials		$ 93,000

b. Supplies	
Lubricants & hand tools	
Cutting tools & abrasives	
Maintenance & spare parts	
Office supplies	
Gas, oil and maintenance of truck	
Total supplies	$ 2,000

c. Availability of materials & supplies

Mushrooms must be available locally. Cartons and labels should be available locally. Cans may have to be imported.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 13 H.P. connected load	
Fuel - oil	
Water - must be potable	
	$ 3,000

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 9,800

5. MANPOWER

	Number	Annual Cost
a Indirect labor		
Manager	1	
Clerk	1	
Inspector	1	
Truck Driver	1	
Total indirect labor	4	$ 11,400
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	3	
Unskilled workers	10	
Total direct labor	15	$ 26,800

c. Training needs

The manager and the inspector should be fully experienced. They, with the two skilled workers, should be able to train all workers and reach full production in about one week.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

During the canning season the input at this plant will amount to about 1 ton per day.

Good highways.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 93,000	
Direct labor	26,800	
Manufacturing overhead*	26,200	
Total manufacturing cost		$ 146,000
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		12,000
Sales expense		12,000
Freight-out, travel discounts Allowances & bad debts		6,000
Total annual costs		$ 176,000
Annual Gross Profit		$ 10,000
ANNUAL SALES REVENUE		$ 186,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

CANNED CREAM C

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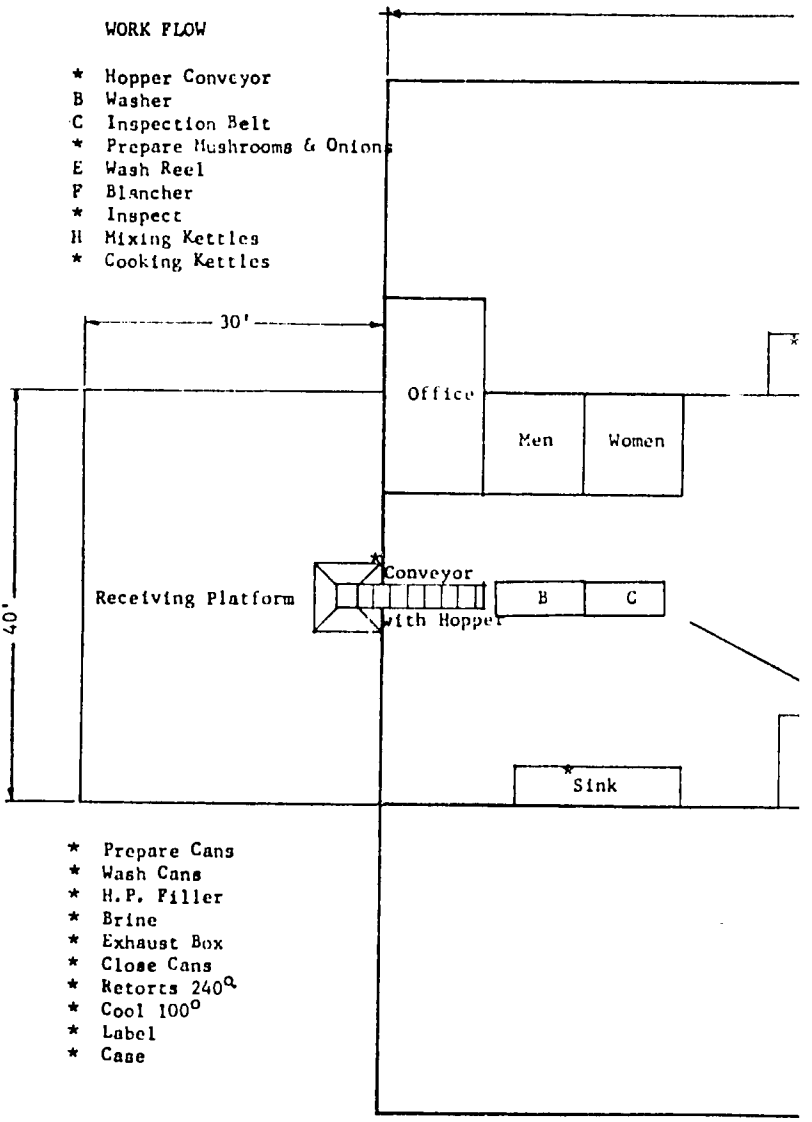

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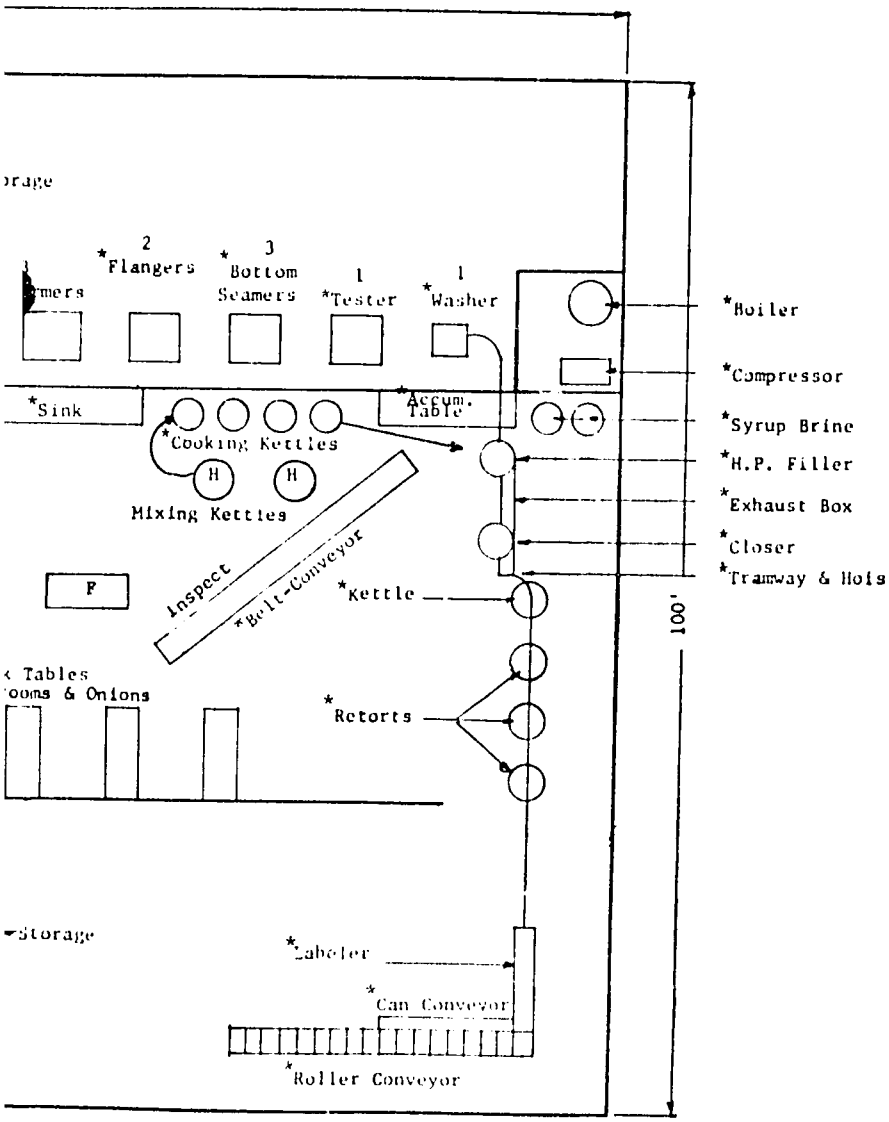
)M SOUP, READY TO SERVE

I. P. NO. 67395
S. I. C. 2032



d for canning all products.

lly for this product.

I.P. No. 67395
S.I.C. 2032

CANNED CREAM OF MUSHROOM SOUP, READY TO SERVE

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Complete Course in Canning. 8th ed. 1966. 400 p. $15.00.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Covers all products, fruits, vegetables, meats, milk, soups, juices, etc. in minute details, with full basic instruction from the field through to the warehouse.

B. The Almanac of the Canning, Freezing and Preserving Industries, 1967. 510 p. $7.50.

Edward E. Judge
P.O. Box 866
Westminster, Maryland 21157

Includes latest prices on vegetables, fruits, cans, glass jars, canned products, as well as data on quality grade standards, labeling, packaging, international trade, U.S. and world packs, and other valuable information.

C. Quality Control and Reliability. Norbert L. Enrick. 1966. 5th ed. 254 p. $7.50.

The Industrial Press
93 Worth Street
New York, N. Y. 10013

The 24 chapters of the book are divided into three main sections: (1) basic quality control applications; (2) additional quality control methods; and (3) reliability.

D. Federal Food, Drug and Cosmetic A ., General Regulations for its enforcement, Title 21, Par 1, $3.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Deals with all phases of quality and health aspects of processed foods, including minimum standards and additives, such as vitamins, coloring, and enforcement of regulations.

II. TECHNICAL AND TRADE PERIODICALS

A. Canning Trade. Bi-weekly. $5.00/year.

The Canning Trade
2619 Maryland Avenue
Baltimore, Maryland 21218

Devoted exclusively to the food processing industry.

B. Food Engineering. Monthly $25.00/year.

Food Engineering
Chestnut & 56th Street
Philadelphia, Pa. 19139

Devoted exclusively to the food processing industry.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 1961. (Small Business Administration). 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Prepared by the Small Business Administration to assist in the development of more effective management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each

A. Patent No. 3,272,636 Sept. 1966 4 p.
Method of controlling microorganisms in food products.

B Patent No. 3,232,770 Feb. 1966 9 p.
Method of sterilizing and canning food materials.

C. Patent No. 3,071,475 Jan. 1963 7 p.
Sterilizing method for canned foodstuff.

D. Patent No. 2,794,326 June 1957 6 p.
Method and apparatus for cooling canned goods.

E. Patent No. 2,793,582 May 1957 4 p.
Continuous operating cooker.

F. Patent No. 2,760,837 Aug. 1956 4 p.
Process for transporting cans through a continuous sterilizer.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

VI. DIRECTORIES

A. Canners Directory. $5.00. Annual.

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

B. Canning Machinery Directory. Gratis.

Canning Machinery and Supplies Association
7758 Wisconsin Avenue, N.W.
Washington, D.C. 20014

C. The Directory of the Canning, Freezing, Preserving Industries, $25.00. Annual.

Edward E Judge
P.O. Box 866
Westminster, Maryland 21157

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

The price of *Industry Profiles* is a minimum of $3.00 for from one to five "*Profiles*." The purchaser may select up to five of any "*Profiles*" available.

Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410 12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

CANNED SARDINES

I. P. No. 67396
S. I. C. 2031

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

CANNED SARDINES

I.P. No. 67396
S.I.C. 2031
DECEMBER 1967

PRODUCT DESCRIPTION

Sardines packed in oil in 1/4-pound tins. Two by-products will result from this plant's operation; fish waste and crude fish oil.

A. GENERAL EVALUATION OF PROSPECTS

If the raw material, sardines, plus salt and cotton seed oil, and the packaging materials, are available at satisfactory prices and in sufficient volume to operate this plant at capacity for 200 days per year, the prospects for this plant are good. A well-established world-wide market exists for canned sardines and for the by-products, fish waste and crude fish oil. The capital requirements for establishment of this factory are modest in comparison with the gross sales and gross profit. The investment per man employed is not large and only four skilled workers are required. Since an adequate supply of sardines for at least 200 days per year is the principal item affecting the successful operation of this industry, an accurate determination of the local sardine supply should be made. Data can be obtained from appropriate government agencies which have conducted surveys on this subject.

B. MARKET ASPECTS

1. USERS.

The entire local population, except babies and young children.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to wholesalers and to large chain stores. No direct sales to small retailers would be made. The market for canned sardines will depend to some extent on the per capita income of the country, which should be moderate, and on the eating habits of the local population. This plant should be able to export any surplus production that is not consumed locally. This industry cannot be operated successfully on a small-volume basis. Unless other sardine canning plants similar to this in size and capacity already exist within the local market, no competition should exist. However, the possibility of competition from marketers of fresh fish should be investigated. If raw materials are available at reasonable cost and if the plant is well managed and efficiently operated, this plant should be able to distribute its production nationwide, to compete effectively against imported canned sardines and to export some of its own production.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $ 2,200,000.
The total fixed investment, plus working capital, is estimated at $4[illegible]4,800.
The annual gross profit, before taxes, is estimated at $207,000.
Based on these figures, the profit on gross sales, before taxes, amounts to 9.3%.
(A gross profit on sales, before taxes, of 9.3%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to 41.0%.

5. COST PER MAN EMPLOYED

Sixty-five direct workers and seven indirect workers, or a total of seventy-two workers, are employed. The total fixed investment is estimated at $ 305,000. Based on these figures, the fixed investment per man employed would amount to about $4,235.

C. PRODUCTION REQUIREMENTS - CANNED SARDINES

I.P. No. 67396
S.I.C. 2031

ANNUAL CAPACITY - ONE SHIFT OPERATION: 24,000,000 QUARTER-POUND CANS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital		Cost
Land - about 3 acres		
Building - one story 100′ x 200′		
Equipment, furniture & fixtures		
Prodn. tools & equipment		
Other tools & equipment		
Furniture & fixtures		
Transportation equipment		
Total fixed capital		$ 305,000
Principal items:		
Continuous cooker	500 Trays	
Combination oiler-sealer	Refrigeration equipment	
4 Wooden salting tanks	Boiler	
4 Wooden holding tanks	Automatic carton sealer	
2 Spray type filled can washers	Pickup truck	
Metal flumes 2′ wide		
Conveyor belts (metal & rubber)		
8 Storage bins 7′ x 7′		
Flexible suction hose		
16 Packing tables		
36 Carts		
b. Working Capital (15 days)		
Direct materials		
Direct labor		
Manufacturing overhead		
Administrative costs		
Sales Costs		
Freight-out, discounts, bad debts & allowances		
Sales revenue		
Training costs		
Total working capital		$ 179,800
c. Total Capital Requirements		$ 484,800

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Sardines	3,000 tons	
Salt		
Cotton seed oil		
Cans, labels & wrappings		
Shipping cartons		
Total direct materials		$1,658,000
b. Supplies		
Lubricants & hand tools		
Cutting tools & abrasives		
Maintenance & spare parts		
Office supplies		
Gas, oil and maintenance of truck		
Total supplies		$ 7,500

c. Availability of materials & supplies

Sardines will be supplied by fishing boats. Supplies should be available locally.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - about 7000 KWH Fuel - about 40,000 gals. No. 2 fuel oil Water - about 6,000,000 gals. must be potable.	$ 6,500

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 23,900

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisors	2	
Office	2	
Maintenance	1	
Truck driver	1	
Total indirect labor	7	$ 54,000
b. Direct labor		
Skilled workers	4	
Semi-skilled workers	4	
Unskilled workers	57	
Total direct labor	65	$ 199,400

c. Training needs

Manager and supervisors must be fully experienced. They and four skilled workers should be able to train other workers and reach full production in 10 days.

6. TRANSPORTATION

a. Own transport equipment

Truck

b. External transport facilities

Plant should be located at seaport. Out shipments average about 35 tons per day. Good highways and railroad essential.

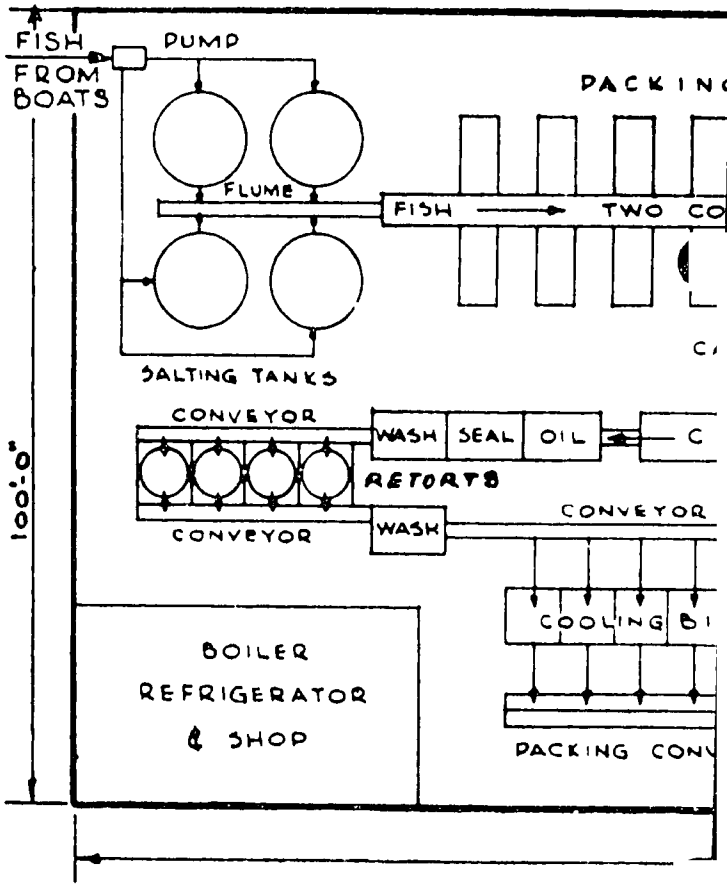
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$1,658,000	
Direct labor	199,400	
Manufacturing overhead*	91,900	
Total manufacturing cost		$1,949,300
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 33,700
Sales expense		$ 24,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$2,013,000
Annual Gross Profit		$ 207,000
ANNUAL SALES REVENUE		$2,220,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

PLANT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) SARDINES

I.P. No. 67396
S.I C. 2031

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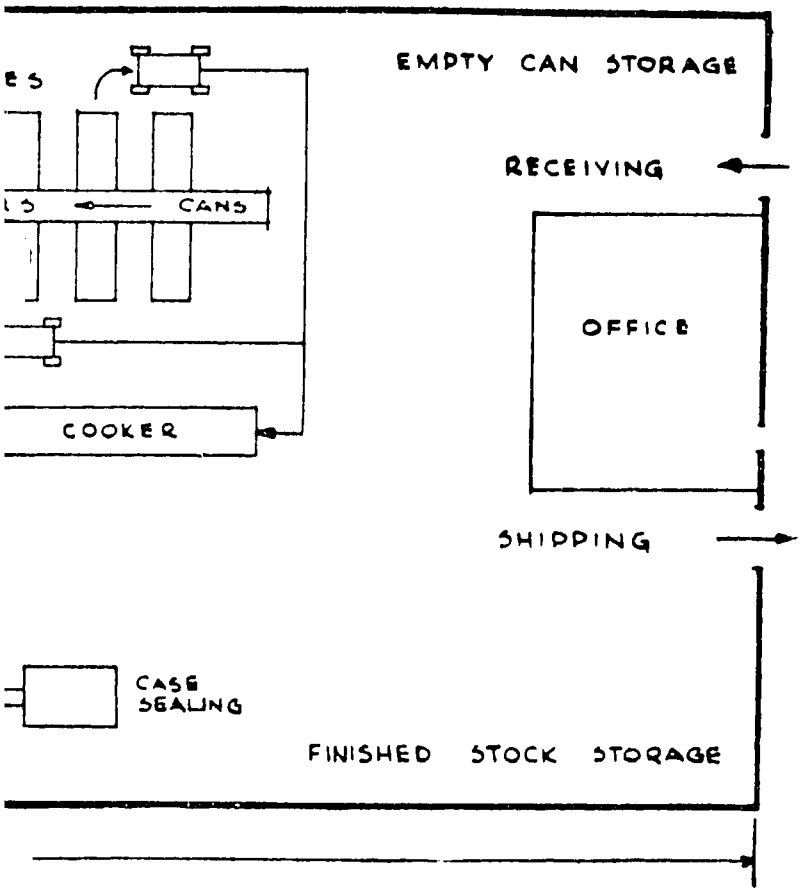

I.P. No. 67396
S.I.C. 2031

CANNED SARDINES

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Industrial Fishiery Technology. M. E. Stansby. 1963. $12.00

Reinhold Publishing Corporation
430 Park Avenue
New York, New York 10022

B. Fish Handling and Processing. $8.00

British Information Services
845 Third Avenue
New York, New York 10022

II. TECHNICAL AND TRADE PERIODICALS

A. Western Fisheries. Monthly. $3.00/year.

Roy Wrigley Publisher
1104 Hornby Street
Vancouver, B. C.
Canada

Commercial fishing and canning trade editions in English, French, and Spanish.

B. Canadian Fisherman. Monthly. $10.00/year

National Business Publications, Ltd.
Gardenvale, Quebec
Canada

Commercial fishing and fish processing Industries.

C. Commerial Fisheries Review. Monthly. $5.50/year.

U.S. Bureau of Commercial Fisheries
1815 North Fort Meyer Drive
Arlington, Virginia 22209

Fishery market news services.

D. Pacific Fisherman. Monthly. $3.00/year.

Miller Freeman Publications
731 Southwest Oak Street
Portland, Oregon 97205

Commerial fisheries of the Pacific, canning, processing and marketing.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. Improving Materials Handling in Small Plants. $.20

Small Business Management Series No. 4
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by Small Business Administration to assist in the development of management in small business.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,137,581 June 16, 1964 11 p.
Process for cooking and canning sardines.

B. Patent No. 3,050,403 August 21, 1962 4 p.
Canning of fish.

C. Patent No. 3,024,114 March 6, 1962 5 p.
Process of preparing fish for canning.

D. Patent No. 2,937,096 May 17, 1960 2 p.
Process for canning seafood.

E. Patent No. 2,680,076 June 1, 1954 4 p.
Process for canning fish and products thereof.

F. Patent No. 2,748,005 1956 4 p.
Method of canning foods.

G. Patent No. 2,741,978 1956 11 p.
Apparatus for canning sardines and the like.

H. Patent No. 2,696,776 1954 9 p.
Machine for filling cans.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Canners Association
1133 - 20th Street, N. W.
Washington, D. C. 20036

B. National Fisheries Institute, Inc.
1614, 20th Street, N. W.
Washington, D. C. 20009

VI. DIRECTORIES

A. Canner/Packer Yearbook. Annual. $5.00

Triad Publishing Company
59 East Monroe Street
Chicago, Illinois 60603

Buyers guide of food equipment ond supplies. Directory of 100 food industry trade associations.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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2029 K Street, N. W.
Washington, D.C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

INDUSTRY PROFILES

WOMEN'S AND MISSES' COTTON GINGHAM DRESSES

I. P. No. 67397
S. I. C. 2335

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

WOMEN'S AND MISSES' COTTON GINGHAM DRESSES

PRODUCT DESCRIPTION

Women's and misses dresses made from cotton gingham material.

A. GENERAL EVALUATION OF PROSPECTS

The amount of capital required to establish this factory is relatively modest. The machinery and equipment needed to manufacture ladies' dresses is of the type used generally throughout the clothing manufacture business. Therefore, it is possible for this plant to make other kinds of clothing or other items made from fabric. If this plant is efficiently operated and managed well, and if the local market can produce the sales needed, prospects for this industry should be very good.

B. MARKET ASPECTS

1. USERS

Ladies and teenage girls will use this product.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to large clothing and department stores and to wholesale houses for distribution to small retail outlets. The market for these dresses will depend, to a great extent, on the purchasing power of the population, their clothing tastes and habits. Competition for the domestic market would come from similar plants producing similar products and from that segment of the population that does dressmaking in the home. These products should be distributed nationally. Competition from imported cotton gingham dresses should be negligible.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U. S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial production costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $400,000.
The total fixed investment, plus working capital, is estimated at $101,400.
The annual gross profit, before taxes, is estimated at $28,000.
Based on these figures, the profit on gross sales, before taxes, amounts to 7.0%.
(A gross profit on sales of 7.0%, before taxes, while reflecting U. S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, would amount to about 27.6%.

5. COST PER MAN EMPLOYED

Twenty-four direct workers and six indirect workers or a total of thirty workers, are employed.
The total fixed capital investment is estimated at $32,000.
Based on these figures, the fixed investment per man employed would amount to about $1,070.

C. PRODUCTION REQUIREMENTS - WOMEN'S AND MISSES' COTTON GINGHAM DRESSES

I.P. No. 67397
S.I.C. 2335

ANNUAL CAPACITY - ONE SHIFT OPERATION : 150,000 DRESSES
NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - about 10,000 sq. ft.	
Building - 30' x 80' may use any suitable local material	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 32,000

Principal items:
Cloth spreader
Cutting table
Electric cutting machine
Electric marking drill
20 Sewing machines
Steam iron
Work tables
Stands
Racks

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 69,400

c. Total Capital Requirements $ 101,400

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Gingham, combed, mill finished	in types and quantities as required	
Thread		
Hooks & eyes		
Zippers		
Trimming		
Packaging material		
Total direct materials		$ 166,000

b. Supplies	
Lubricants & hand tools	
Gas, oil and maintenance of truck	
Maintenance & spare parts	
Office supplies	
Total supplies	$ 2,300

c. Availability of materials & supplies

All should be available locally.
All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 90 H.P. connected load	
Fuel - heating as required	
Water - sanitation & fire protection	
	$ 1,300

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 3,000

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	2	
Machine fixer	1	
Truck driver	1	
Total indirect labor	6	$ 47,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	20	
Unskilled workers	2	
Total direct labor	24	$ 119,200

c. Training needs
Manager and machine fixer must be fully experienced. They with the help of two skilled workers should be able to train all workers and reach full production in 3 weeks.

6. TRANSPORTATION

a. Own transport equipment
Truck

b. External transport facilities
In and out shipments small.

Good highways.

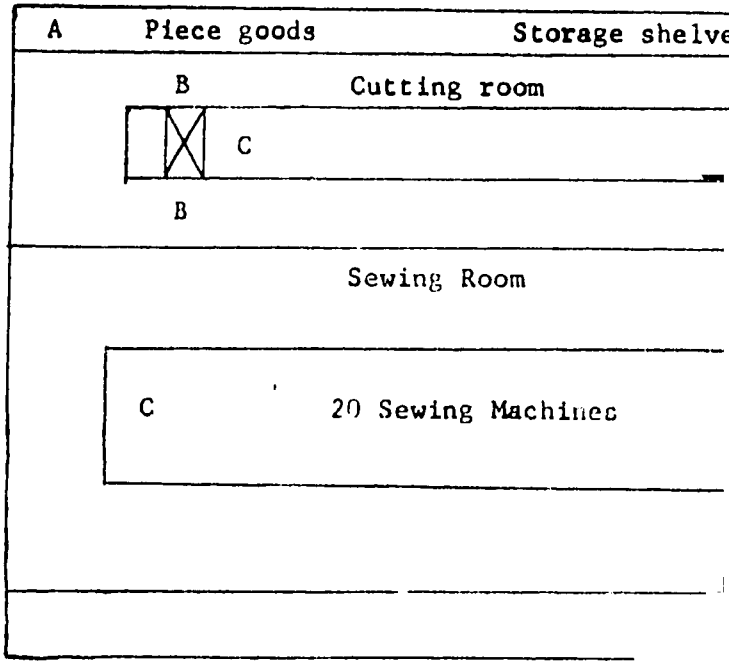
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 166,000	
Direct labor	119,200	
Manufacturing overhead*	53,600	
Total manufacturing cost		$ 338,800
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 15,200
Sales expense		$ 12,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 372,000
Annual Gross Profit		$ 28,000
ANNUAL SALES REVENUE		$ 400,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

WOMEN'S AND MISSES'

PLANT LAYO



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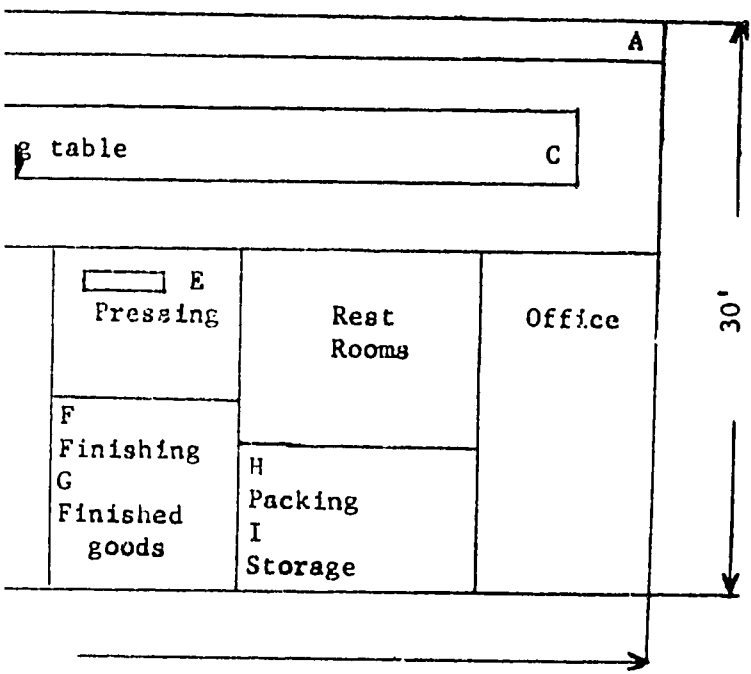
D	- D.	Sewing
E.		Steam ir
F.		Finishing
G.		Finished
H.		Packing
I.		Storage

I GINGHAM DRESSES

I.P. NO. 67397
S.I.C. 2335

WORK FLOW



Marking, Cutting and Assembly

ng

I.P. No. 67397
S.I.C. 2335

WOMEN'S AND MISSES' COTTON GINGHAM DRESSES

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Apparel Manufacturing Analysis. Jacob Solinger. 1961. 800 pp. Illus. $25.00

John Wiley & Sons, Inc.
605 Third Avenue
New York, New York 10016

Nature and scope of apparel production including raw materials, design, cutting, sewing production equipment, and machine operation, molding production, packaging, time and motion study, plant layout, oranization, wages, sales engineering and cost controls.

B. Clothing Construction. E. A. Mansfield. 1953. 454 pp. Illus. $7.50

Houghton Mifflin Company
2 Park Street
Boston, Massachusetts 02108

Covers all types of clothing manufacture.

II TECHNICAL AND TRADE PERIODICALS

A. Women's Wear Daily. $20.00/year

Fairchild Publications, Inc.
7 East 12th Street
New York, New York 10003

News and information concerning styles, markets, sources of supply, management in the women's wear industry.

B. Apparel Manufacturer. Monthly. $5.00/year

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Information about the apparel manufacturing industry; new processes, equipment, products

C. The Bobbin Magazine. Monthly. $4.00

Needle Trades Publishing Company
P. O. Box 1354
Columbia, South Carolina 29202

Management magazine for the needle trades industries.

III. BUSINESS MANAGEMENT MATERIALS

A. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

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Insights and clues concerning the entire procees of small business formation, growth, and decline.

IV. REPRESENTATIVE U. S. PATENTS

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A.	Patent No. 3,261,024 Skirt construction.	July 1966	7 p.
B.	Patent No. 3,025,577 Dress construction.	March 1966	3 p.
C.	Patent No. 2,875,445 Maternity garment construction.	March 1959	3 p.
D.	Patent No. 2,849,716 Dress construction.	September 1958	5 p.
E.	Patent No. 2,835,897 Garment design.	May 1958	4 p.
F.	Patent No. 2,665,428 Garment construction.	January 1954	7 p.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. American Apparel Manufacturers Association, Inc.
2000 "K" Street, N. W.
Wathington, D. C. 20006

VI. DIRECTORIES

A. Apparel Manufacturers Directory. Annual. $3.00

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Lists 5,000 suppliers of garment industry fabrics, trimmings, machinery, and equipment.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

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INDUSTRY PROFILES

NURSES' WASHABLE SERVICE APPAREL

I. P. No. 67398
S. I. C. 2339

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NURSES' WASHABLE SERVICE APPAREL

I.P. No. 67398
S.I.C. 2339
DECEMBER 1967

PRODUCT DESCRIPTION

Various designs of uniforms worn by misses providing services such as maids, cooks, nurses, etc.

A. GENERAL EVALUATION OF PROSPECTS

The amount of capital required is relatively modest in comparison with the annual sales revenue. If an adequate amount of potential gross sales is available and the plant is well managed and efficiently operated, the prospects for this industry should be good.

B. MARKET ASPECTS

1. USERS

Ladies and young women performing such services as noted above will use this product.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made direct to large stores and to wholesale houses for distribution to small retail outlets. The market for this article of apparel will depend, to great extent, upon the demand within the country for the services of maids, cooks, nurses and other specialized services requiring the wearing of a uniform. There is no hope of competing against large mass-producers of uniforms in the world marketplace. The value of this product is high in comparison with its weight and bulk, marking shipment easy and transportation costs relatively low. Therfore, the domestic market should be nationwide. Competition can be expected from other textile fabrication plants producing the same product for domestic consumption.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufacturered product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)
The annual gross sales revenue is estimated at $255,000.
The total fixed investment, plus working capital, is estimated at $73,800.
The annual gross profit, before taxes, is estimated at $18,000.
Based on these figures, the profit on gross sales, before taxes, amounts to about 7.1%.
(A gross profit on sales, before taxes, of 7.1%, while reflecting U.S. experience, should not be considered normal for a developing country, where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 24.3%.

5. COST PER MAN EMPLOYED

Twenty direct workers and six indirect workers or a total of twenty-six workers, are employed.
The total fixed capital investment is estimated at $29,500.
Based on these figures, the fixed investment per man employed would amount to about $1,135.

C. PRODUCTION REQUIREMENTS - NURSES' WASHABLE SERVICE APPAREL

I.P. No. 67398
S.I.C. 2339

ANNUAL CAPACITY - ONE SHIFT OPERATION - 40,000 UNITS
NOTE : COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - about 1/2 acre	
Building - one story 30′ x 60′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 29,500

Principal items:
Cloth spreader
Cutting table
Electric cutting machine
Electric marking drill
18 Sewing machines
Steam iron
Work table
Stands
Racks

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 44,300
c. Total Capital Requirements	$ 73,800

2. MATERIALS AND SUPPLIES

a. Direct Materials	Annual Requirements	Annual Cost
Dacron polyester and nylon	160,000 yds.	
Thread, hooks 7 eyes		
Zippers		
Packaging material		
Total direct materials		$ 63,500

b. Supplies
Lubricants & hand tools
Gas, oil and maintenance of truck
Maintenance & spare parts
Office supplies

Total supplies $ 2,000

c. Availability of materials & supplies
All should be available locally.
All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 90 H.P. connected load	
Fuel	
Water	
	$ 1,250

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 2,850

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	2	
Machine fixer	1	
Truck Driver	1	
Total indirect labor	6	$ 45,000
b. Direct Labor		
Skilled workers	2	
Semi-skilled workers	16	
Unskilled workers	2	
Total direct labor	20	$ 99,200

c. Training needs
The manager and machine fixer should be fully experienced. They with the help of two skilled workers should be able to reach full production in about 30 days.

6. TRANSPORTATION

a. Own transport equipment
One truck

b. External transport facilities
In and out shipments small.
Good highways.

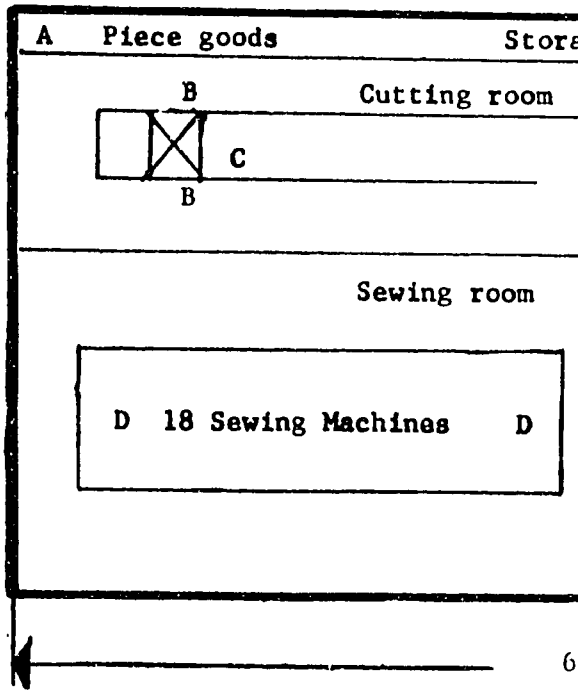
7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct Materials	$ 63,500	
Direct labor	99,200	
Manufacturing overhead*	51,100	
Total manufacturing cost		$ 213,800
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 10,200
Sales expense		$ 10,000
Freight-out, travel discounts Allowances & bad debts		$ 3,000
Total annual costs		$ 237,000
Annual Gross Profit		$ 18,000
ANNUAL SALES REVENUE		$ 255,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

NURSES' WASH

PLANT LAYO



A - A.
B - B.
C - C.

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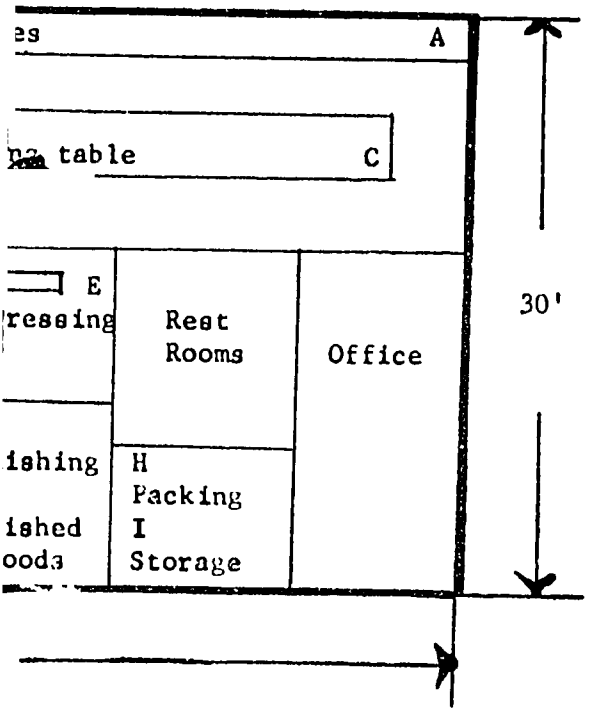
RVICE APPAREL

I.P. NO. 67398
S.I.C. 2339

VORK FLOW



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I. P. No. 67398
S. I. C. 2339

NURSES' WASHABLE SERVICE APPAREL

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Apparel Manufacturing Analysis. Jacob Solinger. 1961. 800 pp. Illus. $25.00

John Wiley & Sons, Inc.
605 Third Avenue
New York, New York 10016

The nature and scope of apparel production including raw materials, design, cutting, sewing production equipment and machine operation, molding production, packaging, time and motion study, plant layout, organization, wages, sales engineering and cost controls

B. Clothing Construction. E. A. Mansfield. 1953. 454 pp. Illus. $7.50

Houghton Mifflin company
2 Park Street
Boston, Massachusets 02108

Covers all types of clothing manufacture.

II. TECHNICAL AND TRADE PERIODICALS

A. Women's Wear Daily. 20.00/year outside U.S

Fairchild Publications, Inc.
7 East 12th Street
New York, New York 10003

News and information concerning styles, markets, source of supplies, and management in the women's industry.

B. Apparel Manufacturer. Monthly. $5.00/year.

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

Information about the apparel manufacturing industry; new processes, equipment, products.

C. The Bobbin Magazine. Monthly. $4.00

Needle Trades Publishing Company
P. O. Box 1354
Columbia, South Carolina 29202

Management magazine for the needle trades industries.

III. BUSINESS MANAGEMENT MATERIALS

A. Improving Materials Handling in Small Plants. $ 20

Small Business Management Series No. 4
U. S. Government Printing Office
Washington, D. C. 20402

Prepared by Small Business Administration to assist in the development of management in small business.

B. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A.	Patent No. 3,261,024 Skirt construction.	July 1666	7 p.
B.	Patent No. 3,025,577 Dress construction.	March 1960	3 p.
C.	Patent No. 2,875,445 Garment construction.	March 1959	3 p.
D.	Patent No. 2,489,716 Dress construction.	September 1958	5 p.
E.	Patent No. 2,835,897 Garment design.	May 1958	4 p.
F.	Patent No. 2,665,428 Garment construction.	January 1954	7 p.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. American Apparel Manufacturers Association, Inc.
2000 "K" Street, N. W.
Washington, D. C. 20006

B National Association of Uniform Manufacturers, Inn.
112 East 19th Street
New York, New York 10003

VI. DIRECTORIES

A. Apparel Manufacturers Directory. Annual. $3.00

Haire Publishing Company
111 Fourth Avenue
New York, New York 10003

List 5,000 suppliers of garment industry fabrics, trimmings, machinery and equipment.

B. Ready to Wear Directory. Semi-annual. Free.

Fairchild Publications
Directory Division
7 East 12th Street
New York, New York 10003

New York City women's apparel manufacturers.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professional engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the :

National Society of Professional Engineers
2029 K Street, N.W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

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Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

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This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.

NDUSTRY PROFILES

LIGHT BULB ASSEMBLY PLANT

I. P. No. 67399
S. I. C. 3641

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

Industry Profiles contain basic information on market aspects, production rates, capital requirements, materials and supplies, utilities, manpower operating costs and sales revenues. Work-flow diagrams and, in some instances, machinery layouts are included along with references to sources of technical information, professional services, patents, materials and equipment.

The profiles adopt as a benchmark, productivity rates and costs which could be anticipated under conditions prevailing in the United States. Anticipated profits are before taxes. Since conditions vary widely from country to country, the entrepreneur using this profile must make suitable adjustments to conditions prevailing in his country, This profile should help in reaching correct assumptions.

I.P. No. 67399
S.I.C. 3641
DECEMBER 1967

LIGHT BULB ASSEMBLY PLANT

PRODUCT DESCRIPTION

Standard base light bulbs in 25, 40, 60, 75, and 100 Watt sizes. Other types of incandescent bulbs can be manufactured at a later date, economically, as needs arise.

A. GENERAL EVALUATION OF PROSPECTS

This plant requires an investment of approximately $269,000 and employs 45 people. Production is on a semi-automated basis with estimated production of eleven million units per year. Further automation can be added gradually as production rises to meet sales. Automation can double the number of units produced annually while using only half of the work force; however, this would require more investment in equipment.

B. MARKET ASPECTS

1. USERS

Homes, commercial, industrial and institutional establishments in any area where electric power is available.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales will be made to wholesalers for distribution in stores and direct to municipalities and large institutions. The market needed to support the output of this plant will depend primarily on the extent of electrification within the country. It is not practical to base sales potential on population alone since electrification is the prime requisite. A comprehensive survey should be made to determine the number of families and number of industries having power available for utilization of these products. The extent of the domestic market will encompass all areas where electric power is available. Light bulbs cannot be manufactured in small plants. Competition from domestic producers should be negligible. This plant should be able to export to neighboring countries and, if the demand is great enough, should be able to reduce costs sufficiently, through full automation, to meet overseas export competition.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $760,000.
The total fixed investment, plus working capital, is estimated at $269,000.
The annual gross profit, before taxes, is estimated at $82,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 10.8%.
(A gross profit on sales, before taxes, of 10.8%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at about 30.5%.

5. COST PER MAN EMPLOYED

Thirty-three direct and twelve indirect workers, or a total of forty-five workers, are employed.
The total fixed capital investment is estimated at $143,000.
Based on these figures, the fixed investment per man employed would amount to about $3,175.

C. PRODUCTION REQUIREMENTS - LIGHT BULB ASSEMBLY PLANT

I.P. No. 67399
S.I.C. 3641

ANNUAL CAPACITY-ONE SHIFT OPERATION: 11,000,000 UNITS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - about 2 acres	
Building - one story 60′ x 100′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 143,000

Principal items:
7 Wire welding stations
13 Glass joining & processing stations
6 Assembly stations
1 Marking station
1 Evacuate and fill station
1 Packaging machine
Miscellaneous transfer & handling equipment

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 126,000
c. Total Capital Requirements	$ 269,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Bulbs, stems	11,000,000	
Tungsten filament	11,000,000	
Bulb bases	11,000,000	
Dumet filament & support wires	1,200 lbs.	
Copper lead wire	1,000 lbs.	
Solder & cements		
Cartons & packaging		
Total direct materials		$ 316,000

b. Supplies

Lubricants & hand tools
Cutting tools & abrasives
Maintenance & spare parts
Office supplies
Gas, oil and maintenance of truck

Total supplies $ 11,000

c. Availability of materials & supplies

Some materials may have to be imported. All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - about 1.04 million KWH - connected load	
Fuel - about 65,000 cu. ft. gas	
Water - sanitation and fire protection	$ 21,000

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 13,200

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisors	2	
Office	4	
Maintenance	1	
Inspectors	3	
Truck Driver	1	
Total indirect labor	12	$ 86,000
b. Direct labor		
Skilled workers	2	
Semi-skilled workers	4	
Unskilled workers	27	
Total direct labor	33	$ 140,000

c. Training needs

The manager and 2 supervisors should be fully experienced. They with the help of 2 skilled workers should be able to train the other workers and reach full production in 30 days.

6. TRANSPORTATION

a Own transport equipment

Truck

b. External transport facilities

In and out shipment about 3 tons per day. Good highways essential.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 316,000	
Direct labor	140,000	
Manufacturing overhead*	131,200	
Total manufacturing cost		$ 587,200
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 36,800
Sales expense		$ 36,000
Freight-out, travel discounts Allowances & bad debts		$ 18,000
Total annual costs		$ 678,000
Annual Gross Profit		$ 82,000
ANNUAL SALES REVENUE		$ 760,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)
**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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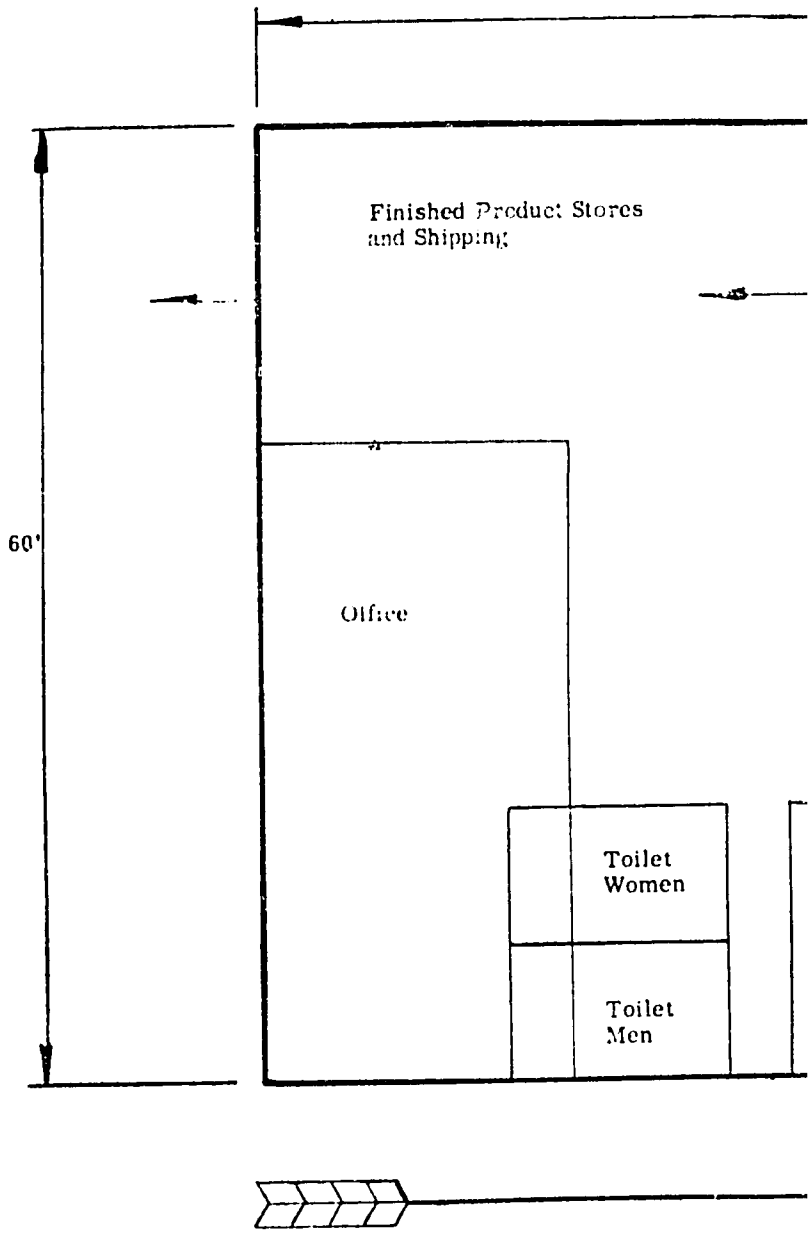
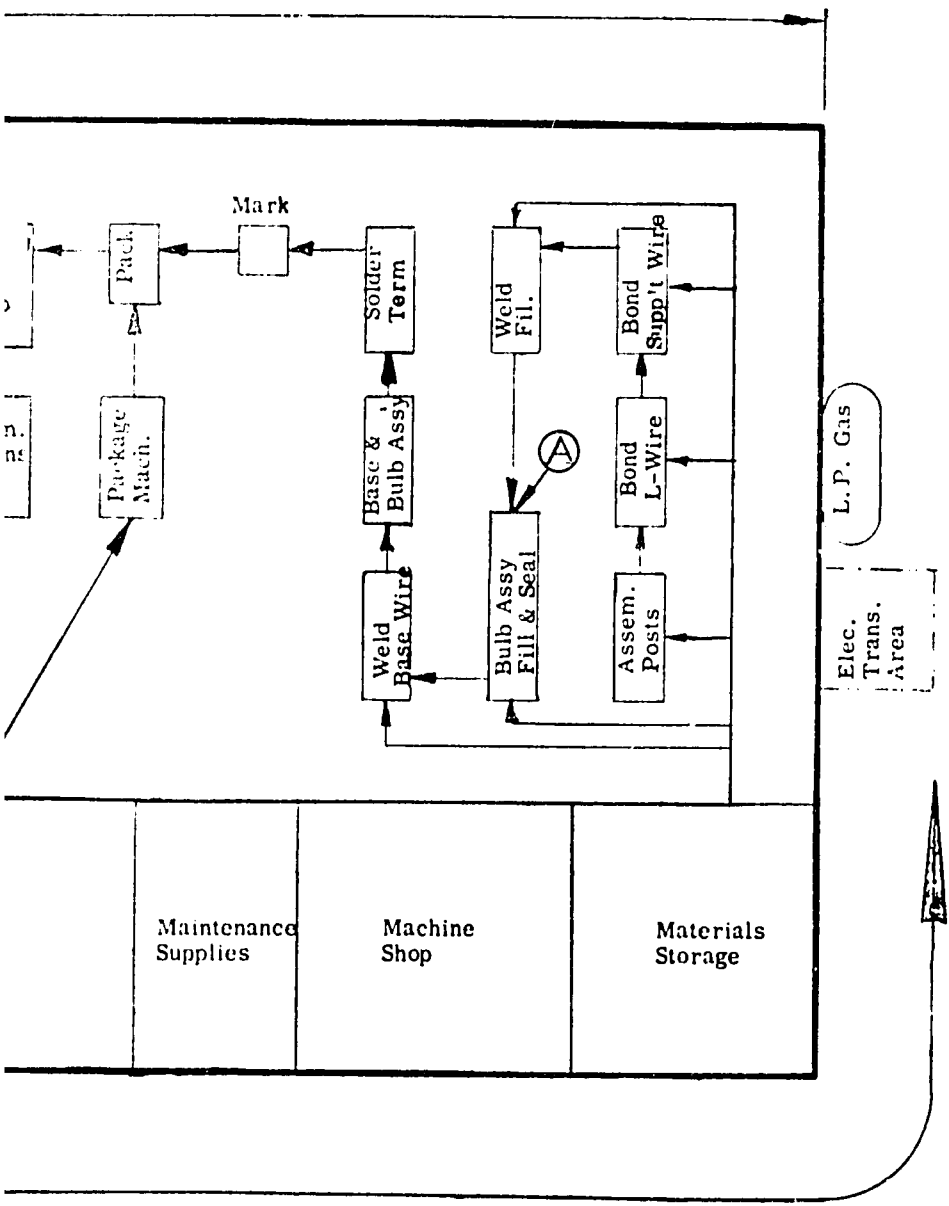

Finished Product Stores
and Shipping
60'
Office
Toilet
Women
Toilet
Men

ASSEMBLY PLANT

I.P. No. 67399
S.I.C. 3641

AND WORKFLOW



I.P. No. 67399
S.I.C. 3641

LIGHT BULB ASSEMBLY PLANT

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Properties of Glass Surfaces. L. Holland. 1964 $15.00

John Willey & Son
605 Third Avenue
New York, New York 10016

Devoted to the analysis of glass surface properties.

B. Light, Photometry, and Illuminating Engineering. William E. Barrows. 3rd Edition. 1951. 415 pp. $1050.

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

Includes data on the various types of lamps, illumination levels, utilization of luminaries and design data, together with the methods of procedure in applying these data to the design of lighting installations.

II. TECHNICAL AND TRADE PERIODICALS

A. Electrical West. Monthly. $3.00

Miller Freeman Publications
500 Howard Street
San Francisco, California 94105

B. The Glass Industry. Monthly. $6.00

Ogden Publishing Company
777 Third Avenue
New York, New York 10017

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

C. Improving Materials Handling in Small Plants. $.20

Small business management Series No. 4
U.S. Government Printing Office
Washington, D. C. 20402

Prepared by Small Business Administration to assist in the development of management in small businses.

IV. REPRESENTATIVE U. S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231. $.50 each.

A. Patent No. 3,270,238 August 30, 1966 3 p.
Electric lamp filament support.

B. Patent No 3,265,923 August 9, 1966 7 p.
Baseless double ended electric incandescent lamp.

C. Patent No. 3,254,257 May 31, 1966 4 p.
Lamp mount and component therefore.

D. Patent No. 3,253,178 May 1966 3 p.
Electric incandescent lamp - relates to a mount construction.

E. Patent No. 3,243,634 March 29, 1966 4 p.
Electric lamp and support web.

F. Patent No. 3,146,305 September 1964 3 p.
Electric incandescent lamp with a rectifying diode mounted within the lamp base.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. Incandescent Lamp Manufacturers Association
760 South 13th Street
Newark, New Jersey 07103

B. National Electrical Manufacturers Association
155 East 44th Street
New York, New York 10017

VI. DIRECTORIES

A. Directory of Verified Electrical Wholesale Distributors. Biennial. $45.00

McGraw-Hill, Inc.
330 West 42nd Street
New York, New York 10036

Supplies data on more than 3,000 electrical distributors, including lighting fixtures.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

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Springfield, Virginia 22151

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NDUSTRY PROFILES

ROCKERS, WOOD, UPHOLSTERED

I. P. No. 67400
S. I. C. 2512

Industry Profiles are intended to promote the development of private industry in the developing countries by assembling economic and technical information in a professional analysis to support basic decisions in the establishment of small or medium-scale plants in a specific industry. The information contained in a profile is selected and organized for the guidance of the entrepreneur in the less developed country.

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ROCKERS, WOOD, UPHOLSTERED

I.P. No. 67400
S.I.C. 2512
DECEMBER 1967

PRODUCT DESCRIPTION

Rocking chairs, with arms, made from wood, with upholstered seats

A. GENERAL EVALUATION OF PROSPECTS

Manufacturing processes are relatively simple. The capital requirements are moderate compared with the number of people employed and the sales volume. Technically, this industry appears well suited to the conditions of many developing countries. The main factor to consider before investing in this plant is the market potential which will depend to a great extent on the per capita income of the country. If income is excessively low in the rural areas, sales will be confined principally to urban areas. A comprehensive survey of sales potential should be made. If raw materials and sales prospects are available, this industry should prove favorable for investment.

B. MARKET ASPECTS

1. USERS

Households, hotels, clubs, etc.

2. SALES CHANNELS AND EXTENT OF MARKET

Sales would be made directly to retail stores. Competition from small furniture manufacturers, as for as price is concerned, might be keen in low-wage countries. However, this plant would have an advantage in the quality of its rockers over hand-made products. There is also a possibility of competition from cheap metal furniture but, in countries where wood is available locally, this plant should be able to compete against all other similar products in the domestic market. Low cost furniture such as that described in this profile is not usually an export item but, if some rockers were imported, this plant would have no difficulty meeting any import competition.

3. RATE OF PROFIT

It should be emphasized that the information under "Production Requirements" on the next page illustrates typical U.S. cost relationships of the various factors entering into the manufacture in the United States of a specified product. It is generally recognized that profits before taxes of manufacturers in the United States may be appreciably lower than normally would be the case in a developing country. While certain imported capital items and specialized technical services may be higher in cost in developing countries, certain other significant production costs such as semi-skilled and unskilled labor, materials and supplies obtained locally may be significantly lower. Factors vitally affecting industrial products costs and profit margins such as degree of competition, size of market, availability of labor, availability of risk capital, relative financial risk, level of industry taxes, and general economic and political stability have widely differing interrelationships and impact on the selling price and profit margin of a manufactured product in a developing country as compared with the United States. Planned operations and production limits would, of necessity, have to be adapted to cost and profit conditions existing in a particular developing country as a first step in determining whether a more intensive survey of the manufacturing possibilities for a particular product and industry is warranted.

4. SELECTED GROSS PROFIT ITEMS

(See supporting data on page 3)

The annual gross sales revenue is estimated at $1,276,000.
The total fixed investment, plus working capital, is estimated at $157,000.
The annual gross profit, before taxes, is estimated at $20,000.
Using these figures, the profit on gross sales, before taxes, amounts to about 7.2%.
(A gross profit on sales, before taxes, of 7.2%, while reflecting U.S. experience, should not be considered normal for a developing country where profit margins may be considerably higher in industry and trade.)
The annual profit on the total capital requirements, before taxes, is estimated at 12.7%.

5. COST PER MAN EMPLOYED

Seventeen direct and six indirect workers, or a total of twenty-three workers, are employed.
The total fixed capital investment is estimated at $104,000.
Based on these figures, the fixed investment per man employed would amount to about $4,525.

C. PRODUCTION REQUIREMENTS - ROCKERS, WOOD, UPHOLSTERED

I.P. No. 67400
S.I.C. 2512

ANNUAL CAPACITY - ONE-SHIFT OPERATION: 12,500 UNITS

NOTE: COSTS AND OPERATING DATA ARE BASED ON UNITED STATES PRICES AND PRACTICES**

1. CAPITAL REQUIREMENTS

a. Fixed Capital	Cost
Land - about 2 acres	
Building - one story, 60′ x 100′	
Drying kilns, 20′ x 60′	
Equipment, furniture & fixtures	
Prodn. tools & equipment	
Other tools & equipment	
Furniture & fixtures	
Transportation equipment	
Total fixed capital	$ 104,000

Principal items:

Radial saw	Spray booth
Jointer	Knife Grinder
Rip saw	Saw file
Planer	Assembly presses
2 Trim saws	
Glue jointer	
Glue reel	
Bandsaw	
Shaper	
3-Drum sander	
Horizontal forms	
Upright forms	
Chucking machine	
Bending equipment	

b. Working Capital (30 days)	
Direct materials	
Direct labor	
Manufacturing overhead	
Administrative costs	
Sales costs	
Freight-out, discounts, bad debts & allowances	
Sales revenue	
Training costs	
Total working capital	$ 53,000
c. Total Capital Requirements	$ 157,000

2. MATERIALS AND SUPPLIES

a. Direct materials	Annual Requirements	Annual Cost
Lumber	140,000 bd. ft.	
Upholstering material		
Dowels, glue and screws		
Finishing materials		
Packaging		
Total direct materials		$ 66,000

b. Supplies

Lubricants & hand tools
Cutting tools & abrasives
Maintenance & spare parts
Office supplies
Gas, oil and maintenance of truck
Total supplies $ 8,600

c. Availability of materials & supplies

All should be available locally.
All are available in world markets.

3. POWER, FUEL AND WATER

	Annual Cost
Electric Power - 100 H.P. connected load	
Fuel - scrap wood used for production and heating	
Water - sanitation & fire protection	
	$ 3,100

4. DEPRECIATION

	Yrs. life	Amount
Building	20	
Prodn. tools & equipment	10	
Other tools & equipment	10	
Furniture & fixtures	10	
Transportation equipment	4	
Total depreciation		$ 8,300

5. MANPOWER

	Number	Annual Cost
a. Indirect labor		
Manager	1	
Supervisor	1	
Office	2	
Maintenance	1	
Truck driver	1	
Total indirect labor	6	$ 47,000
b. Direct labor		
Skilled workers	4	
Semi-skilled workers	8	
Unskilled workers	5	
Total direct labor	17	$ 82,000

c. Training needs

Manager and supervisor should be fully experienced. They, with four skilled workers, should be able to train all workers and reach full production in 30 days.

6. TRANSPORTATION

a. Own Transport equipment

Truck

b. External transport facilities

Production is fifty rockers per day.
Good highways essential.

7. TOTAL ANNUAL COSTS AND SALES REVENUE

Direct materials	$ 66,000	
Direct labor	82,000	
Manufacturing overhead*	68,000	
Total manufacturing cost		$ 216,000
Interest on loans		
Insurance		
Legal		
Audit		
Contingencies		
Total administrative cost		$ 17,000
Sales expense		$ 17,000
Freight-out, travel discounts Allowances & bad debts		$ 6,000
Total annual costs		$ 256,000
Annual Gross Profit		$ 20,000
ANNUAL SALES REVENUE		$ 276,000

*Includes Supplies, Power, Fuel, Water, Depreciation and Indirect labor (2b-3-4-5a)

**It was not found practical to show individual item costs because of wide variations in price and other factors, consequently only representative totals are used.

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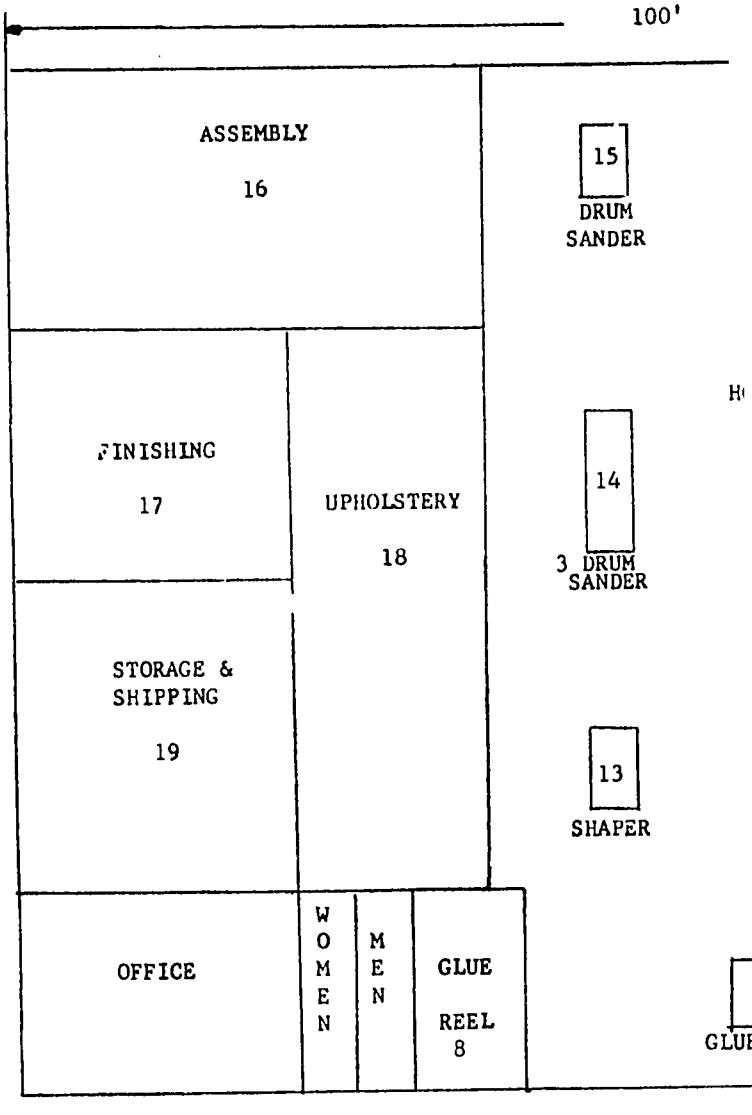

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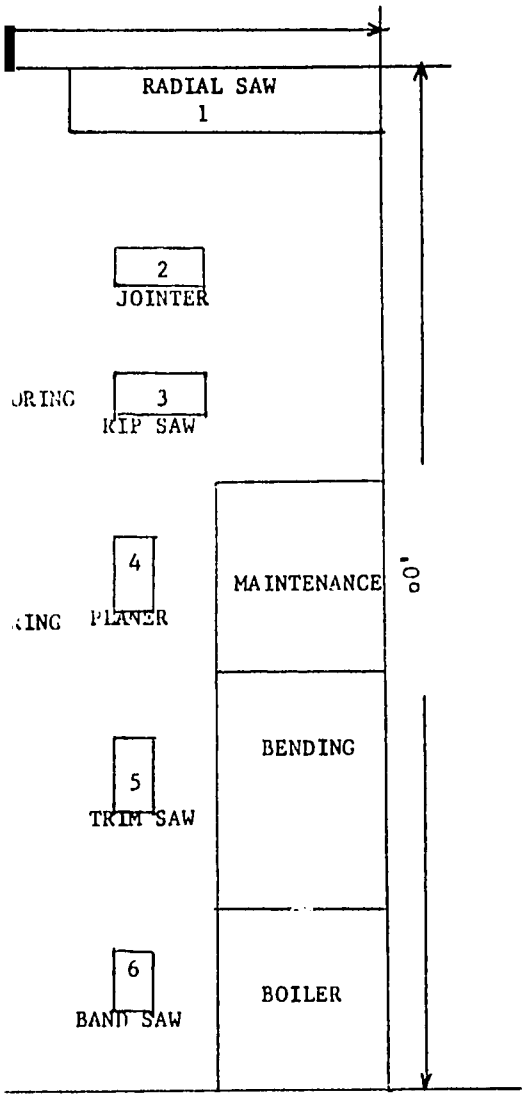
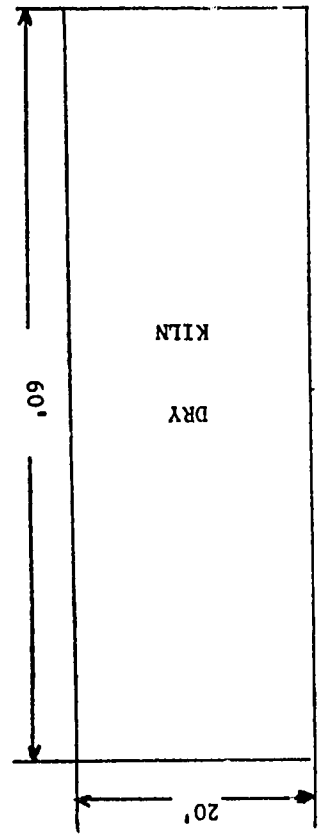
since some of the parts will not re
start with 1 and end at 18, but some
will not be any backtracking





be considered as a constant straight line flow,
ions on every machine. The flow will always
equire only a few operations. However, there

I. P. No. 67400
S.I.C. 2512

ROCKERS, WOOD, UPHOLSTERED

SELECTED REFERENCES

I. TECHNICAL AND TRADE BOOKS

A. Wood Machining Processes. Peter Koch. 1964. 530 pp. Illus. $15.00

The Ronald Press Company
15 East 26th Street
New York, New York 10010

Comprehensive illustrated guide to the basic facts, methods and relationships that govern wood machining processes.

B. General Woodworking. C. H. Groneman. 2nd Edition. 1959. 256 pp. Illus. $7.25

McGraw-Hill, Inc.
300 West 42nd Street
New York, New York 10036

Machine tool processes, portable tool processes, and hand tool processes.

C. The Chemistry of Wood. B. L. Browning. 1963. 689 pp. $25.00

John Wiley & Sons, Inc.
605 Third Avenue
New York, New York 10016

The supply and uses of wood.

II. TECHNICAL AND TRADE PERIODICALS

A. Woodworking Digest. Monthly. $5.00/year.

Hitchcock Publishing Company, Inc.
Wheaton, Illinois 60188

Devoted to industrial woodworking.

B. Furniture Manufacturer. Monthly. $3.00/year.

Vincent Edwards, Inc.
342 Madison Avenue
New York, New York 10017

Furniture components, manufacturing processes, marketing.

III. BUSINESS MANAGEMENT MATERIALS

A. The First Two Years: Problems of Small Firm Growth and Survival. Kurt B. Mayer and Sidney Goldstein. 233 pp. $1.00.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Insights and clues concerning the entire process of small business formation, growth, and decline.

B. A Handbook of Small Business Finance. Jack Zwick. 80 pp. 1965. No. 15 in the Small Business Management Series (Seventh Edition).

Superintendent of Documents
U.S. Government Printing Office
Washington, D. C. 20402

Points out major areas of financial management and describes a few of the techniques that can help small businessmen understand past decisions and to make better decisions in the future.

IV. REPRESENTATIVE U.S. PATENTS

Available U.S. Patent Office, Washington, D. C. 20231 $.50 each.

A. Patent No. 2,973,806 1961 5 p.
Process for manufacturing chairs.

B. Patent No. 2,932,121 1960 4 p.
Materials and upholstering fabrics used in making furniture.

C. Patent No. 2,612,936 October 1952 5 p.
Upholstered rocking chairs.

D. Patent No. 2,913,041 1959 4 p.
Upholstered furniture and method of construction.

E. Patent No. 2,877,832 1959 10 p.
Covers for chairs.

V. TECHNICAL INSTITUTES AND TRADE ASSOCIATIONS

A. National Association of Furniture Manufacturers
666 Lake Shore Drive
Chicago, Illinois 60611

Keeps members informed of latest developments in machinery, materials, processes and market opportunities.

B. Furuiture Manufacturers Association
103 Pearl Street, N. W.
Grand Rapids, Michigan 49502

VI. DIRECTORIES

A. Hitchcock's Woodworking Directory and Handbook. Annual. $5.00

Hitchcock Publishing Company
Wheaton, Illinois 60188

Lists producers of funiture and other wood products machinery, manufacturers for the industry and trade associations.

VII. PROFESSIONAL ENGINEERING SERVICES

The services of professional engineers are desirable in the design of industrial plants even though the proposed plant may be small.

A correct design is one which provides the greatest economy in the investment of funds and establishes the basis of operation that will be most profitable in the beginning and will also be capable of expansion without expensive alteration.

The addresses of professonal engineers who specialize in Industrial Design, some of whom may be willing to undertake such work on low cost projects overseas, can be secured by reference to the published cards in various engineering magazines.

They may also be reached through their national organizations, one of which is the:

National Society of Professional Engineers
2029 K Street, N. W.
Washington, D. C. 20006

Manufacturers of industrial equipment employ engineers familiar with the design and installation of their specialized products. These manufacturers are usually willing to give prospective customers the benefit of technical advice by those engineers in determining the suitability of their equipment in any proposed project. The equipment manufacturer also knows, and can recommend, professional engineers in private practice who are willing and able to provide appropriate consulting services.

PRE-INVESTMENT FEASIBILITY STUDY SUGGESTED

The foregoing information must be necessarily presented in concise form. Before an investment is made in a plant a feasibility study is suggested. The investor, for his planning, should have more information dealing with the specific locality contemplated. For obvious reasons, such information cannot be included in *Industry Profiles*. Such a study, therefore, should explore local factors and conditions, including costs, sources of raw materials and supplies, availability of utilities and fuel, manpower, transportation, etc.

The investor will need reasonably accurate information on Government and legal requirements, banking and financing, potential demand, competition, construction services, and manpower training requirements. Further, he should consider developing plans for management and production controls, operating procedures, and sales promotion.

ORDERING INSTRUCTIONS

The price of *Industry Profiles* is a minimum of $3.00 for from one to five "*Profiles*." The purchaser may select up to five of any "*Profiles*" available.

Complete sets of the 250 *Industry Profiles* published in 1966, I. P. No. 66001 through I. P. No. 66250 consecutively, may be purchased for $125.00 per set. Complete sets of the 150 *Industry Profiles* to be published in 1967, I. P. No. 67251 through I. P. No. 67400 consecutively, may be purchased for $75.00 per set. The latter "*Profiles*" will automatically be shipped to full set purchasers upon release.

Address orders to: U.S. Department of Commerce
Clearinghouse for Federal Scientific and
Technical Information, 410.12
Springfield, Virginia 22151

Prepayment is required. Make check or money order payable to National Bureau of Standards—CFSTI. Clearinghouse deposit account holders may charge purchases to their accounts.

GENERAL INFORMATION

An *Index of Industry Profiles* is available on request from the agency for International Development, AA/PRR, Washington, D. C. 20523.

This *Industry Profile* was prepared for the U. S. Agency for International Development by International Development Services Inc., Washington, D. C.