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SOLAR POWER
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Table of Contents

Introduction	1
Bibliographies/Resources	3
General Applications	5
Manufacturers of Solar Devices	9
Solar Energy Appurtenances	11
Collectors	11
Concentrators	13
Cookers	15
Cooling	17
Distillation	19
Dryers	21
Engines	25
Heating Systems	27
Ovens	31
Photovoltaic Cells	33
Ponds	35
Pumps	37
Refrigeration	39
Stills	41
Tracking Devices	43
Water Heaters	45
Theory and Design	49
List of Publishers	51
Order Blank	55

INTRODUCTION

The Solar Bibliography is a quarterly publication that covers a wide variety of solar energy subjects, from theory to specific applications. It lists selected documents, articles, and books from the Documentation Center of Volunteers in Technical Assistance (VITA). Each entry includes an abstract that summarizes its contents.

Entries in the Bibliography that are marked with an asterisk (*) are available from VITA. See Order Blank, page 55, for ordering information. Orders should include the code number printed to the right of each entry. Use of these numbers will speed and simplify the processing of requests. Other documents should be ordered directly from the source. A list of publishers appears at the end of the Bibliography.

BIBLIOGRAPHIES/RESOURCES

- GRET. "Energie solaire." Paris: GRET, 1980. Pp. 2. XVIII-DA-2(A)
Addresses of groups working in solar energy in 007272
France are given.
- * National Solar Heating and Cooling Information Center. XVIII-A-3
"Sensible Solar Heat Storage." Rockville, Maryland: 007554
National Solar Heating and Cooling Information Center,
1980. Pp. 3.
Articles and reports on sensible heat storage are
listed.
- * _____ . "Solar and Alternative Energy Newsletters." Rock- XVIII-DA-2(A)
ville, Maryland: National Solar Heating and Cooling 007555
Information Center, 1980. Pp. 3.
A list of North American newsletters that carry
articles on solar energy.
- * _____ . "Solar Standards Organizations." Rockville, Mary- XVIII-DA-2(A)
land: National Solar Heating and Cooling Information 007556
Center, 1980. Pp. 3.
Lists organizations involved in the development of
solar standards.
- Tata Energy Research Institute. "Indian Solar Energy Resources 18-DA-2,TAT
Index 1975-79." Bombay: Tata Energy Research Institute, 015096
1980. Pp. 80.
Index of major Indian resource papers on all
aspects of solar energy.

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GENERAL APPLICATIONS

- Cosse-Maniere, Caroline. "Le soleil et nous." Palaiseau, France: Societe Francaise d'Editions et d'Informations Regionales, 1979. Pp. 60. XVIII-DA-1(FRE) 007652
Introduces the possibilities of solar energy to the layman. Discusses solar heating for homes, thermodynamic conversion of solar energy for use in solar motors and solar power plants, photovoltaic cells, biomass, and solar chemistry. Describes current techniques and projects. Lists where further research is needed.
- Economic and Social Commission for Asia and the Pacific. Proceedings of the Meeting of the Expert Working Group on the Use of Solar and Wind Energy. New York: United Nations, 1976. Pp. 147. XVIII-DA-1,P2 007131
Contains the report of the meeting and technical documents presented by the participants at the gathering of the Expert Working Group on the Use of Solar and Wind Energy. The technical documents discuss solar energy research, wind energy research, and integrated systems using solar and/or wind devices.
- GRET. "Sechage solaire: unites de mesure, definitions." Paris: GRET, 1980. Pp. 2. XVIII-DA-1(FRE) 007725
Explains different units used in measuring heat.
- Lede, J. et al. "Pyrolyse-flash de dichets lingo-cellulosiques en vue de leur valorisation par l'energie solaire concentree." Revue de Physique Appliquee 3 (March 1980):545-552. Pp. 8. XVIII-CC-2(FRE) 007283
A process of valorization of wood wastes by flash pyrolysis using concentrated solar energy has been proposed. Experimental studies done with Douglas fir sawdust in electric and image furnaces at temperatures between 7000 and 1000°C (simulating temperatures achieved with concentrated solar energy) yielded carbon monoxide and hydrogen with only negligible amounts of light hydrocarbons. A highly technical paper.
- * National Physical Laboratory. "Research and Development on Solar Energy." New Delhi: Tara Art Press, 1980. Pp. 33. XVIII-DC-1,P2 007264
Discusses the applications of solar energy and the research being done by the National Physical Laboratory, which is the agency in India devoted to research development in solar energy.
- Oregon Department of Energy. "The Oregon Sunbook." Salem, Oregon: Oregon Department of Energy, 1980. Pp. 42. XVIII-DA-1,P4 007275

- Gives consumer information for selecting and installing a solar system. It is written for the North-west section of the United States and highlights building codes, legal rights and solar energy incentive programs in that section of the country.
- Preparatory Committee, United Nations Conference on New and Renewable Sources of Energy. "Report of the Technical Panel on Solar Energy at Its Second Session." New York: UNIPUB, 1980. Pp. 48. XVIII-DA-1,P4
007843
- Provides information on the present status of solar technologies, identifies their constraints, suggests measures to overcome the constraints, and recommends suitable solar technologies for areas of different climatic and socio-economic conditions.
- Regalsky, Pablo. "Energia solar en Bolivia." Cochabamba, Bolivia: Centro Pedagogico y Cultural de Portales, 1981. Pp. 12. XVIII-DA-1(SPA)
015165
- Brochure that introduces solar energy and its applications. Advertises a solar conference EXPOSOL, held in Cochabamba, Bolivia, from 23-31 May 1981.
- Spencer, Dwain F. "L'Energie solaire vue sous l'angle d'une Compagnie d'Electricite." Paris: Electricite de France, 1977. Pp. 24. XVIII-DA-1(FRE)
007675
- Article translated from English, which looks at solar energy from the point of view of an electric company. Discusses the capacity and economic factors of electricity generated by photovoltaic cells and solar power plants, and solar heating of homes.
- Touchais, Maurice. "L'Energie solaire et sa maitrise industrielle, fascicule no. 4." Villeneuve-Loubet, France: ESTREL, 1979. Pp. 57. XVIII-DA-1(FRE)
007661
- The fourth of a series whose aim is to instruct people working in industry on solar energy techniques. This part discusses the technical problems that still have not been solved in various industrial solar energy applications.
- United Nations. Proceedings of the Workshop on Biogas and Other Rural Energy Resources Held at Suva, and the Roving Seminar on Rural Energy Development Held at Bangkok, Manila, Tehran, and Jakarta. New York: United Nations, 1979. Pp. 152. 18-A-4,UNI
007647
- Gives the report and recommendations of the workshop and the seminar. Contains papers that were presented at the seminar on firewood, biogas, solar energy, wind-power, agricultural wastes, rural electrification, small hydro-electric plants, geothermal energy and ocean thermo-electric conversion. Some of the papers are abridged versions.
- United Nations Industrial Development Group. Techniques d'utilisation de l'energie solaire. Vienna: UNIDO, 1980. Pp. 160. 18-DA-1,UNI(FRE)
0015155

Examines the utilization of solar energy in developing countries. It gives technical papers on a variety of solar energy applications: solar distillation, drying of agricultural products, heating and cooling. Includes summaries of country and institution programs on solar energy. Available in English (VITA no. 2216) and Spanish (VITA no. 15156).

. Tecnologia para aprovechar la energia solar.
Vienna: UNIDO, 1979. Pp. 169.

18-DA-1,UNI
015156
(SPA)

Examines the utilization of solar energy in developing countries. It gives technical papers on a variety of solar energy applications: refrigeration, swimming pools, water distillation, food drying, heating and cooling. Includes summaries on country and institutional programs on solar energy. Available in English (VITA no. 2216) and French (VITA no. 15155).

U.S. Department of Energy. Proceedings: Open Workshops on Solar Technologies, 23 and 24 October 1979. Washington, D.C. Springfield, Virginia: NTIS, 1980. Pp. 221.

18-DA-1,UNI
007591

Details the deliberations, conclusions, and recommendations of six panels asked to provide advice to the Department of Energy on solar energy in cities and solar energy and employment. Recommends increased funding, conservation, outreach programs, small business funding and solar training programs.

Working Group for Development Techniques. "Solar Energy, Simple Applications." Amsterdam: TOOL, 1981. Pp. 30.

XVIII-DA-1,P4
015119

Gives a general overview of several simple applications of solar energy: solar collectors, solar water heating, solar distillation, solar cooking and solar drying of agricultural produce.

MANUFACTURERS

- Gordon Publications. "1980 Solar Buyers Guide." Solar Heating and Cooling 5 (March 1980). Pp. 108. XVIII-DB-1
007141
Of particular interest in this issue is a list of manufacturers of solar products and a list of distributors by states in the United States. Also includes a list of manufacturers by type of products.
- McPhillips, Martin, ed. The Solar Age Resource Book. Harrisville, New Hampshire: Solar Age, 1979. Pp. 242. 18-DB-1, MCP
007735
List of solar equipment and systems with descriptions and addresses of manufacturers. Smaller buyer's guides for wood stoves and wind products. Also includes sixteen articles on various aspects of selecting and building solar systems for the home.
- Novelerg. "Novelerg." Paris: Nodelerg, 1979. Pp. 25. XVIII-A-2, P2
007265
Gives a summary of the products and services that Novelerg offers to individuals and industries. Also contains a brief description of research topics that the Compagnie Generale d'Electricite has decided to give priority in research.
- Solar Age. "Solar Products Directory." Solar Age 5 (April 1980):38-105. Pp. 68. XVIII-DB-1
007262
Lists individual companies and the solar products that they manufacture under twenty-eight product categories.

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SOLAR ENERGY APPURTENANCES

Collectors

- Awot, Alfred E. "Heat Exchange Apparatus." Patent no. 2,907,318. Arlington, Virginia: U.S. Patent Office, 1959. Pp. 3. XVIII-DC-2
007494
Gives a patent for reflector type of solar heat collector. It uses corrugated sheet ducts and finned tubing that are connected for discharging liquid fluid as well as heated air.
- Bolon, Paul. "Ferrocement Solar Collectors for Space Heating." Popular Science 218 (June 1981):14, 16. Pp. 2. XVIII-DC-2
007811
Describes a solar collector made of ferrocement that is installed in the ground. The collectors are used for space and water heating. Plans are available for US \$5 from Arnold Kirkewoog, the designer.
- _____. "In Missouri: Seasonal Wall Collector." Popular Science 218 (February 1981):42. P. 1. XVIII-DC-2
007281
Briefly describes a disposable solar wall made of a role of polyethylene sheeting. It is hung on the south wall of a garage for the winter and removed in the spring.
- Brunet, P. "Sechage solaire: le capteur a air." Paris: GRET, 1980. Pp. 4. XVIII-DC-2(FRE)
007723
Explains the theoretical notions that make solar collectors work. Includes list of French manufacturers of solar collectors.
- _____. "Sechage solaire: typologie des capteurs a air." Paris: GRET, 1980. Pp. 4. XVIII-DC-2(FRE)
007724
Discusses different types of solar air collectors and absorbers.
- Commissariat a l'Energie Solaire. "Sechage solaire: les couvertures transparentes de capteurs solaires, fonctions et choix." Paris: GRET, 1980. Pp. 4. XVIII-DC-2(FRE)
007722
Describes the functions of transparent covers for solar collectors. A chart compares various materials used for covers.
- Dysinger, Dave et al. "Collector Test Report: Puerto Rican Solar Collector." Butte, Montana: NCAT, 1980. Pp. 36. XVIII-DC-2
007474
Contains the data and results of thermal performance tests conducted by the National Center for Appropriate Technology on a Puerto Rican solar collector. The

collector was manufactured by Comite de Trabajadores Para Ayudar Al Consumidor in Puerto Rico.

- * Garg, H. P., and Gupta, B. K. "Flat-Plate Collectors with Selective Surfaces." Invention Intelligence 16 (January 1981):31-36. Pp. 6. XVIII-DC-2
007668
Discussion of the properties of various coatings of solar collectors and their ability to absorb solar radiation.
- Heid, Walter G., Jr. "The Young Solar Collector: An Evaluation of Its Multiple Farm Uses." Washington, D.C.: U.S. Department of Agriculture, 1981. Pp. 14. XVIII-DC-2
015177
Describes the design and performance of an efficient solar collector used for grain drying and home heating developed by a Nebraska farm couple and the Small Farm Energy Project. The collector is portable, can be tilted to receive the maximum solar radiation, and features a flexible airflow system.
- Madsen, Per, and Goss, Kathy. "Report on Non-metallic Solar Collectors." Solar Age 7 (January 1981):28-32. Pp. 5. XVIII-DC-2
010395
Reports on nonmetallic solar collectors, mainly those made of polymeric plastic materials. Concludes that plastic collectors are an important part of the solar industry and that their performance is comparable or superior to metal flat-plate collectors in low-temperature applications at a lower price.
- Nagaraja, R. "Criteria for Commercial Development of Flat-Plate Collector for Developing and Under-Developed Countries." Hospet, India: Ravi Printers, 1980. Pp. 23. XVIII-DC-2
007527
Design and performance criteria for flat-plate collectors are outlined. Suggests criteria for the commercial development of flat-plate collectors to encourage their manufacture.
- Touchais, Maurice. "L'Energie solaire et sa maitrise industrielle, fascicule no. 2" Villeneuve-Louvet, France: ESTREL, 1979. Pp. 49. XVIII-DC-2
007659
The second of a series whose aim is to instruct people working in industry on solar energy techniques. This part discloses industrial solar collections and their use in industry for medium temperature applications.
- Working Group for Development Techniques. "Solar Energy, Simple Applications." Amsterdam: TOOL, Inc., 1981. Pp. 30. XVIII-DA-1,P4
015119
Gives a general overview of several simple applications of solar energy: solar collectors, solar water heating, solar distillation, solar coating, and solar drying of agricultural produce.

Concentrators

- Daniels, F., and Breihan, R. R. "Miroirs solaires paraboliques." Rivesaltes, France: Daniel Fargeas, 1974. Pp. 2. XVIII-DC-3 (FRE)
007276
Explains for methods for making a parabolic solar mirror. It is made of plastic with an aluminized plastic covering mounted on a support.
- Groupe d'Etudes de Fours Solaires a Applications Tropicales. XVIII-DC-3 (FRE)
007608
"Applications thermiques de l'energie solaire en concentration pour l'artisanant et l'industrie." Paris: GEFOSAT, 1979. Pp. 11.
Summarizes a research report that gives the results of the development of a solar oven by GEFOSAT. The oven generates solar concentrated heat at high temperatures, which is used immediately as it cannot be stored. It has applications for firing ceramics, glazing pottery, and alloying aluminum.
- Touchais, Marice. "L'energie solaire et sa maitrise industrielle fascicule no. 3" Villeneuve-Loubet, France: ESTREL, XVIII-DC-3 (FRE)
007660
1979. Pp. 54.
The third of a series aim to instruct people working in industry on solar energy techniques. This part discusses industrial solar concentrators of thermal function and their use in industry for high temperature applications and solar power stations.
- Walton, J. D., Jr. "Development of the Spiral Fresnel Concentrator." Atlanta, Georgia: Georgia Institute of Technology, 1980. Pp. 4. XVIII-DC-3
010427
Describes the development of a new, simple, light weight, point focusing concentrator known as the Georgia Tech Spiral Concentrator. It is formed by cutting a computer generated spiral pattern from a sheet of flat material.

Cookers

- Beblavi, James C. "Thermal Energy Storage for Domestic Solar Cooking." Denver, Colorado: Martin Marietta Aerospace, 1978. Pp. 22. XVIII-DD-1,P2
007139
- A technical proposal is given for the development of a portable personal solar cooker that retains heat. The concept of cooking with stored solar energy using ammoniated salts is a technology that can be developed by Martin Marietta Aerospace.
- Bowman, Thomas E. "Solar Cookers: Test Results and New Designs." Melbourne, Florida: Center for Research on Energy Alternatives, 1978. Pp. 26. XVIII-DD-1,P2
007266
- Gives the results of test performances on four Telkes ovens, two Adams cookers, three direct-focusing cookers, two steam cookers, and three combined-focusing oven cookers. Some factors considered were time to boil one to three liters of water, energy storage, capacity, ease of maintenance, and materials cost. Three new designs for combined focusing/oven cookers are presented.
- Halacy, Beth, and Halacy, Dan. The Solar Cookery Book: Everything Under the Sun. Culver City, California: Peace Press, 1978. Pp. 108. XVIII-DD-1.1
007479
- Gives instructions and plans for building an inexpensive solar oven and reflector cooker. Contains a comprehensive section of recipes that were tried and tested on the solar cookers.
- * Kulkarni, P. K. Firewood Crisis: Solar Cooker Has a Useful Role in Villages. Pune, India: By the author, Mohor, 64/17 Erandavane, 1980. Pp. 6. XVIII-DD-1,P2
007128
- Describes the design and performance of a concentrator type solar cooker developed by the author that is known as the Jaydip solar cooker. Draws a comparison between biogas plants, firewood plantations, and solar cookers for supplying energy needs for cooking.
- * Popali, S. C.; Yardi, N. R.; and Jain, B. C. "Cooking at Low Temperatures: Energy and Time Requirements." Proceedings of Indian Academy of Sciences C2 (September 1979):331-37. XVIII-DD-1,P2
007543
- Energy and time requirements for cooking rice, potatoes, and green vegetables on an electrical heater were computed. The information can be used for designing efficient solar cookers.
- Working Group for Development Techniques. "Solar Energy, Simple Applications." Amsterdam: TOOL, 1981. Pp. 30. XVIII-DA-1,P4
015119

Gives a general overview of several simple applications of solar energy: solar collectors, solar water heating, solar distillation, solar coating, and solar drying of agriculture produce.

Cooling

- Anderson, Bruce, and Wells, Malcolm. Passive Solar Energy: The Homeowner's Guide to Natural Heating and Cooling. Andover, Massachusetts: Brick House Publishing Co., Inc., 1981. Pp. 194. 18-DE-1,AND
007500
- Comprehensive reference in nontechnical terms on passive solar heating and cooling. Explains solar windows, solar chimneys, solar walls, solar roofs, and rooms. Also discusses solar building design basics.
- de Winter, Francis, ed. Workshop Proceedings: Solar Cooling for Buildings, February 6-8, 1974, Los Angeles, California. Washington, D.C.: Government Printing Office, 1975. Pp. 231. 18-DE-3,WIN
007590
- Papers presented at the workshop dealing with the problems of solar cooling of buildings. Various absorption and heat pump systems were proposed and implementation problems dealing with current buildings and building practices were discussed.
- Lazzarin, Renato. "Control Problems in Solar Cooling Plants." Padova, Italy: Istituto di Fisica Tecnica dell' Università di Padova, 1978. Pp. 20. XVIII-DE-3
007278
- Discusses various control modes of solar cooling plants. The control system is very important as it compensates between solar input and load demand. Different plants are examined with different control systems and operational modes.
- _____. "Theoretical and Experimental Performance of LiBr Absorption Coolers." Padova, Italy: Istituto di Fisica dell' Università di Padova, 1978. Pp. 19. XVIII-DD-4
007279
- Equations and theoretical formulas are given for the absorption cycle of a refrigerating machine. By study of the actual cycle of a Yazaki absorption machine, the parameters involved in the design of a solar cooling plant are brought out.
- Solar Dwelling Designs. New York: Sterling Publishing Company, 1980. Pp. 144. 18-DE-1
007629
- Provides a concise report on existing solar dwellings and solar heating/cooling and solar domestic hot water systems. Discusses design considerations and numerous dwelling and site design concepts.
- Sovrano, Mario. "A Review of Solar Absorption Cooling." Padova, Italy: Istituto di Fisica Tecnica dell' Università di Padova, 1978. Pp. 20. XVIII-DE-3
007280

Presents a brief account of work in solar operation of absorption cooling systems. Although solar cooling is not economically competitive with solar space heating, past and continued research may change that condition. The use of a water-lithium bromide solution for solar absorption refrigeration seems promising.

Distillation

Talbert, S. G.; Ebling, J. A.; and Lof, G. O. G. Manual on Solar Distillation of Saline Water. Springfield, Virginia: NTIS, 1970. Pp. 263.

18-DD-2,TAL
007299

Includes a historical review of solar distillation, solar still technology, data of meaningful value from basin-type solar stills that have been operated for extended periods, economics, overdue appraisal of solar distillation, and procedures for building and sizing solar stills. Emphasizes simple basin-type solar stills. Sophisticated designs are not included.

United Nations Industrial Development Group. Techniques d'utilisation de l'energie solaire. Vienna: UNIDO, 1980. Pp. 160.

18-DA-1,UNI
(FRE)

Examines the utilization of solar energy in developing countries. It gives technical papers on a variety of solar energy applications: refrigeration, swimming pools, water distillation, drying of agricultural products, heating and cooling. Includes summaries of country and institutional programs on solar energy. Available in English (VITA No. 2216) and Spanish (VITA No. 15156).

Technologia para aprovechar la energia solar. Vienna: UNIDO, 1979. Pp. 169.

18-DA-1,UNI
(SPA)

Examines the utilization of solar energy in developing countries. It gives technical papers on a variety of solar energy applications: refrigeration, swimming pools, water distillation, food drying, heating and cooling. Includes summaries on country and institution programs on solar energy. Available in English (VITA No. 2216) and French (VITA No. 15155).

Dryers

- Chang, H. S. "Solar Energy Utilization in a Greenhouse Solar Drying System." Agricultural Mechanization in Asia 9 (Winter 1978):11-15. Pp. 5. XVIII-DD-3
010582
Paper describes a greenhouse solar drying system that consists of a bulk drying module inside a specially designed greenhouse.
- Groupe de Recherche sur les Techniques Rurales. "Secador solar basculante." Paris: GRET, 1976. Pp. 3. XVIII-DD-3 (SPA)
007730
Describes a solar dryer by ITIPAT of Abidjan; originally designed for drying cacao.
- _____. "Sechoirs solaires pour produits agricoles." Paris: GRET, 1978. Pp. 3. XVIII-DD-3 (FRE)
007148
A list of addresses is given of various institutions that have developed different kinds of solar dryers.
- Instituto de Estudios Andinos. "Deshidratadora solar." Fichas de Tecnologia Popular, no. 4. Huancayo, Peru: Instituto Estudios Andinos, 1978. Pp. 4. XVIII-DD-3 (SPA)
007821
Illustrations for building a solar dryer for food from wood, glass, and metal wire.
- National Institute of Physics. Kamar pengering energi surya [Solar drying room]. Bandung, Indonesia: National Institute of Physics, 1980. Pp. 7. XVIII-DD-3 (IND)
007239
Describes the construction of a drying chamber. Zinc plate, painted black, is at the bottom of the chamber to collect energy as the sun shines on it from the side. Trays made of chicken wire are mounted in the frame above the solar collector.
- Ozsisik, M. N.; Huang, B. K.; and Toksoy, M. "Development of Greenhouse Solar Drying for Farm Crops and Processed Products." Agricultural Mechanization in Asia 12 (Winter 1981):47-52. Pp. 6. XVIII-DD-3, P2
007537
Presents the basic concept, design, and development of a rotary drum solar collector system to be used for drying crops and processed products. Results using the dryer with peanuts, rice, and vegetables are given.
- Working Group for Development Techniques. "Solar Energy, Simple Applications." Amsterdam: TOOL, 1981. Pp. 30. XVIII-DA-1, P4
015119
Gives a general overview of several simple applications of solar energy: solar collectors, solar water heating, solar distillation, solar cooling, and solar drying of agricultural produce.

FRUITS, VEGETABLES, NUTS, BEANS

- Brace Research Institute. "Sechoir solaire avec ventilateur." Quebec: Brace Research Institute, 1978. Pp. 3. XVIII-DD-3(A)
007170 (FRE)
Briefly describes a solar dryer with a fan for drying fruits and vegetables.
- Clark, C. Stuart. "Solar Food Drying: A Rural Industry." Renewable Energy Review Journal 1 (June 1981):23-37. XVIII-DD-3(A)
015182
Describes the work of the Mennonite Central Committees in Bangladesh to apply the principles of solar food drying to establish a rural food drying industry. A version of the Lawand solar dryer is used and women's groups have been set up to produce dried grated coconut.
- * de Iongh, Hans. "A Simple Solar Dryer." Bandung, Indonesia: The Documentation Center DTC-ITB, 1977. Pp. 2. XVIII-DD-3(A)
007263
Briefly describes the construction and operation of a solar dryer made of iron wire or ropes and plastic sheets. It costs approximately US\$8.00 to build.
- Headley, Oliver, and Singh, Upindranath. "Solar Drying of Crops." Trinidad and Tobago: University of West Indies, 1978. Pp. 10. XVIII-DD-3(A)
007477
Briefly describes the operation of three types of solar dryers. One is an open-cycle dryer and the others are closed-cycle dryers. Results of drying sorrel are given.
- Lawand, T. A. "Comment fabriquer un sechoir solaire pour produits agricoles." (Translated by Yolene Jumelle, Patrick Hollier, Eric Brunet.) Quebec: Brace Research Institute, 1973. Pp. 11. XVIII-DD-3(FRE)
007400
Instructions are given for building a solar dryer for agricultural products. It includes a list of needed materials and their cost. This document is also in Spanish (VITA No. 5614) and Arabic (VITA No. 6973).
- "Making a Solar Crop Dryer." Link 18 (April 1980):31-34. XVIII-DD-3(A)
010401
Gives instructions for building a simple solar dryer for fruits and vegetables. Results obtained in using the dryer with apricots, cling peaches, nectarines, and plums are reported.
- * SEP. "Frutas y verduras secas." Como Hacer Major, no. 32. Mexico: SEP, 1980. Pp. 32. XVIII-DD-3(A)
007604 (SPA)
Illustrated directions are given for drying fruits and vegetables at home using traditional methods. Also explains how to make an electric dryer and two types of solar dryers.

GRAINS

- Foster, George H., and Peart, Robert M. "Solar Grain Drying: Progress and Potential." Washington, D.C.: Government Printing Office, 1976. Pp. 14. XVIII-DD-3(B)
007526

Presents a study on using solar energy as an alternative or supplemental source for low-temperature drying of grain in the Midwest.

- Heid, Walter G., Jr. "The Young Solar Collector.: An Evaluation of Its Multiple Farm Uses." Washington, D.C.: US Department of Agriculture, 1981. Pp. 14. XVIII-DC-2
015177
Describes the design and performance of an efficient solar collector used for grain drying and home heating developed by a Nebraska farm couple and the Small Farm Energy Project. The collector is portable, can be tilted to receive the maximum solar radiation, and features a flexible airflow system.
- Muhlbauer, Stahl. "Deux sechoirs solaires pour les cereales. Inde: un instrument pour le village." Afrique Agriculture 56 (April 1980):48-49. XVIII-DD-3(B)
015136 (FRE)
This is a description of a solar bin dryer, consisting of a propeller fan, solar radiation capture device, and a storage bin with perforated floor. This solar device is made of plastic films costing between US\$4 and 6/m². Temperatures can attain more than 130°C.
- Sarr, Mamadou. "Deux sechoirs solaires pour les cereales. Senegal: un modele simple et efficace." Afrique Agriculture 56 (April 1980):46-47. XVIII-DD-3(B)
015135 (FRE)
A description of a prototype of a homemade solar tent dryer is given. The upper window panel is made of transparent plastic material 180 microns thick. Floor and back panel are covered with black plastic material. They both capture the penetrating solar radiation, leading to a considerable through current. Operational temperature is between 45°C and 50°C.
- Wieneke, W. "Bin Drying of Grain and Grass with Solar Heated Air." Agricultural Mechanization in Asia 11 (Autumn 1980):11-14. XVIII-DD-3(B),P2
010402
Discusses bin drying of grain and hay in the low temperature range of up to 8°C. Simple solar collectors are shown to be effective for this task.
- LUMBER**
- Garro, Roger Solano. "Diseno y construccion de una secadora solar de maderas." Tecnologia en Marcha 2 (January-March 1980):5-14. Pp. 10. XVIII-DD-3(C)
007538 (SPA)
Construction details, efficiency, and cost are given for a small solar dryer for wood. Discusses methodology for drying wood.

Engines

- Butti, Ken, and Perlin, John. A Golden Thread. Palo Alto, California: Chesire Books, 1980. Pp. 289. 18-DE-1,BUT
007171
Gives a historical and sociological survey of solar energy applications over 2500 years of Western civilization. The early use of solar engines, solar water heaters, and solar heating for houses in Europe is traced.
- Cosse-Maniere, Caroline. "Le soleil et nous." Palaiseau, France: Societe Francaise d'Editions et d'Informations Regionales, 1979. Pp. 60. XVIII-DA-1(FRE)
007652
Introduces the possibilities of solar energy to the layman. Discusses solar heating for homes, thermodynamic conversion of solar energy for use in solar motors and solar power plants, photovoltaic cells, biomass, and solar chemistry. Describes current techniques and projects. Lists where further research is needed.
- Molara, Eusebius J., and Cebrian, John C. "Boilers and Condensers for Vapor Engines." Patent No. 230,323. Arlington, Virginia: US Patent Office, 1980. Pp. 4. XVIII-DF-2
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- Bier, C. James. "Vertical Solar Louvers: A Versatile Solar Storage and Tempering System." Ferrun, Virginia: Whetstone Branch Living School, 1981. Pp. 22. XVIII-DE-1,P3
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Introduces the possibilities of solar energy to the layman. Discusses solar heating for homes, thermodynamic conversion of solar energy for use in solar motors and solar power plants, photovoltaic cells, biomass, and solar chemistry. Describes current techniques and projects. Lists where further research is needed.
- Coxe, Edmund J. D. "Apparatus for Utilizing Solar Heat." Patent no. 1,814,997. Arlington, Virginia: US Patent Office, 1931. Pp. 6. XVIII-DE-1,P3
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- Dean, Thomas Scott, and Hedden, Jay W. How to Solarize Your House. Totown, New Jersey: Charles Scribner's Sons, 1980. Pp. 162. 18-DE-1,DEA
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Describes how to design, construct, and install in a new or existing house, a liquid-cooled, flat-plate, solar system for space and water heating. Appendices

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- * Early, Maureen. "A Solar Wind Heater That's Easy to Build." Newsday (November 23, 1975). Pp. 2. XVIII-DE-1,P3
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Briefly describes a solar heater that consists of a well insulated glass-topped wooden box divided into sections that fit into a window. It can heat a 12' X 15' room on a sunny day. It was developed by Chris Ahrens.
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- Holloway, Charlie. "Cooling with Overhangs." Southwest Bulletin 5 (March 1980):12-14. XVIII-DE-1,P3
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Gives consumer information for selecting and installing a solar system. It is written for the Northwest section of the United States and highlights building codes, legal rights, and solar energy incentive programs in that section of the country.
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Looks at the construction of two pilot installations, a Trombe wall and solar greenhouse, designed by Heliotechnic Associates International at Ladakh, India. They were built to demonstrate the advantages of solar heating to the inhabitants.
- Poole, Lee H. "Solar Heating Unit of First Presbyterian Church." Washingtonville, New York: First Presbyterian Church, 1978. Pp. 7. XVIII-DE-1,P3
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Gives plans and description of a solar heating unit made from glass, beer cans, and air ducts that help heat a church.
- Sandia Laboratories. Passive Solar Buildings. Springfield, Virginia: NTIS, 1979. Pp. 285. 18-DE-1,SAN
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Gives specific proposals for modernizing all aspects of draft animal power. Gives suggestions for improved animal breeds, harnessing devices, farming operations, vehicles, and carrying methods. See summary of report XVIII-B-1 (VITA No. 7468).
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Provides a concise report on existing solar dwellings and solar heating/cooling and solar domestic hot water systems. Discusses design considerations and numerous dwelling and site design concepts.
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Gives the results of tests performed on four Telkes ovens, two Adams cookers, three direct-focusing cookers, two steam cookers, and three combined-focusing/oven cookers. Some factors considered were time to boil one to three liters of water, energy storage, capacity, ease of maintenance, and materials cost. Three new designs for combined focusing/oven cookers are presented.
- * Comunidad San Gabriel. "Horno solar." Arlington, Virginia: VITA, Inc., n.d. Pp. 3. XVIII-DD-1.1(SPA)
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Directions are given for making a solar oven from galvanized steel or aluminum and glass.
- GRET. "Horno solar volcable." Paris: GRET, 1976. Pp. 4. XVIII-DD-1.1(SPA)
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Describes a prototype solar oven developed in Peru.
- Halacy, Beth, and Halacy, Dan. The Solar Cookery Book: Everything Under the Sun. Culver City, California: Peace Press, 1978. Pp. 108. XVIII-DD-1.1
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Gives instructions and plans for building an inexpensive solar oven and reflector cooker. Contains a section of comprehensive recipes that were tried and tested on solar cookers.
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Photovoltaic Cells

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- Introduces the possibilities of solar energy to the laymen. Discusses solar heating for homes, thermodynamic conversion of solar energy for use in solar motors and solar power plants, photovoltaic cells, biomass, and solar chemistry. Describes current techniques and projects. Lists where further research is needed.
- Crozier, Robert F. Introduction to Solar Cells and Solar Cell Projects. Cornville, Arizona: Desert Publications, 1980. Pp. 99. 18-DF-1,CRO 007396
- Provides a nontechnical introduction to solar cells. Instructions are given for building simple demonstrational models of solar cells. Includes source references for materials and suggests solar models of novelty nature that one can sell.
- Newkirk, Herbert W. "Solar Technology Applications: A Survey of Solar-Powered Irrigation Systems." Springfield, Virginia: NTIS, 1978. Pp. 45. XVIII-DF-3 010426
- Summarizes published information on solar-powered irrigation systems. (Several of the systems utilize photovoltaic cells.) It gives literature references with a description of the on-going work described in the paper.
- Russel, Mills C. "An Apprentice's Guide to Photovoltaics." Solar Age 7 (July 1981):32-36. XVIII-DF-1,P3 005179
- Evaluates current residential photovoltaic system designs. Discusses the use of the power inverter, the electrical design, and photovoltaic mounting methods.
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- Performance criteria are given for present-day photovoltaic systems in response to the Photovoltaic Research Development and Demonstration Act of 1978 (P.L. 95-590). Since the document will be updated, the term interim is used. Each criterion contains a statement of expected performances, a method of evaluation, and a commentary with further information.

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Reviews the research in Israel on developing solar pond power plants. An experimental 150-kW solar pond power plant is successfully operating at Ein Bokek.
- California Institute of Technology. "Salton Sea Solar Pond Project." Pasadena: California Institute of Technology, 1981. Pp. 13. XVIII-DF-4
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Describes a project that proposes the use of solar ponds at Salton Sea in Imperial Valley, California, to generate commercial electric power. At present, the project is at Phase 1, which involves a feasibility study. If all goes well, Phase 2 will begin in 1982 with the construction of a prototype 5-megawatt, electric-generating plant.
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- University of New Mexico. "New Mexico Gel Pond." Albuquerque: University of New Mexico, 1981. Pp. 5. XVIII-DF-4
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Briefly summarizes concept of solar ponds and describes undertaking by the University of New Mexico to develop a suitable polymer gel. A pond has been filled with a saline bottom layer and a top gel layer. Heat is extracted from the bottom to generate electricity using a rankine cycle.

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- McNelis, Bernard. "Solar Powered Water Lifting Devices for XVIII-DF-3
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Describes principal types of solar pumps that are in use or are being developed. Designs and performance are basic data to understand the principles of solar energy and its use for pumping.
- Newkirk, Herbert W. "Solar Technology Applications: A Survey of XVIII-DF-3
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- Isaak, David T. "Solar Icemakers for Rural Development: Technical Proposal." Honolulu, Hawaii: East West Center, 1980. Pp. 33. XVIII-DD-4 015158
- Brief review of the history of solar refrigeration and related technologies is followed by an introduction to refrigeration theory. Specific designs and their problems are discussed. Concludes with the potentials and economics of solar refrigeration.
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- Equations and theoretical formulas are given for the absorption cycle of a referigerating machine. By study of the actual cycle of a Yazaki absorption machine, the parameters involved in the design of a solar cooling plant are brought out.
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- Examines the utilization of solar energy in developing countries. It gives technical papers on a variety of solar energy applications: refrigeration, swimming pools, water distillation, drying of agricultural products, heating and cooling. Includes summaries of country and institutional programs on solar energy. Available in English (VITA no. 2216) and Spanish (VITA no. 15156).
- United Nations Industrial Development Organization. Technologia para aprovechar la energia solar. Vienna: UNIDO, 1979. Pp. 169. 18-DA-1,UNI(SPA) 015156
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Brief discussions of the development of the Australian solar still. Includes a feasibility questionnaire and an illustration of the solar distillation schematic. 010435
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Describes a prototype solar still built in Beirut. Its efficiency is limited in European climates as it only produces four liters of water for every meter of collector space. (SPA)
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Illustrations and description of a solar water purification unit that uses a solar collector to boil water so it is portable. Unit cost US\$3. 007734
- National Institute of Physics. "Penyuling air energi surya." [Distilling water with energy of the sun.] Bandung, Indonesia: National Institute of Physics, 1980. Pp. 6. XVIII-DD-2(A)
Describes construction of the still. Gives list of materials and costs. (IND)
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- * Ramu, N. "A New Type of Solar Still." Invention Intelligence (May 1980):202-04. XVIII-DD-2(A)
Instruction details are given for making a solar still from black slate. 010434
- "Solar Stills Developed in People's Republic of China." RCTT Technical Digest (November/December 1980):14-19. XVIII-DD-2(A)
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- Talbert, S. G.; Eibling, J. A.; and Lof, G. O. G. Manual on Solar Distillation of Saline Water. Springfield, Virginia: NTIS, 1970. Pp. 263. 18-DD-2,TAL
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Includes a historical review of solar distillation, solar still technology, data of meaningful value from basin-type solar stills that have been operated for extended periods, economics, overdue appraisal of solar distillation, and procedures for building and sizing solar stills. Emphasizes simple basin-type solar stills. Sophisticated designs are not included.

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Scott, David. "Tracking Solar Heater Uses Tap Water to Keep Its Face to the Sun. Popular Science (June 1979):82-83.

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Describes a solar water heater for sunny areas, developed by the Little Brothers of Australia, that has won two prizes at inventors' competitions. The aiming system, run by tap water, precisely tracks the sun across the sky.

Water Heaters

- Bachmann, Andreas. "Solar Water Heaters in Nepal: Basic Information." Kathmandu, Nepal: SATA, 1979. Pp. 19. XVIII-DE-2,P2
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Descriptions and pictorial representations of solar water heaters in operation in various parts of Nepal.
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- _____. Solar Water Heaters in Nepal: Installation Manual for Systems with Natural Circulation Only for Non-Freezing Areas. Kathmandu, Nepal: Swiss Association for Technical Assistance, 1979. Pp. 56. XVIII-DE-2,P3
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The basics of hot water installations are explained. Explains the principles of operation of solar water heaters with emphasis on their installation. Illustration examples are given of circulation systems and installation.
- Bainbridge, David A. The Integral Passive Solar Water Heater Book. Davis, California: Passive Solar Institute, 1981. Pp. 99. 18-DE-2,BAI
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Looks at the history of integral passive solar water heaters (IPSWH). Details for constructing a heater are given, along with listings of materials sources and available commercial models. A heater can be built by a handyman for around US\$5.
- Butti, Ken, and Perlin, John. A Golden Thread. Palo Alto, California: Chesire Books, 1980. Pp. 289. 18-DE-2,BUT
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Gives a historical and sociological survey of solar energy applications over 2500 years of Western civilization. The early use of solar engines, solar water heaters, and solar heating for houses in Europe is traced.
- Carter, Joe, and Flower, Robert G. "The Micro-load." Solar Age 5 (September 1980):22-30. XVIII-DE-2,P3
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Gives tips for reducing use of hot water in the home so there is a minimized water heating load, the micro-load. The tips range from installing low-flow generators on faucets to doing laundry in cold water. A solar water system will then need less collector area.
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Briefly describes the construction of a prototype solar water heater that was designed by J. Savorin in 1961. There is a small model and a large model.

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Briefly describes the construction of a prototype solar water heater. There is a small model and a large model.
- Dean, Thomas Scott, and Hedden, Jay W. How to Solarize Your House. Totown, New Jersey: Charles Scribner's Sons, 1980. Pp. 162. 18-DE-1,DEA 007397
Describes how to design, construct, and install in a new or existing house a liquid-cooled, flat-type solar system for space and water heating. Appendices include charts for determining U.S. solar radiation and system evaluation.
- Instituto de Estudios Andinos. "Terma solar doble plancha." Fichas de Tecnologia Popular, no. 2. Huancayo, Peru: Instituto de Estudios Andinos, 1978. Pp. 4. XVIII-DE-2 (SPA) 007823
Illustrations for building a solar collector of galvanized sheets. The collector is filled with water and has pipes connecting it to a water tank in the house.
- _____. "Terma solar ducha." Fichas de Tecnologia Popular, no. 1. Huancayo, Peru: Instituto de Estudios Andinos, 1978. XVIII-DE-2 (SPA) 007824
Illustrations for building an outdoor solar shower.
- _____. "Terma solar para fecho plano." Fichas de Tecnologia Popular, no. 3. Huancayo, Peru: Instituto de Estudios Andinos, 1978. Pp. 4. XVIII-DE-2 (SPA) 007822
Illustrations for building a solar water heater that is installed on a flat roof. It is filled with water and has a pipe releasing the hot water in a sink.
- Moss, Eric. "Solar Heater." Patent no. 761,596. Arlington, Virginia: United States Patent Office, 1904. Pp. 3. XVIII-DE-2,P2 007464
A patent that improves solar heaters through the use of a conical reflector with a cylindrical extension. Coils are extended through the reflector and water or air can be forced through them.
- Nichols, Thomas F. "Solar Heater." Patent no. 1,014,972. Arlington, Virginia: United States Patent Office, 1912. Pp. 4. XVIII-DE-2,P2 007483
A patent for a solar heater to be used to heat water or generate steam. It consists of a preliminary water heating tank, a generator pipe (which receives the water from the tank), and a series of parabolic mirrors arranged to focus the sun's rays on the generator pipe, and a means of adjusting the mirrors to catch the sun's rays.

- Schumacher, Diane, and McVeigh, Cleland. "Solar Water Heaters." XVIII-DE-2,P3
London: ITDG Publications, Ltd., 1980. Pp. 38. 007545
Informative paper that discusses the availability of solar energy in developing countries and the advantages and disadvantages of solar water heaters. Methods of installation, maintenance, upkeep problems, and economics of solar water heating are outlined.
- Schwolsky, Rick; Williams, Jim; and Ross, Alan. "Weatherproofing Domestic Hot Water Systems, Part II." Solar Age 5 XVIII-DE-2
(April 1980):27-33. Pp. 7. 007282
Continues the discussion of weatherproofing. Details in connections anchoring the collector array and in penetrations of piping passing through the building envelope. Gives techniques for limiting the exposure of penetrations with an examination of options for flat roofs.
- Scott, David. "Tracking Solar Heater Uses Tap Water to Keep Its Face to the Sun." Popular Science (June 1979):82-83. XVIII-DE-2
Pp. 2. 007150
Describes a solar water heater for sunny areas, developed by the Little Brothers of Australia, that has won two prizes at inventors competitions. The solar heater uses a simple air-hydraulic aiming system run by tap water to precisely track the sun across the sky.
- Solar Dwelling Designs. New York: Sterling Publishing Company, 18-DE-1,SOL
1980. Pp. 144. 007629
Provides a concise report on existing solar dwellings and solar heating/cooling and solar domestic hot water systems. Discusses design considerations and numerous dwelling and site design concepts.
- Stickney, Bristol. "Son of Solaroll Returns: Results of Winter Testing." Sunpaper 6 XVIII-DE-2,P2
(April 1981):25-29. Pp. 5. 007829
Results of tests made on Solaroll EDM synthetic rubber, which was used in the absorber plate in the collector and the heat exchanger element in the tank of an active water heater. Gives guidelines for proper use of this method.
- Working Group for Development Techniques. "Solar Energy, Simple Applications." Amsterdam: TOOL, 1981. Pp. 30. XVIII-DA-1,P4
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Gives a general overview of several simple applications of solar energy: solar collectors, solar water heating, solar distillation, solar cooling and solar drying of agricultural produce.

THEORY AND DESIGN

- Broda, E. "Solar Energy in the Nineteen Eighties." Renewable Energy Review 2 (December 1980):15-32. XVIII-DC-1,P2
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Discusses the state-of-the-art of solar energy. The three options available are solar-thermal, solar-electric, and solar-chemical. The solar-electric option through photovoltaic cells is very promising. The solar-thermal option through ocean thermal-electric conversion involves too large an investment.
- Brunet, P. "Sechage solaire: le capteur a air." Paris: GRET, 1980. Pp. 4. XVIII-DC-2(FRE)
007723
Explains the theoretical notions that make solar collectors work. Includes list of French manufacturers of solar collectors.
- Lazzarin, Renato. Control Problems in Solar Cooling Plants." Padova, Italy: Instituto di Fisica Tecnica dell'Universita di Padova, 1978. Pp. 20. XVIII-DE-3
007278
Discusses various control modes of solar cooling plants. The control system is very important as it compensates between solar input and load demand. Different plants are examined with different control systems and operational modes.
- * National Physical Laboratory. "Research and Development on Solar Energy." New Delhi: Tara Art Press, 1980. Pp. 33. XVIII-DC-1,P2
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Discusses the applications of solar energy and the research being done by the National Physical Laboratory, which is the agency in India devoted to research development in solar energy.
- * National Solar Heating and Cooling Information Center. "Solar Standards Organizations." Rockville, Maryland: National Solar Heating and Cooling Information Center, 1980. Pp. 3. XVIII-DA-2(A)
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Lists organizations involved in the development of solar standards.
- Solar Dwelling Designs. New York: Sterling Publishing Company, 1980. Pp. 144. 18-DE-1,SOL
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Provides a concise report on existing solar dwellings and solar heating/cooling and solar domestic hot water systems. Discusses design considerations and numerous dwelling and site design concepts.

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AnaChem, Inc. 2420 Alamo S.E., Albuquerque, New Mexico 87106 USA.

Appropriate Technology. Intermediate Technology Publications. 9 King Street, London WC2E 8HN England.

Brace Research Institute. McGill University. Ste. Anne de Bellevue, Quebec H9X 1C0, Canada.

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California Institute of Technology. Jet Propulsion Laboratory, Pasadena, California USA.

Center for Research on Energy Alternatives. Florida Institute of Technology, Melbourne, Florida 32901 USA.

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