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Task Order No. 7
Alternative Transportation Technologies,
India

Financial and Commercial
Review of Companies in the
Electric Vehicle Sector

Prepared for:



United States Agency for International Development
as part of the Energy and Environment Sector Project

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Introduction

This report is presented to the U.S. Agency for International Development to support Task Order 7 "Alternative Transportation Technologies, India" of the Energy and Environment Sector project. As requested by US AID, the report is a review and assessment of the financial and commercial viability of three U.S. companies identified by US AID. Each of these companies has active business operations in the Electric Vehicle sector and is considered a potential candidate for future activities in developing and supporting an electric vehicle market in India. This report is based on information provided by the companies through direct solicitation, available market information and interviews. Where possible, data included in this report is based on audited financial statements. However, in some cases, data is drawn from unaudited financial information and this is indicated in the report. In no way should this report be construed as a recommendation to do business with any of the candidate firms. Instead, the report presents an overview of each company's position, strategy and growth potential relative to the market.

Report Framework

The report opens with a Sector Overview, which identifies the operating environment in which the three selected companies must do business. The overview also provides sector financial and ratio standards to benchmark the selected companies. Subsequent sections provide an operational, financial, commercial, facility and product review of the companies and is designed to provide a brief, but complete picture of each firm's viability, market strategy and growth prospects, which is necessary in assessing any potential business partnership. Each of these company profiles is presented in a uniform framework to provide ease of comparison between companies. These profiles include:

- **Company Profile:** Overview of company history, business line, market position, financial position, and business objectives.

- **Strategy and Significant Developments:** Identifies company strategy relative to the EV market and highlights key alliances, acquisitions and business initiatives that support this strategy.
- **Financial Summary:** Presents key business indicators and a review of financial performance and related changes in operating position. A definition of the ratios used in this report is provided as an attachment to this report. Two items should be noted when reviewing this section. First, the EV sector is new, in many cases involving start-up operations or companies, and financial comparisons with industry standards should be made with discretion. For example, net income is negative or negligible in many cases, although the financial status and growth prospects for the company may still be strong. Second, there are important differences in financial information available for each company, as follows. Unique Mobility is a publicly traded firm and thus has greater corporate and financial information. MAC-BMC is a newly formed joint venture with minimal financial information, but is funded by the parent company, MAC, which has also provided the financial and commercial data used in this report. New Generation Motors is a recent start-up company with sufficient financial information, but minimal history to support meaningful comparisons over time. These differences should be taken in context for each company reviewed.
- **Commercial Summary:** Reviews company business objectives, relevant achievements and any salient issues that have an impact on operating environment.
- **Facility Summary:** Identifies company facilities necessary to support business objectives.
- **Product Summary:** While this report does not provide a technical assessment of company products, this section provides a review of company products essential for justifying commercial viability and growth prospects.

Sector Overview

According to Motion Tech Trends, the worldwide market for electric motors and drives is approaching \$90 billion annually. Currently, the total market for electric vehicles (EVs) is largely driven by legislative mandates both in selected U.S. states and abroad. Total EV unit sales in the U.S. are projected to grow from 56,000 in 1998 to 279,000 in 2003. Hybrid-electric niche markets are also beginning to appear. These markets include large trucks, buses and off-highway equipment, scooters and small commuter cars also known as Neighborhood Electric Vehicles. However, relatively unfavorable battery cost/performance metrics and the lack of battery charging infrastructure have relegated the all-electric vehicle to niche market status. Over the long term, a mass market for alternative-powered vehicles is expected to emerge as advances in fuel cell and hybrid-electric technologies begin to mature. Nearly all the major car companies in the world now have prototype electric vehicles.

The market in which the three assessed companies must operate is characterized by three salient features.

First, the market for electric vehicles has enormous *growth potential*. In other words, the market promises large, but likely longer-term returns. This market characteristic is a major determinant in defining company operating strategy.

Second, the market is changing from one that is dependent upon government and commercial grants and subsidies for product development to one that is driven by commercial demand and more traditional market forces. This shift is forcing EV companies to transition operations from product development to manufacturing, commercial sales and product distribution.

Third, due to the diverse nature of the technology associated with the production of electric motors, companies in the field find themselves competing in several markets simultaneously, including Technology, Mechanical, and Electric. These markets are described briefly below.

Technology - At present, the market for electric drive systems is not significant, although various legislative mandates and incentives are expected to accelerate the development of the market for vehicles propelled by such systems. What complicates this market segment is that the technology itself is changing and no standard has been defined, including the debate between electric and hybrid-electric motors. As a result, EV companies must continuously allocate sufficient funds to research and development, and position themselves to be competitive regardless of the eventual standard. Potential competitors are Hitachi, Matsushita, Siemens, Delphi, and Visteon.

Mechanical - Products are primarily for the Automotive, Aerospace, and Medical industry. The U.S. market is forecasted to be about \$25 billion by 2000. A major issue in the EV industry is precision grinding of gears required for quiet and durable gearboxes. Potential competitors are Advanced DC, Emerson Electric, General Electric, Rockwell Internat'l, Baldor, ABB, Fairfield Manufacturing, Precision Gear, and Fairlane Gear.

Electric - products primarily for the Automotive, Telecommunications, Medical and Industrial markets. The market in the U.S. is projected to grow to \$50 billion with growth being fueled by the continuing trend of original equipment manufacturers outsourcing electric components. Potential competitors are Jabil Circuit, Plexus, EFTC Corporation, Flextronics International, and Baldwin.

The following are key benchmarks and ratios used in this report. The figures are compiled by Dun & Bradstreet and are taken from SIC 3714 for Motor Vehicle Parts and Accessories, deemed the most comparable category relative to the assessed companies.

Net Worth (equity): \$2,053,833

Net Revenue: \$8,499,486

Net Income: \$356,978

Current Ratio: 2.0 (current assets/current liabilities)

Quick Ratio: 1.0 (current assets - inventories /current liabilities)

Profit Margin: 4.5 (net income/net revenue)

Return on Assets: 8.2 (net income/total assets)

Debt Ratio: 0.50 (short + long term debt/total assets)

Unique Mobility

Year Founded: 1967

Location: Golden, Colorado

Corporate Status: Publicly traded corporation on American Stock Exchange

Employees: 120

Worth: \$99.6 million

Company Profile

Unique Mobility is a 31 year old company that develops and produces high efficiency permanent magnet motors and controls for automotive, industrial and aerospace applications. From 1985 to 1995, the company's core technology focus has been on technology and drive system development for electric and hybrid electric vehicle propulsion systems. While maintaining viable operations in this sector, Unique Mobility is currently completing a three year transition program that has resulted in greater product diversity and is designed to lead to improved profitability.

Financially, Unique Mobility appears stable despite negative net incomes for the past several years. The recent sale of 626,875 shares of common stock has improved its cash position and allowed the company to acquire two corporations that support its strategic objectives of product and market diversification.

Strategy and Significant Developments

Unique Mobility maintains viable operations in the EV sector. Management views the emerging mass market for alternative-powered vehicles as having the potential to become Unique's largest commercial opportunity. The company's market position as a provider of efficient, power dense electric traction motors and electronic controls for application in battery electric, fuel cell-electric or hybrid-electric vehicles is strategically sound and allows the company to avoid having to forecast the eventual market standard. In addition, the company's diversification strategy is designed to target markets with more immediate returns

that will help increase revenues and turn an operating profit in the near term.

In the Electric Vehicle market, Unique Mobility is involved with several ventures designed to expand its market position. These include:

- In 1997, Lee Iacocca's EV Global Motors became the Company's largest shareholder with the purchase of a 10% equity position, and Unique acquired 1% of EV Global. The presidents of EV Global Motors and Unique Mobility sit on each other's Board of Directors. Unique is currently working with EV Motors and Energy Conversion Devices of Germany to develop a small electric powered van for the commercial market.
- Unique established a joint venture in Taiwan with KYMCO, Taiwan's largest producer of motor scooters with factories in Taiwan and China. In May 1998, the joint venture, called Taiwan UQM Electric Co., Ltd, launched production of small motors for KYMCO and will be KYMCO's principal supplier of electric propulsion systems. The joint venture will introduce an electric scooter in the Taiwan market in the near future to respond to Taiwan government requirements for production of electric scooters in 2000. Taiwan UQM also has a 75,000 square foot engineering and manufacturing facility in the city of Tao-Yuan for production of starter motors and alternators for KYMCO's gas scooters
- Unique Mobility continued to provide powertrain development support to Italian car designer Pininfarina to produce a two-passenger hybrid electric sports car. The car is the second in the Ethos series with a four-door, four-passenger model due soon.
- Unique Mobility announced in December, 1997 that it signed separate memoranda of understanding with Orbital Engine Corporation Limited of Australia and Koyo Seiko Co., Ltd of Japan (part of the Toyota group of companies) to develop hybrid electric vehicle power systems.
- The company is providing targeted development support to General Motors

for a hybrid propulsion system and to Ford for the development of compression motors.

Nevertheless, responding to slow growth in the electric vehicle market, Unique Mobility moved from an emphasis on development of power systems for new electric vehicles to production of product offerings that include gears, gear assemblies and a wider array of electronic devices. The corporate strategy is to become a "one stop shop" for customers that require integrated motor, gear and electronic control systems. At the same time, Unique Mobility is targeting new markets in aerospace and small vehicle production, including electric wheelchairs. Recent events that demonstrate this trend toward diversification include:

- The Company acquired Franklin Manufacturing, a \$10 million, Missouri-based manufacturer of printed circuit boards, wire harnesses and electronic assemblies. In addition to its core business, Franklin will manufacture controllers and related electronic components.
- The Company acquired Aerocom Industries, a \$2 million, Colorado-based manufacturer of precision gears. In addition to its core business, Aerocom will produce speed reduction gear sets for the Company's integrated electric power systems. Aerocom recently received an for \$3.9 million in annual revenue from Deere & Co. for complex welded clutch gear assemblies used in transmissions for off-highway equipment, such as tractors.
- Unique Mobility signed a multiyear license and supply agreement with Invacare Corporation, the world's largest producer of power wheelchairs, to manufacture Unique motors for power wheelchairs. The company also began production of the "Gearless Brushless GB™" motor, the first high volume application of a brushless permanent magnet motor with no gears in an electric propulsion system.

Financial Summary

Net Worth (equity): \$16,731,132

Net Revenue: \$4,064,732

Net Income: (\$3,266,360)

Current Ratio: 6.29 (current assets/current liabilities)

Quick Ratio: 5.67 (current assets - inventories /current liabilities)

Profit Margin: -0.80 (net income/net revenue)

Return on Assets: -0.17 (net income/total assets)

Debt Ratio: 0.13 (short + long term debt/total assets)
(based on audited financial statement March 31, 1998)

The company's financial condition strengthened during Fiscal 1998 due to the sale of 626,875 shares of common stock. As a result, Unique Mobility's current ratio and the more revealing figure of financial liquidity the quick ratio are healthy. In the previous three reporting periods (Oct. 31, 1995; Oct. 31, 1996; and Mar. 31, 1997 when the company changed its fiscal calendar), Unique Mobility showed a current ratio of 1.58; 2.24; and 2.55 respectively. At the same time, the company's outstanding debt has declined steadily since 1995 from \$2.3 million to \$1.19 million as reported in Fiscal 1998.

In the past year, both revenues and operating losses for Unique Mobility have increased substantially. Revenue for the quarter ended September 30, 1998, was \$3,387,794 compared to \$792,629 for the comparable quarter last year. Revenue for the six months ended September 30, 1998, was \$6,240,575 compared to \$2,049,791 for the comparable period last year. The growth in revenue was driven by product sales in Unique's electronic and mechanical product segments and is largely a result of sales by the firm's two recent acquisitions. Accordingly, product sales for the second quarter rose to \$2,941,800, nearly a thirty-fold increase from product sales for the comparable quarter last year. For the six months ended September 30, 1998, product sales were \$5,495,247 compared to \$346,421 for the comparable period last year. Again, sales increases largely came from operations outside the electric vehicle market.

At the same time, Unique Mobility experienced significant increases in operating losses. Operations for the quarter ended September 30, 1998, resulted in a net loss of

\$1,422,804 compared to a net loss of \$609,099 for the quarter ended September 30, 1997. Operations for the six months ended September 30, 1998, resulted in a net loss of \$2,365,056 compared to a net loss of \$854,448 for the six months ended September 30, 1997.

The balance sheet and income statement for Unique Mobility is provided as an attachment to this company summary.

Share price performance: As a publicly traded company, Unique Mobility is also subject to market fluctuations and these have shifted significantly in the past year. From a high of more than \$8 per share in 1994, the company's stock declined more than 50% to about \$3.70 per share in early 1997. From mid-1997 to early 1998, the firm's stock more than doubled to nearly \$9 per share. It is this analyst's opinion that the sharp rise was largely due to the investment of and publicity resulting from Lee Iacocca's EV Motor's company. It is interesting to note that when EV Motors subsequently engaged in a stock swap, relinquishing shares back to Unique, the company's shares dropped by more than 30%. Unique Mobility shares have since stabilized to about \$6 per share primarily as a result of new contracts received by the newly acquired firms.

Commercial Summary

Unique Mobility is reducing the proportion of its revenue base that has historically emphasized product development, largely funded by low margin government and commercial sponsors, in the EV sector that constitutes a longer term growth horizon. Instead, the company is focusing on product manufacturing and sales with higher margins and more immediate returns. The following figures reflect this commercial trend.

Over the past four years, product sales as a percentage of total revenue has climbed from 17% to 34% and is expected to continue growing. At the same time, Unique Mobility initiated an inventory write down associated with its decision to terminate past practice of batch production of specialty motors and controllers and the associated stocking of these specialty components in inventory. Coincident with this decision, the Unique intends to cease the marketing of these

products to the solar racing market, which has historically accounted for approximately \$300,000 in specialty product sales, although the company intends to continue to produce these components for customers on a custom build basis. Likewise, Unique Mobility recorded an inventory write-down on its entire line of prototype motors, controllers and associated components. The company intends to devote substantially all of its marketing, sales and engineering personnel to securing and executing development programs, both customer and internally funded, which have a higher probability of resulting in products that can be manufactured in volume and sold in existing commercial markets. Work in process inventories rose \$90,365 to \$159,825 at March 31, 1998 due to production of twenty SR286 motors and associated controls pursuant to existing customer orders.

As listed among the company's significant developments, Unique Mobility expanded its commercial portfolio in 1998 through the acquisition of two companies. The acquisition of Aerocom and Franklin has thus expanded Unique Mobility's product offerings beyond that of motors and controllers. By including gears, gear assemblies and a wider array of electronic devices, the company hopes to open opportunities to supply components to new markets and to offer "one-stop shopping" to customers that require integrated motor, gear and electronic control systems. With these transactions, Unique Mobility's revenue run-rate tripled and its order backlog jumped to more than \$20 million.

Facility Summary

Unique Mobility has its own in-house Engineering and Product Development Center. The Center includes engineering and drafting/design offices, an electronics laboratory, a mechanical assembly shop, a dynamometer test facility and an experimental garage. The electronics lab is equipped to fabricate and test both analog and digital controllers, control software and computer area networks. The power lab has the capability to test motors, generators and controllers for systems rated up to 250 horsepower.

Manufacturing operations for mechanical products — motors and gears — are

performed by two of the Company's wholly-owned subsidiaries, Unique Power Products (formed in 1997 to produce wheelchair motors for Invacare) and Aerocom Industries. These are housed together in a newly constructed 25,000 square foot facility in Frederick, Colorado. Franklin Electronics, acquired in April 1998, is a manufacturer of thru-hole and surface mount printed circuit boards, cable harness assemblies and complete electronic boxes. It is located in a 31,000 square foot facility in St. Charles, Missouri. The Taiwan joint venture, Taiwan UQM, has constructed and equipped a 75,000 square foot facility in the city of Tao-Yuan to produce starter motors and alternators for KYMCO's gasoline powered scooters.

Product Summary

Historically, Unique has developed technology primarily for application in electric and hybrid-electric vehicles. At present, the company is addressing this market with a focus on low voltage propulsion systems and auxiliary automotive components. During fiscal 1999, Unique traction drives will appear in electrically propelled wheelchairs, bicycles and scooters. Other near-term traction applications include golf carts, warehouse vehicles, neighborhood vehicles, lawn equipment, floor cleaners and sweepers and fork lift trucks. Unique has also targeted several related markets such as generators, converters, battery management systems, battery chargers, power steering pump motors, air conditioning compressor motors, fuel cell compressor motors and cooling fan motors.

Unique's integrated electric power systems consist of proprietary brushless permanent magnet motors, controllers, speed reducers (gears), advanced control software and computer area networks (CAN). These are available in power ranges from 745 W (1 hp) to 100 kW (134 hp).

Unique also has a history of integrating battery-electric propulsion systems into passenger cars, beginning with the ElecTrek all-composite sedan produced by the company from 1980 through 1983. Since that time, Unique has developed advanced motors and controllers for the following programs:

- Unique-Powered BMW El. First introduced in 1991 at the Frankfurt Motor

show, this two-door, four-passenger electric vehicle is powered by a UQM@ 32 kW brushless permanent magnet motor and solid state controller developed in cooperation with BMW.

- Ethos 3 EV Demonstrator. As a joint development by Industrie Pininfarina and Unique Mobility, this showcase vehicle demonstrates their combined resources to automotive OEMs. A UQM@ 53 kW PowerPhase™ traction drive system and NiMH batteries provide the Ethos 3 EV with sports car performance and a 240 km (150 mile) range between charges.
- Kia Sephia EV Show Car. This vehicle is one of five Kia Sephia sedans that were converted to incorporate a 53 kW PowerPhase™ electric drive system by Unique Mobility for Kia Motors (Korea).
- The Company was awarded a U.S. Patent covering phase advance control, which extends the power range of electronically commutated permanent magnet motors.
- Signed agreements with Orbital, a developer of engine components and fuel systems, to develop a hybrid electric assist powertrain concept into the Pininfarina designed Ethos HEV open sports car; and with Koyo Seiko of Japan to develop a flywheel battery which Koyo Seiko hopes to commercialize by 2000 for energy storage systems for cars, trucks and buses.
- Developed hub-mounted traction motors and controls for the U.S. Department of Transportation-funded Advanced Technology Transit Bus (ATTB) and a 4WD traction system and high-output generator for the hybrid-electric HMMWV for the U.S. Department of Defense.

**Unique Mobility
Income Statement**

	March 31, 1998	March 31, 1997	Oct. 31, 1996	Oct. 31, 1995
REVENUE				
Contract services	\$ 2,790,496	700,132	1,436,484	4,031,951
Product sales	1,274,236	152,016	611,213	701,700
TOTAL	4,064,732	852,148	2,047,697	4,733,651
OPERATING EXPENSES:				
Costs of contract services	2,635,599	631,823	1,168,757	2,781,866
Costs of product sales	980,034	132,418	570,481	594,782
Research and development	902,407	513,544	1,698,352	1,298,311
General and administrative	2,121,340	695,263	1,354,713	1,193,030
Amortization of goodwill	16,215	-	-	-
Write-down of inventory	416,736	-	-	-
	7,072,331	1,973,048	4,792,303	5,867,989
Operating loss	(3,007,599)	(1,120,900)	(2,744,606)	(1,134,338)
Other income (expense):				
Interest income	191,186	54,802	113,582	50,890
Interest expense	(96,073)	(84,704)	(202,798)	(177,051)
Equity in loss of Taiwan joint venture (note 6)	(246,648)	(24,121)	(45,164)	(11,952)
Minority interest share of earnings of consolidated subsidiary	(70,905)	(27,725)	(69,400)	(64,627)
Other	(36,321)	1,563	43,643	6,645
	(258,761)	(80,185)	(160,137)	(196,095)
Net loss	\$ (3,266,360)	(1,201,085)	(2,904,743)	(1,330,433)
Net loss per common share - basic and diluted (note 10)	\$ (.23)	(.12)	(.26)	(.13)
Weighted average number of shares of common stock outstanding	13,924,434	12,043,481	11,021,742	10,090,778
See accompanying notes to consolidated financial statements.				

**Unique Mobility
Balance Sheet**

ASSETS	March 31, 1998	March 31, 1997
Current Assets		
Cash and cash equivalents	7,005,533	5,713,557
Accounts receivable	1,105,466	389,314
Costs and estimated earnings in excess of billings on uncompleted contracts	454,738	191,885
Inventories	253,917	425,391
Prepaid expenses	158,764	115,260
Other	18,361	17,675
Total current assets	8,996,779	6,853,082
: Property and equipment, at cost:		
Land	444,480	335,500
Building	1,511,635	1,438,090
Molds	102,113	102,113
Transportation equipment	209,920	258,675
Machinery and equipment	5,605,326	1,963,146
Total Fixed Assets	7,873,474	4,097,524
Less accumulated depreciation	(2,186,805)	(1,764,288)
Net property and equipment	5,686,669	2,333,236
Investment in Taiwan joint venture (note 6)	2,044,393	2,677,730
Investment in EV Global (note 7)	1,000,000	-
Patent and trademark costs, net of accumulated amortization of \$63,542 and \$45,551 (note 13)	575,985	502,297
Goodwill, net of accumulated amortization of \$16,215 (note 2)	1,280,872	-
Other assets	853	4,354
TOTAL ASSETS	\$ 19,585,551	12,370,699
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable	389,791	169,403
Note payable to Taiwan joint venture (note 6)	-	1,345,285
Other current liabilities (note 8)	876,357	459,223
Current portion of long-term debt (note 9)	163,554	45,180
Billings in excess of costs and estimated earnings on uncompleted contracts (note 3)	450	659,807
Total current liabilities	1,430,152	2,678,898
Long-term debt, less current portion	1,029,924	726,218
TOTAL LIABILITIES	2,460,076	3,405,116
Minority interest in consolidated subsidiary	394,343	390,784
STOCKHOLDERS' EQUITY		
Common stock, \$.01 par value, 50,000,000 shares authorized; 15,394,621 and 13,042,964 shares issued	153,946	130,430
Additional paid-in capital	38,852,446	27,094,170
Accumulated deficit	(21,798,724)	(18,532,364)
Notes receivable from officers	(56,056)	(83,646)
Cumulative translation adjustment	(420,480)	(33,791)
TOTAL STOCKHOLDERS' EQUITY	16,731,132	8,574,799

New Generation Motors

Year Incorporated: 1995

Location: Ashburn, Virginia

Corporate Status: Closed-end, privately held

Employees: 28 (+12 in Egypt)

Assessed Worth: \$23.8 million

Company Profile

In October of 1995, New Generation Motors Corporation was incorporated in the Commonwealth of Virginia. The company specializes in the development and manufacture of advanced electric drive systems and components and their integration into electric and hybrid-electric vehicles. New Generation Motors' (NGM) business goal is to be a component supplier to the major automotive manufacturers, providing such products as efficient drive systems and auxiliary power units.

NGM was formed by 3 partners who worked previously together at George Washington University in research and development on high efficiency solar powered vehicles. Funding for the solar car project was provided by Ford Motor Company, General Motors Corporation, the Department of Energy and private parties. As a result of this university affiliation and use of university research facilities, NGM has been able to attract two rounds of venture capital funding. At inception, the company raised \$679,000 through an initial private offering. In 1998, NGM secured a second round of venture capital funding valued at \$4.2 million. This seed capital constitutes the foundation for the company and has significantly improved NGM's operating position.

Strategy and Significant Developments

NGM is making a planned transition from product development to product manufacturing and distribution. In the first years of operation, NGM relied on U.S. government contracts, primarily with the U.S. Army and to a lesser extent with NASA, to fund operations. The year 1998 has marked a significant shift in operations as NGM has expanded product manufacturing and

developed international partnerships for distribution in the electric vehicle market. The following list summarizes these new ventures.

- NGM received \$6.5 million in funding from the Social Fund for Development and the Global Environment Fund as part of a World Bank project with the Egyptian Ministry of Environment. As prime contractor for the project, NGM is providing the drive systems for 24 buses produced by AVS, Inc. (based in Tennessee) for shipment to Egypt to be used at the pyramids. NGM is also providing training to the Egyptian bus manufacturer, AFICO, regarding motor assembly and integration.
- In 1999, NGM plans enter a second phase with the Egyptian firm, AFICO. NGM is currently negotiating a commercial agreement with the company whereby NGM will work directly with AFICO to integrate NGM drive systems into their buses.
- Also in Egypt, NGM is working with AFICO to assemble and sell 2 and 4 passenger Neighborhood Electric Vehicles in the Middle East and Africa. Assembly was begun in November, 1998. Projected production is for 100 NEVs in 1998 and 600 for 1999.
- NGM has established a joint venture with EVT of Thailand to sell electric scooters using NGM drive systems. According to the arrangement, NGM has exclusive rights to sell scooters in the U.S. and Middle East; EVT has a corresponding agreement for East Asia. The joint venture has produced approximately 300 vehicles per month for the past six months.
- NGM is currently initiating alliances in Egypt and China for development of micro-trucks for eventual sale and distribution in the U.S. NGM will receive the trucks as rollers and then integrate drive systems prior to distribution. NGM plans for production and distribution of 200 to 300 micro-trucks in the U.S. in 1999.

- NGM signed an agreement with Global Electric Motor Cars to sell them 2,000 motors for use in pick-up trucks. According to NGM management, the drive systems are similar to those proposed for three wheel vehicles in India.

Financial Summary:

Net Worth (equity): \$1,726,373

Net Revenue: \$548,418 for 6 month period

Net Income: (\$163,143) for 6 month period

Current Ratio: 2.34 (current assets/current liabilities)

Quick Ratio: 1.01 (current assets - inventories /current liabilities)

Profit Margin: -0.29 (net income/net revenue)

Return on Assets: -0.07 (net income/total assets)

Debt Ratio: 0.31(short + long term debt/total assets)

(based on unaudited financial statement for six month period ending June 30, 1998)

NGM is a young company with minimal financial history. Accordingly, it is difficult to assess key budget, income and revenue trends that create a clear financial picture of the company. Nevertheless, the balance sheet and income statement for the previous two fiscal years do provide certain insights.

Note that data for the above cited figures are from NGM's unaudited financial statement for the six month period ending June 30, 1998. This was done to provide the most current financial information available on the company, which was deemed necessary for a new business operating in a dynamic market sector. However, the following text highlights comparable data from audited financial reports through fiscal year ending December 31, 1997. Unaudited earnings estimates and project earnings for the 3rd and 4th quarter, 1998 were also provided by NGM.

Total revenue for NGM climbed from \$371,538 in FY 1997 to projected over \$2 million for FY 1998 (revenue for the June 30, 1998 period was listed as \$571,213). The increased revenue is due to the sale of motors and controllers, as well as neighborhood electric vehicle sales in Egypt. The composition of the firm's revenue stream also shifted dramatically in the last year. For FY 1997, sales of equipment constituted 65% of total revenue with 31% coming from contracted services (the remainder came from

interest income and miscellaneous). For the June, 1998 income statement, sales had increased to 96% of total revenue and earnings from contracted services declined to less than 1% of total revenue. This change appears to represent a fundamental shift toward the production and sale of equipment for the electric vehicle market.

The shift toward equipment production and sales also had an effect on the Cost of Goods Sold. This figure increased substantially from \$128,282 in FY 1997 to \$522,025 for the six month period ending June 30, 1998. As a result, gross profit for NGM declined from \$243,255 to \$49,187 over the same period. Accordingly, net income (which reflects gross profit minus operating expenses, discussed below, and taxes) also declined from a net income loss of \$109,902 in FY 1997 to a loss of \$163,143 for the six month period in the 1st and 2nd quarters of 1998.

Although net income declined, it appears that NGM improved operating efficiency. Operating expenses (which include expenses for contract services, general and administrative costs, research and development, and depreciation) actually declined as a percentage of total revenue from 123% to 56%. To reiterate, decline in net income over the two reporting periods is primarily due to the increase in Cost of Goods Sold which, in turn, appears to reflect the company's shift toward equipment production and sales.

On the balance sheet side, NGM's financial condition improved. The current ratio (current assets/current liabilities) improved from 1.81 in FY 1997 to 2.34 by mid-1998. What is more significant is that the actual volume of total current assets increased by more than threefold over the same period to nearly \$1.5 million. At the same time, the quick ratio (current assets - inventories/current liabilities) improved dramatically, from 0.05 to 1.01 over this period. This improvement is due to a second round of private investment in the company, which totals \$4.2 million.

In mid-1998, NGM contracted with Value Management Group to conduct a Fair Market Value Analysis of the firm. Value Management Group assessed NGM in the context of the electric vehicle market and selected Unique Mobility for company

comparison since it was the only publicly-traded company comparable to NGM. Based upon the evaluation, the fair market value of NGM common and preferred stock was assessed at \$23 million to \$25 million.

Commercial Summary

As part of its Fair Market Value Analysis of NGM, Value Management Group developed a ten year discounted cash flows analysis for NGM. While optimistic, the analysis provides insight as to the company's commercial and business objectives. According to the analysis, which assumes NGM will capture less than 5% of the total electric vehicle market, NGM will achieve over \$800 million in annual revenues by 2007. Projected net income, after Cost of Goods Sold, Other Operating Expenses, depreciation, interest expense and taxes is project at over \$83 million for the same year.

What is more telling are the revenue streams projected for the company. NGM projects sale of its EV series motor/controllers for cars and scooters to constitute 23.7% of revenues by 2007. Sale of drive systems for Heavy Bus motor/controllers, AVS buses and Suzuki pickups are projected at 12% to 13% each. Sale of drive systems for a range of Neighborhood Electric Vehicles and scooters as well as for a range of clients, including for Bajaj scooters and 3-wheelers, constitute the remainder. What is most significant is that 100% of company revenues are projected to come from drive systems and related services to support the electric vehicle sector.

Facility Summary

NGM currently operates out of two facilities. The company leases 16,000 square feet of space primarily devoted to the manufacturing and assembly of motors and controllers. NGM also leases 7,000 square feet of space primarily for vehicle integration (insertion of drive systems into vehicles) and some related engineering work. As operations expand, NGM is looking to move to a larger facility of 17,000 square feet in 1999 for vehicle integration and engineering.

Product Summary

NGM's current product line includes motors, controllers and battery management

systems for platforms ranging from bicycles to buses. The company sells its products to vehicle manufacturers worldwide.

The main product manufactured and marketed by NGM motor and associated controller. According to NGM management, this product has several advantages over traditional electric motor systems, including an additional 20-30% range and is supposedly maintenance free. NGM has filed for several patents covering the critical components of the axial flux motor and controller.

In December, 1997, NGM announced a new line of motors and controllers to customers in 1998 based on the axial flux DC brushless. With NGM's proprietary variable gap technology, the motor is capable of delivering a wide torque/speed envelope without the use of gear reduction or shiftable transmission while maintaining over 90% total system efficiency. The product may be used in one, two, or four wheel drive topologies.

In 1998, NGM also announced production of a limited number of electric pickups for fleet operation. This conversion vehicle is based on a Dodge Dakota compact truck, and will be available in a two-wheel or four-wheel drive configuration. The latter is driven by four NGM high efficiency axial flux motors, making it the only available EV with independent four-wheel drive.

**New Generation Motors
Income Statement**

REVENUE	December 31, 1997	June 30, 1998
Sales	\$ 242,962.34	548,418
Services	115,508.09	5,500
Interest Income	8,723.40	5,809
Other	4,344.50	11,486
Total Revenue	371,538.33	571,213
Cost of Goods Sold	128,282.84	522,025
Gross Profit	\$ 243,255.49	49,187
EXPENSES		
Research and Development	109,382.81	91,105
Contract Services	108,325.07	18,804
Support Services	22,056.01	
General & Administrative	166,818.33	192,078
Depreciation	48,575.78	18,343
Total expenses	455,158.00	320,330
Income (loss) before tax provision	(211,902.51)	(271,143)
Provision (benefit) for income taxes	(102,000.00)	(108,000)
Net Income	(109,902.51)	163,143

**New Generation Motors Corporation
Balance Sheet**

ASSETS	December 31, 1997	June 30, 1998
Current Assets		
Cash	7,476	\$ 619,416
Accounts receivable	5,815	24,229
Inventory	457,765	849,020
Total Current Assets	\$ 471,056	1,492,666
Investment	\$ 136,498	139,678
Property And Equipment, net of accumulated depreciation	\$ 499,927	573,172
Other Assets		
Deposits	\$ 5,239	
Deferred income taxes	125,000	239,000
Land	50,000	50,000
Other		11,420
Total other assets	\$ 180,239	300,420
TOTAL ASSETS	\$ 1,287,720	\$ 2,505,936

LIABILITIES AND STOCKHOLDERS'EQUITY		
Current Liabilities		
Current portion of note payable	30,000	\$ 30,000
Current portion of obligations under capital leases	53,226	53,226
Accounts payable	158,960	556,012
Payroll and payroll taxes payable	17,485	
Total current liabilities	259,671	639,238
Long Term Liabilities		
Note payable, net of current portion	87,500	96,048
Obligations under capital leases 5	4,732	31,082
Deferred rent	15,330	13,196
Total long term liabilities	157,562	140,325
Stockholders'equity		
Common stock; \$1 par value, 25,000 shares authorize	12,413	12,972
Class A convertible preferred stock; \$ 1,000 par value, 10,000 shares authorized	771,778	857,778
Additional paid in capital	523,998	1,319,546
Stock subscriptions receivable	(164,000)	(33,078)
Retained Earnings	(273,702)	(430,845)
Total stockholders' equity	870,487	1,726,373
TOTAL LIABILITIES AND STOCKHOLDERS'EQUITY	1,287,720	\$ 2,505,936

MAC-BMC

Year Founded: 1996

Location: St. Louis, Missouri

Corporate Status: Privately held joint venture of Motor Appliance Corporation and Brushless Motor Company

Employees: 10 including MAC staff support (+25 in India)

Worth: not available

Company Profile

MAC-BMC was formed in 1996 as a joint venture between Motor Appliance Corporation and a single person operation under the name of Brushless Motor Company. The rationale for the joint venture was to combine Motor Appliance Corporation's (MAC) experience in the design and manufacture of induction motors and battery chargers for the motive power sector with the knowledge of Brushless Motor Company (BMC) in the design and manufacture of brushless motors and controls for electric vehicles.

MAC was founded in 1946 and manufactures both custom AC induction motors for original equipment manufacturers and battery chargers for industrial and commercial battery operated equipment. MAC has annual sales of \$20 million and serves as financial backer to the joint venture. The company has a 50% interest in MAC-BMC and is presently providing funding to the joint venture. MAC-BMC is also presently using the resources of MAC to support Research and Development through engineering, purchasing, accounting, sales and marketing.

Brushless Motor Company (BMC) is an individually owned company that was formed in 1992 and is involved in the design and manufacture of small brushless motors and controls. The owner of BMC is Mr. Chandu Vanjani who has over 30 years of experience in the design and manufacture of electric motors in the U.S. and India and is the principal figure in the development MAC-BMC's operations in India, discussed below.

Strategy and Significant Developments

MAC-BMC's strategic focus has been as a producer of brushless DC motors in the electric vehicle market for two wheel applications. The company is presently working on other electric vehicle applications as well as motors for conventional battery powered equipment.

The key strategic relationship for MAC-BMC is with Motor Appliance Corporation. As stated, MAC has current annual sales of \$20 million and manufactures special AC induction motors for the industrial market and battery chargers used in battery operated equipment. The company operates 2 manufacturing facilities totaling 125,000 square feet in Missouri and Arkansas. MAC's customer base includes some of the leading Original Equipment Manufacturers producing battery-powered equipment, including JLG (scissor-lifts), Yamaha (golf cars), Tennant (floor care), and Crown (lift trucks).

MAC-BMC's business focus is currently directed at establishing manufacturing operations in India of brushless motors and controllers for domestic sale and export primarily to the U.S. market. To this end, MAC-BMC has achieved the following over the past 18 months:

- In 1997, MAC-BMC established an exclusive alliance with an Indian firm, Kinetic Engineering, which makes 2-wheel mopeds and scooters for the local market. Together with Kinetic Engineering, MAC-BMC formed a joint venture, Kinetic Electric Vehicles, Ltd (KEVL). KEVL is 74% owned by MAC-BMC and 26% owned by Kinetic Engineering.
- As part of the joint venture, KEVL will produce motors and controllers in India for installation in electric bicycles. Production of the motors and controllers began recently and is currently running at about 300 units per month. The plan is to produce 1,000 units per month by 1999.
- MAC-BMC entered into a contractual relationship with Currie Technologies, Ltd., whose CEO is former CEO of Hughes Aircraft, a division of General Motors. MAC-BMC will sell motor and

integrated speed control units produced in India to Currie Technologies for installation in electric bicycles. In turn, Schwinn bicycle has an exclusive agreement to sell the Currie Technologies propulsion system on their bicycle products in the U.S.

Financial Summary for MAC

Net Worth (equity): \$748,416

Net Revenue: \$3,157,731

Net Income: \$266,109

Current Ratio: 1.71 (current assets/current liabilities)

Quick Ratio: 0.82 (current assets - inventories /current liabilities)

Profit Margin: 0.08 (net income/net revenue)

Return on Assets: 0.03 (net income/total assets)

Debt Ratio: 0.90 (short + long term debt/total assets)
(based on audited financial statement December 31, 1997)

Motor Appliance Corporation is a financially stable company with a consistently positive net income. Last year, net income more than double over the previous fiscal year although net sales declined slightly. The company has a "good" credit appraisal from Dun & Bradstreet, which results from positive payment information and D&B's own assessment of the company's December 31, 1997 abridged financial statement.

MAC-BMC has only in the last few months begun product sales of motors and controllers in India for export in electric bicycles to the U.S. market. As a result, revenue is negligible and MAC-BMC was unable to provide more detailed financial information on their operations, preferring instead to provide information on MAC as the principal financial backer. Further financial analysis of MAC-BMC is thus not possible.

Commercial Summary

MAC-BMC's commercial operations are centered in their joint venture manufacturing facility located in Bombay, India. The commercial contract with Currie Technologies Ltd., whose end products will go on Schwinn bicycles, appears to establish viable revenue base for the short term.

This year, MAC-BMC plans to expand production and sales of brushless motor units

primarily for the U.S. market, but also for domestic sales in India. Company management has also stated intentions to build on existing technical capacity and expand the design and manufacture of brushless motors and controls from a broader range of electric vehicles.

Facility Summary

MAC-MBC has a 5,000 square foot facility in the Los Angeles area primarily for motor and controller research and development, basic engineering and development of prototype vehicles.

MAC-BMC has also established a manufacturing facility in Bombay, India. The 16,000 square foot facility is presently producing brushless DC motors. The staff of 25 is, according to management, growing rapidly.

Motor Appliance Corporation, with headquarters located in the St. Louis, Missouri area, provides engineering, purchasing, accounting, sales and marketing support to the joint venture.

Product Summary

As technology and product differentiation is a key component of MAC-BMC's market strategy and growth potential, the following product summary provides greater detail on MAC-BMC product capabilities.

MAC-BMC builds a variation on the BLDC motor, which is a brushless motor with permanent magnets that uses an electronic control to sequence the windings to provide rotation. This motor is differentiated from brush DC motors due to the absence of a segmented commutator and carbon brushes, which act as a mechanical system to sequence windings. A brushless motor is made up of two subsystems. The magnetic/mechanical system (motor) and an electronic system (drive). The BLDC motor produced by MAC-BMC is designed with an inverted motor. In this case, inverted means that the rotor rotates outside the stator, which is composed of steel laminations with copper windings. Conventional motor design has the stator on the outside and the rotor inside the stator. MAC-BMC management believe their design

configuration is more efficient to produce and operate.

MAC-BMC motors are marketed according to frame sizes of 15, 34, 56, 67 and 125 and range in diameter from 1.5 inch diameter to 15 inch diameter- The power of the motor ranges from 10W to 10KW. MAC-BMC's controls are both open and closed loop. They are designed for either AC or DC voltage input in both low and high voltage-

MAC BMC also acquired exclusive worldwide rights to the patented ElectroTurbine technology for motive power applications from American Motion Systems in March 1998. ElectroTurbine technology allows for a variable torque constant, which defines how much torque a motor will develop as well as the motor's speed capabilities. ElectroTurbine technology overcomes the traditional speed versus torque dilemma by adjusting performance for either torque or speed depending on the requirements at any point in the applications duty cycle without the need of mechanical gearing. ElectroTurbine technology uses a patented stationary arrangement of a DC field winding and an AC winding. Adjusting the current applied to the DC field coil allows for the capability of a variable torque constant. The variable torque constant also allows for greater starting torque with less current draw as compared to conventional motor technology, which means less battery power is required to start the motor.

Motor Appliance Corporation
Statements of Income and Retained Earnings

	For The Years Ended December 31		Percent	
	1997	1996	1997	1996
Net Sales	\$18,812,728	19,537,199	100.00%	100.00
Cost Of Sales	15,654,997	16,763,578	83.21	85.80
Gross Profit	3,157,731	2,773,621	16.79	14.20
Operating Expenses	2,179,614	2,070,017	11.59	10.60
Operating Income	978,117	703,604	5.20	3.60
Other (Income) Expenses	545,493	518,585	2.90	2.66
Income Before Income Taxes	432,624	185,019	2.30	.94
Provision For Income Taxes	166,515	73,176	.89	.37
Net Income	266,109	111,843	1.41%	.57
Retained Earnings, January 1	480,605	368,762		
Retained Earnings, December 31	\$ 746,714	480,605		

Motor Appliance Corporation Balance Sheets

ASSETS	December 31, 1997	December 31, 1996
Current Assets		
Cash and cash equivalents	\$ 160,368	109,793
Accounts receivable	2,653,646	2,690,402
Sundry receivables	3,771	3,247
Inventories	2,960,827	2,794,620
Prepaid expenses	98,886	87,445
Total Current Assets	5,877,498	5,685,567
Property, Plant and Equipment		
Land and improvement.	66,445	66,445
Buildings and improvements	1,135,408	1,132,907
Machinery and equipment	2,451,855	2,364,323
Patterns, tools and dies	1,563,348	1,529,912
Furniture and fixtures	380,691	351,595
Laboratory equipment	73,809	64,146
Total Fixed Assets	5,691,556	5,552,332
Less - Accumulated depreciation	4,397,515	4,159,569
	1,294,641	1,392,763
Other Assets		
Investment in joint venture	1,128,454	556,710
Deposits and other	59,165	62,054
Reorganization costs	49,362	53,476
License agreement	43,167	46,970
Patents	15,673	15,572
Total Other Assets	1,295,821	734,782
TOTAL ASSETS	\$8,467,360	7,813,112

LIABILITIES AND SHAREHOLDERS EQUITY	December 31, 1997	December 31, 1996
Current Liabilities		
Notes payable - banks	\$1,125,000	1,145,000
Current maturities of long-term debt	227,739	200,898
Accolint5 payable	1,870,336	1,364,646
Accrued salaries and comm., ~5sions	61,353	89,494
Accrued income taxes payable	103,484	33,231
Accrued retirement plan contribution	30,000	-
Total Current Liabilities	3,417,912	2,833,269
Long-Term Debt, less current maturities	4,226,947	4,429,400
Deferred Income Taxes	74,085	68,136
Shareholder's Equity		
Common stock authorized 30,000 shares, \$1 par value; issued 1,702 shares	1,702	1,702
Retained earnings	746,714	480,605
Total Shareholder's Equity	748,416	482,307
TOTAL	8,467,360	7,813,112