Profiles of Major Suppliers to the Automotive Industry

Volume 4: North American Automotive Parts and Components Suppliers

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16. Abstract

This study summarizes extensive information collected over a two-year period (October 1978 to October 1980) on suppliers of parts and components, materials, and machine tools to the automotive industry in the United States. The objective of the study was to provide data and information in support of analyses of the U.S. automotive industry. The results of this effort are published in seven volumes --- Volume I: Overview; Volume II: Iron, Steel, and Aluminum Suppliers to the Automotive Industry; Volume III: Plastics, Glass, and Fiberglass Suppliers to the Automotive Industry; Volume IV: North American Parts and Component Suppliers to the Automotive Industry; Volume V: Multinational Automotive Parts and Components Suppliers; Volume VI: Foreign Automotive Parts and Components Suppliers; and Volume VII: Machine Tool Suppliers to the Automotive Industry.

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PREFACE

Automobile manufacturers, in general, produce only selected, key elements and subassemblies for their final product, and rely on a widespread and complex logistics network including material suppliers, foundries and fabricators for wide variety of other necessary components going into the finished automobile.

Because of the importance of the automobile industry to the United States and to the world economy, it is important to understand the makeup of the logistics infrastructure and to understand its internal interrelationships and workings with the industry it supports.

The purpose of this study was to gather all possible and pertinent information on suppliers to the automotive industry, and to present it in a form for ease of reference and further analysis.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

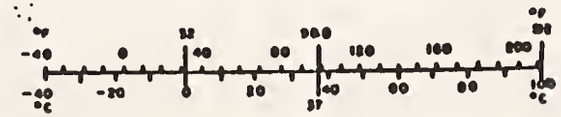

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (Continued)

LIST OF ILLUSTRATIONS (Continued)

LIST OF ILLUSTRATIONS (Continued)

LIST OF ILLUSTRATIONS (Continued)

LIST OF ILLUSTRATIONS (Continued)

LIST OF ILLUSTRATIONS (Continued)

LIST OF TABLES

SUMMARY

This report on North American parts and components suppliers to the automotive industry is one of seven reports on companies that supply materials, parts and components, and machine tools to automotive manufacturers. It is part of a major study being sponsored by the U.S. Department of Transportation, Transportation Systems Center (DOT/TSC), to gather and assess publicly available information on the behavior and response of major materials, parts and components, and machine tool suppliers to changing conditions in the automotive industry.

STUDY BACKGROUND AND OBJECTIVES

This study is being undertaken to help government decision makers increase their understanding of transportation-related industries and to provide them with basic industry information. The information should prove useful in the evaluation of economic impacts caused or encouraged by government regulations. It can also help determine the economic effects of future regulations.

Recent fuel shortages and government mileage regulations are causing the major automobile manufacturers to redesign their cars and produce smaller and lighter vehicles. These changes in automotive design are leading to a change in the requirements for parts and components purchased from automotive suppliers.

Shock absorbers, for instance, will soon be replaced in many cases by MacPherson struts used in front-wheel-drive cars. Brakes are being redesigned in lighter configurations and plastic and aluminum are being used to manufacture master cylinders. In almost every part of the car new technology and new designs are being introduced. As parts and components suppliers respond to and adjust to these changes, decisions are made that can have significant economic impacts, especially on local employment trends and economic activity.

SCOPE OF THIS REPORT

This report provides a detailed view of the response of North American parts and components suppliers to new car needs by looking at specific companies that are important in the industry. In addition, it provides a baseline of data that can be used to track industry changes or predict industry response to future regulations.

Eleven important parts and components suppliers to the auto industry are covered in this report. For each company, information is provided on:

- Company size and structure, including revenues, profit and employment statistics and corporate organization
- Major markets and products, including percent of sales to the auto industry, major automotive products, sales strategy, new product plans and market strategy
- Production and operations, including location, products and employment of major automotive facilities and plans for plant expansions
- Financial status including profitability and investment return, capital spending, capital structure and working capital management
- Research and development plans, including budgets and nature of work
- Labor and government relations, including government-industry interaction and company-union interaction.

The report places special emphasis on company plants and operations, focusing heavily on the location of the plants, plant capacity, major automotive products and planned expansions to the plants. This information is of particular significance since major decisions are continually being made (e.g., decisions regarding plant shutdowns, new plant development and plant expansion) which are likely to have far-reaching impacts.

METHODOLOGY

Information for this report was obtained, wherever possible, from published sources. These include:

- Magazine and trade journal articles
- Annual reports and 10Ks
- Security analysts' reports on companies
- Company marketing literature and advertisements
- Annual meeting speeches
- Speeches before the New York Society of Security Analysts
- Plant guidebooks.

In addition, plant-specific information generally required contacts with the companies. Some information, such as specific customers supplied by particular plants and plant capacity, was generally found to be proprietary and thus could not be included in this report. Other information, such as the location of plants that do supply a significant amount of their output to the auto industry, could usually be obtained.

ORGANIZATION

This report begins with an overview that presents the size and structure of the parts and components industry, its relevance to the auto market and the key issues currently confronting the industry. Following the overview, company analyses are given for 11 major corporations in the industry.

1. PARTS AND COMPONENTS INDUSTRY OVERVIEW

The automotive parts and components industry is more closely associated with and more heavily dependent upon automotive manufacturers than the other industries already covered in this series of reports, such as the steel industry or the plastics industry. The major effect of automotive change on this industry is a "redesign" of parts and components rather than a change in the volume of consumption. Most parts and components suppliers have found automotive technical change an opportunity for sales of new products with innovative technology and higher margins. Perhaps more importantly, automotive innovation has greatly increased the importance and the independence of the parts and components suppliers.

1.1 MAJOR NORTH AMERICAN PARTS SUPPLIERS

Table 1-1 lists the major North American and U.S.-based multinational parts and components suppliers to the auto industry along with the company sales, percent of sales to the auto industry, total sales to the auto industry, major automotive products and estimated portion of sales to OEM. The companies represented on this list are U.S.-based companies serving both the U.S. and foreign automotive markets.

The companies selected for analysis in this report are shown in Table 1-2. These companies are large and considered to be predominantly domestic rather than multinational although many have operations overseas. In addition, companies were chosen so that a broad range of products would be covered, and preference was given to firms with large original equipment sales.

1.2 SIZE AND STRUCTURE OF THE INDUSTRY

The parts and components industry is very large, about the size of the steel industry in terms of sales and employment. A great many companies make up the industry, and the companies are diverse in size and product.

TABLE 1-1. NORTH AMERICAN AND U.S.-BASED MULTINATIONAL PARTS AND COMPONENTS SUPPLIERS

Supplier	Estimated Sales to Auto Industry, 1979* $ Millions	Total Sales 1979 $ Millions	Major Products	Estimated Portion of Sales to OEM**
Bendix	$1,953	$3,829	Brakes, steering systems, fuel systems	Medium
Rockwell	1,853	6,176	Plastic parts, electronics and truck parts	High
TRW	1,778	4,560	Chassis, engine and steering system components	Medium
ITT	1,720	17,197	Disc brakes, McPherson struts	Medium
Eaton	1,646	3,360	Valves, springs, emission control systems	High
Dana	1,574	2,761	Frames, clutches, pistons	High
Borg-Warner	1,168	2,717	Rear axle assemblies, manual transmissions	High
Budd	963***	1,284	Frames, hoods, fenders	High
Tenneco	785	11,209	Exhaust systems, shock absorbers, emission controls	Low
Fruehauf	784	2,451	Brakes, wheels, valves	Medium
Champion Spark	597	807	Spark plugs, wipers	Low
Federal Mogul	557	663	Bearings, engine products	Medium
Colt	535	2,141	Carburetors, intake manifolds, fuel pumps	High
Sheller-Globe	499	656	Hoods, fenders	High
Gould	486	2,024	Batteries	Medium
Arvin	325	493	Mufflers, catalytic converters	Medium
A.O. Smith	443	836	Frames, structural parts	High
Maremont	324	338	Shock absorbers	Low
Timken	321	1,282	Roller bearings	High
Armstrong Rubber	303	394	Tires	Low
McGraw-Edison (Wagner)	230	1,331	Brakes	Medium
Motorola	190	2,713	Radios, electronic controls	Medium
Houdaille	81***	350	Bumpers	High
Irvin	80***	64	Seat belts	High
Goodyear	Not Available	8,239	Tires	Medium
Signal Co. (Garrett)	Not Available	4,241	Turbochargers	High
Firestone	Not Available	3,284	Tires	Medium
B.F. Goodrich	Not Available	2,988	Tires	Medium
Uniroyal	Not Available	2,575	Tires	Medium
General Tire	Not Available	2,295	Tires	Medium
AMP	Not Available	1,013	Electrical components	--
National Semiconductor	Not Available	720	Semiconductors	High
Intel	Not Available	663	Electrical components	High
Hoover Universal	Not Available	601	Aluminum and plastic products	--
Stewart-Warner	Not Available	366	Gauges, speedometers	High
Belden	Not Available	291	Electrical components	Low
Simpson	Not Available	124	Machined parts	High
Delco Remy	Not Available	Not Available	Electrical components	High

* Includes autos, trucks, OEM and aftermarket
** Low implies less than 30%, Medium: 30-70%, High: More than 70%
*** 1977 data

TABLE 1-2. FIRMS SELECTED FOR ANALYSIS IN THIS REPORT

Company	Products
Arvin	Mufflers, catalytic converters
Champion Spark Plug	Spark plugs
Dana	Frames, clutches, piston rings
Delco Remy	Ignition systems, batteries
Eaton	Valves, springs
Fruehauf (Kelsey-Hayes)	Brakes, wheels
Gould	Batteries
Motorola	Radios, electronic engine controls
Sheller-Globe	Stampings, hoods, fenders
Tenneco (Walker and Monroe)	Exhaust systems, shock absorbers
Timken	Roller bearings

1.2.1 Size

It is estimated that approximately 2,000 suppliers sell $40 billion worth of parts to the auto industry each year.[1] This represents about two-thirds of the total sales of these companies.[2] Total employment within the companies is in excess of 400,000 people.[3]

1.2.2 Structure

Many of the companies that supply the auto industry are quite small; only about 900 companies employ 20 or more workers. It is estimated that the top 20 companies supply more than 25 percent of the market.

The auto companies make many of their own components. General Motors and Ford Motor Company manufacture 50 percent and 44 percent of the components they consume, respectively, while Chrysler and American Motors manufacture less than 35 percent of the components they incorporate in their vehicles.

1.3 PRODUCTS

While most companies manufacture many different parts, each is still usually identified with one or two primary products. Various industry products are listed below along with major companies in each segment.

- Frames. The largest manufacturer of frames is A.O. Smith Corporation. Other companies in the field include Dana Corporation, Budd Company (Thyssen A.G.), and Midland Steel Products.

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1 "Detroit's New Face Toward its Suppliers," Business Week, September 24, 1979, p. 140.

2 "No Dramatic Change Seen by Auto Suppliers," Iron Age, December 3, 1979.

3 Standard and Poor's Auto Industry Analysis.

- Wheels and Tires. The largest producer of wheels is Kelsey-Hayes (part of Fruehauf Corporation). Other companies include Motor Wheel (part of Goodyear) and Budd Company. Major tire manufacturers include Goodyear, Firestone, Uniroyal and General Tire.

- Brakes. Major brake producers include Kelsey-Hayes, Goodyear, Budd Company, Bendix, Delco Products (General Motors), Lear Siegler and Raybestos Manhattan.

- Ball and Roller Bearings. The automotive industry is the largest user of bearings. According to Standard and Poor's Industry Surveys, eight domestic producers of bearings probably account for 90 percent or more of the industry total. These are Timken Company, General Motors, Textron, SKF, Federal Mogul, TRW, Gulf & Western, and Federal Bearings.

- Batteries. Delco Remy Division of General Motors is believed to be the largest producer of automotive batteries (starting, lighting, and ignition) and is a major producer of maintenance-free batteries. Other battery producers are ESB (part of Inco Ltd.), Globe-Union, Gould, General Battery (Northwest Industries) and Eltra Corporation.

- Exhaust Systems. The exhaust system market includes mufflers, catalytic converters and connecting pipes. Major manufacturers include Arvin Industries and Walker (part of Tenneco).

- Carburetors. Major carburetor producers are Holley (part of Colt Industries) and Carter.

- Engine and Drivetrain Parts. This segment includes valves, springs, pistons, piston rings, axle assemblies, etc. Major companies in this area include Eaton, Dana, TRW, Borg-Warner, Sealed Power, Bendix, and others.

- Shock Absorbers. This segment includes producers of the MacPherson struts usually used in smaller cars. Major companies include Monroe (part of Tenneco), Delco Products (part of GM), and Maremont Corporation.

- Electrical Parts. Manufacturers of ignition systems include Delco Remy (the largest producer), Echlin, Prestolite (part of Eltra) and Robert Bosch. Major producers of auto radios are Delco Remy and Motorola. Producers of automotive electronic components include Bendix, Motorola and Delco Electronics.

1.4 MARKETS

Parts and components suppliers have three separate types of markets for their products as follows:

- Original Equipment Market (OEM): Automotive products sold directly to vehicle manufacturers as parts for new vehicles

- Aftermarket: Automotive products sold through a complex distribution system that are used to maintain/repair vehicles-in-use

- Non-Automotive: Products related to automotive which are sold to a host of other industries, i.e, marine, aerospace, communications, energy industries, etc.

Most larger suppliers, and even many smaller suppliers, participate in all three markets. Strategic business decisions for parts and components suppliers are often related to balancing their market and product development activities among the three markets. The relatively large capital investments required for mass production of parts and components and the inherent nature of many of the product lines limit the flexibility of many suppliers to respond rapidly to shifts in markets and product technology.

1.4.1 Original Equipment Market (OEM)

The original equipment market contains a small central group of large industrial customers. The market is characterized by extreme competition, high quality and production standards, and tight profit margins. In addition, sales volumes are very cyclical, since they are tied to motor vehicle sales, which in turn are highly sensitive to North American business cycles.

Marketing to the OEM manufacturers is very different from selling to the aftermarket. Suppliers must maintain contacts with a number of different departments of the

major auto producers, such as engineering, manufacturing, service and purchasing, working closely with the auto manufacturers to develop new components. Once specifications for components are established, the auto manufacturers can ask for competitive bids, and companies that participated in the product development may have a considerable advantage due to their expertise. Most contracts are for the model year with some flexibility of volume depending on auto sales. However, sometimes auto manufacturers will favor companies that helped with development and award them long-term contracts.

In addition to the risks of the business cycle, the OEM market is highly sensitive to vehicle manufacturers' make/buy decisions for many parts and components; i.e., the large vehicle manufacturer can decide to make the particular component in its own facilities. For obvious reasons, vehicle manufacturers always attempt to maintain multiple sources of supply for critical components. In times of expanding vehicle production and little fundamental change in component technology, price competition among suppliers will be intense. Suppliers, however, must generally maintain a position in the OEM market to sell in volume to the aftermarket.

Companies often considered original equipment suppliers are those manufacturing wheels, frames, axles, bearings, valves, brakes, bumpers, carburetors and padding. Such companies include Bendix, Dana, Eaton, TRW, Timken, Kelsey-Hayes and Sheller Globe. OEM parts are generally long-life parts, a high percentage of which are expected to last the life of the vehicle in service.

1.4.2 Aftermarket

Unlike the original equipment market the aftermarket is a more stable source of component sales volume. While aftermarket sales are influenced by a number of factors, this market is often viewed as counter-cyclical for some products; i.e., during economic downturns motorists keep their cars longer and require more replacement (aftermarket) parts. Many suppliers view a strong position in the aftermarket as a stabilizing influence on company revenues.

Selling to the aftermarket requires expertise in advertising and distribution. Aftermarket suppliers advertise to both the consumer and the retailer and also sponsor special promotional discounts and contests. Sales are generally made to jobbers and retailers, and product availability and speed of delivery are important in making sales.

As North American motorists exhibit a trend toward longer average vehicle life, many forecasters have predicted strong long-term growth in the aftermarket. This has encouraged some suppliers to increase their aftermarket participation. A few large companies have even forwardly integrated into ventures in automotive repair and service activities.

Companies that make spark plugs, batteries, mufflers, shock absorbers and filters are often considered aftermarket companies. Examples of these companies are Echlin Manufacturing, Genuine Parts, Monroe Auto Equipment and Champion Spark Plug. Many of these companies are also very important original equipment suppliers. However, the aftermarket is much larger than the original equipment market for their products, which are typically "high turnover" maintenance and service items that must be replaced a number of times in the life of an automobile.

1.4.3 Non-Automotive

Most companies labeled automotive parts and components suppliers, especially the larger companies, have a diversified range of products. These product lines may be spinoffs of automotive technologies, acquisitions of technologies/products that enhance their automotive-related business or even totally separate unrelated product lines or business ventures.

When business difficulties are encountered in the basic automotive supplier activities, some companies respond by attempting to diversify. Such strategic decisions will vary widely as the profiles of the North American parts and components manufacturers in this report clearly indicate.

1.5 MAJOR TRENDS AFFECTING THE INDUSTRY

This is clearly a period of fundamental structural change in the North American automotive parts and components industry. The late 1970's were a period during which the confluence of major trends in technology, markets, products, regulations and the worldwide motor vehicle industry reached a crisis stage for many suppliers. The trends are highly interrelated, but the catalyst which triggered the inevitable structural change was U.S. consumer auto buying behavior. The combination of the rapid shift in consumer preferences to small fuel-efficient vehicles, coupled with an economic downturn resulting in

a decline in total vehicle sales, exacerbated the already delicate situation of independent parts and component suppliers. During the decade of the 1970's suppliers experienced the following:

- Increased government regulation of their products, the products of their OEM customers, and their manufacturing facilities (EPA, OSHA)

- Increased pressure from OEM customers for improved quality and lower prices on standard parts and components, i.e., shrinking margins

- Significant reduction in the OEM market for components as Japanese vehicle manufacturers (hence Japanese suppliers) gained market share

- The beginning of technological changes (now rapidly accelerated) to motor vehicles that made many traditional products obsolete and required investment in R&D and new manufacturing facilities.

What appears to be emerging are major structural changes in the supplier industry in the following areas:

- Automaker/Supplier Relationships
- Technology Shifts Affecting Markets and Products
- Diversification and Broader Market Perspectives
- Emphasis on Quality and Productivity.

Each is discussed below, but all are interrelated.

1.5.1 Automaker/Supplier Relationships

In the '60s when product innovation was not extensive and there was a limited need for research and capital investment, single-year contracts between automakers and suppliers were common. Under the highly competitive bidding system, profit margins were thin and suppliers did not have the working capital or the sales security to do extensive research and development or invest in new manufacturing facilities. There was also a trend toward vertical integration in the auto industry with the automotive manufacturers buying supplier companies to assure supply and increase profits.

In the early 80's the situation is radically changed as domestic vehicle manufacturers are investing $70 to 80 billion to radically change the design of their products and the facilities in which these products are made. Domestic manufacturers' resources are stretched as declines in sales eat into available capital. Increasingly, vehicle manufacturers are turning to suppliers for new products. Suppliers who are willing to share the risks of innovation now have opportunities for multiyear negotiated contracts, as manufacturers will be forced to rely on the technical expertise of suppliers. Automakers are no longer inclined to purchase suppliers but instead are calling for strong competitive research and development activities by an independent supplier industry. Suppliers with the capability to perform in this new environment can grow and prosper. Others who fail to recognize and respond to the winds of change will find rapidly shrinking markets for their outdated products.

1.5.2 Technology Shifts Affecting Markets and Products

Changing automotive technology and downsizing are affecting specific parts and components markets in different ways. For the most part, though, suppliers seem to feel downsizing is helping their businesses. A survey of 200 major supplier companies, conducted by Ward's Auto World, found that 57 percent of the respondents felt automotive downsizing was having a positive effect on their companies and products while only 25.5 percent felt the effect was negative. One vendor commented that the company had short-term cash flow problems but the long term looked good. Another commented that downsizing had improved the company's product development areas and stimulated manufacturing and research areas.

Some of the ways in which downsizing and fuel-efficient vehicle design are affecting product areas are listed below.

- Frames. Frame makers are building smaller and lighter frames and using new materials. Unibody designs are making traditional frame manufacturing facilities obsolete.

- Wheels. Wheel manufacturers are investigating aluminum wheels and composite material wheels.

- Brakes. Brakes are being designed to be smaller and lighter. Aluminum and plastic parts are being incorporated.

- Roller bearings. Bearings for wheels using smaller tires must be redesigned for different loads and greater wear. Also, front-wheel-drive vehicles will use new bearing designs.

- Batteries. Research is continuing in smaller, lighter nickel-based batteries which would be useful in smaller front-wheel-drive cars.

- Exhaust systems. New exhaust systems are necessary for diesel designs, and pollution regulations are leading to newer catalytic converter designs.

- Engine and drivetrain components. Fewer valves and springs will be needed on four-cyclinder cars, and new transaxles, differentials and constant velocity joints will be needed for front-wheel-drive vehicles.

- Steering and Suspension. Rack and pinion steering is rapidly displacing traditional designs. A host of new suspension system designs typical of small European vehicles are being introduced.

- Shock absorbers. The conventional shock absorber is being replaced by MacPherson struts for front-wheel-drive cars.

- Electrical parts. Computers for computer-controlled engines will be almost universally used on cars in the 80's to reduce pollution and improve fuel economy. Microprocessor control of many vehicle systems and accessories will trigger an explosive growth in electronic applications in motor vehicles.

- Fuel systems. Fuel economy and emissions control on spark ignition engines and the growth of the diesel-powered vehicle market are stimulating a great demand for fuel injection systems.

- Supercharging: Demands for both performance and fuel economy have opened up new possibilities for power boosting equipment, i.e., turbochargers.

- Chassis and body materials, trim, etc.: Substantial shifts to lighter weight materials will make obsolete many existing supplier's facilities/processes as aluminum, plastics, alloy steels, and composite materials are selectively introduced.

In general, the larger suppliers are already committed to R&D and product strategies emphasizing high-technology, fuel efficiency-related components. The smaller suppliers (vendors) and suppliers with narrow current product ranges are less receptive to change.

1.5.3 Diversification and Broader Market Perspective

The OEM auto market has traditionally been cyclical, and the major changes in automotive technology as a result of the push for fuel economy have made the market more volatile than ever. Thus, over the past ten years many auto suppliers have been diversifying to reduce their dependence on the OEM market or the auto industry in general. As a result, some companies have been able to reduce the effects of auto industry downturns on corporate profits, and this has made them more secure in their dealings with Detroit.

Another trend for the suppliers is increasing attention to the Euroepan market. Vehicle registrations are growing faster in Europe than they are in the U.S. and are expected to do so through the 1980's. The emergence of a "world car" philosophy on the part of major worldwide automakers, will open up broader opportunities for component sales, but will also mean strong international competition from European and multinational suppliers with an edge in small car component technology.

1.5.4 Emphasis on Quality and Productivity

As a result of pressure from high-quality Japanese imports, service complaints and product defect litigation, the U.S. auto manufacturers and their suppliers are presently making a major push to improve quality. Many suppliers are instituting new quality-control programs.

Some suppliers are making substantial investment in new automated plants and equipment. In 1976, suppliers were principally located in the North Central region of the country and highly concentrated in the states of Ohio, Indiana, Michigan, Pennsylvania and Illinois, with three-quarters of the value of parts/components shipments originating in this North Central region. In an increasingly competitive and labor-intensive manufacturing business, automotive parts and components suppliers are showing a marked trend to make facility investments in geographic areas outside of their traditional geographic locations.

Many companies are establishing new plants in the "sun belt" regions and in foreign countries.

The long-term overall productivity implications inherent in this apparent geographic dispersion of supplier facilities has not as yet been studied. The Japanese automotive manufacturing model as exemplified in the tight grouping of vehicle manufacturing and suppliers in Toyota City raises serious questions about this decentralization trend in U.S. automotive manufacturing.

2. ARVIN INDUSTRIES

Arvin Industries is a major manufacturer of exhaust systems and catalytic converters. The company has benefited tremendously because of government regulations—its sales have increased because of the catalytic converter and new quiet exhaust systems required by law. Even the diesel may help the company. Diesel cars require no catalytic converter, but they do require a more expensive exhaust system to reduce noise. To prepare itself for further automotive changes of the '80s, Arvin has significantly increased its technical capability.

2.1 CORPORATE SIZE AND STRUCTURE

Although Arvin's sales are smaller than most of the other companies covered in this report, the percent of its sales to the auto industry is so large (about 65 to 70 percent) that it easily ranks among the largest OEM automobile suppliers.

2.1.1 Revenue, Profit and Employment Statistics

In 1979 Arvin had sales of $493 million, up from $489 million in 1978. Profits, however, declined to $20.4 million in 1979 from $23.1 million in 1978. Between 1978 and 1979, Arvin's operating profit for its automotive group declined more than 25 percent to $30.5 million. The company employed about 8,500 persons in 1979 (see Table 2-1).

TABLE 2-1. ARVIN INDUSTRIES, INC.
REVENUE, PROFIT AND EMPLOYMENT STATISTICS

Year	Revenues (Millions)	Profits (Millions)
1979	$493	$20.4
1978	489	23.1
Average Number of Employees: 8,500 (1979)		

2.1.2 Corporate Organization

Arvin Industries is a decentralized company organized into four operating groups plus a small corporate headquarters staff. (See Figure 2-1.) Each operating group consists of businesses which have similar marketing, technological or product characteristics. A description of these characteristics for each group is provided below.

- Applied Technology Group. The Applied Technology Group is directed toward development and manufacture of video equipment for adverse environmental and specialized applications (Arvin/Echo), automated fabrication and assembly machinery (Arvin/Automation), high-technology products and research, (Calspan) and security and process monitoring systems (Arvin/Diamond).

- Metals Group. The Metals Group precoats steel and aluminum in both coil and sheet form with a variety of finishes. Roll Coater, Inc., supplies corrosion-resistant steel to the auto industry and specializes in special energy-efficient, corrosion-resistant metal coatings. Arvinyl, also part of the Metals Group, is a leader in vinyl-to-metal laminates.

- Consumer Group. As shown in Figure 2-1, the Consumer Group is divided into two divisions—Electronics and Housewares—in accordance with the products it makes. Consumer Group products include compact stereo component systems sold primarily to the nation's largest retail chains as well as portable electric heaters and electric humidifiers sold under either the Arvin brand name or private brand names.

- Automotive Group. The Automotive Group produces mufflers, exhaust and tail pipes, catalytic converters and other tubular metal parts for automobiles. The Group supplies a substantial portion of the combined requirements of Ford, General Motors and Chrysler. As shown in Figure 2-1, the Automotive Group is divided into separate functional sections—purchasing, finance, sales, engineering, international, personnel and manufacturing.

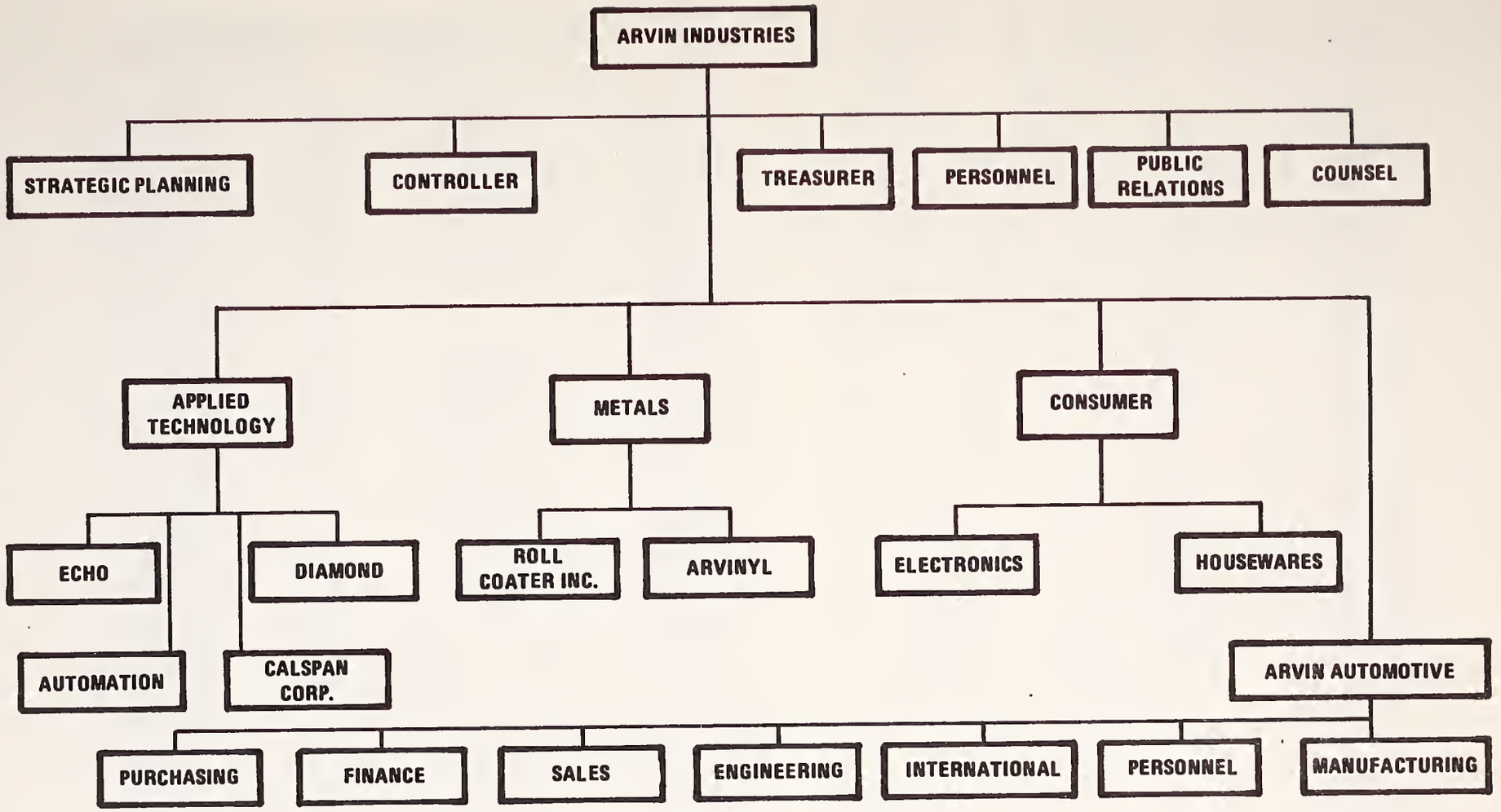

FIGURE 2-1. ARVIN CORPORATE ORGANIZATION

2.2 MAJOR MARKETS AND PRODUCTS

Figure 2-2 presents the major market information for Arvin.

MARKET DATA

Major Markets: Automotive manufacturers, jobbers, distributors, retailers, mass merchandisers, hardware companies.

Percent of Sales to the Automotive Industry: 69

Automotive Customers: Ford, General Motors, Chrysler

Major Automotive Products: Mufflers, exhaust and tailpipes, catalytic converters, coated steel.

FIGURE 2-2. MARKET DATA FOR ARVIN

2.2.1 Major Markets

Arvin's major markets include the automotive industry, the appliance and hardware market, and the government and industrial markets. These are described below and sales and profit figures are shown in Table 2-2.

TABLE 2-2. ARVIN SALES AND PROFITS BY MARKET 1979

Markets	Sales	Profits
Automotive	66%	72%
Appliance and hardware	18	17
Government and utilities	9	4
Commercial and industrial	7	7
TOTAL	100%	100%

Automotive Industry

Arvin sells its exhaust systems to domestic vehicle manufacturers as original equipment and, to a lesser extent, as replacement parts. The company also manufactures and sells exhaust system replacement parts to warehouse distributors and jobbers and to chain retailers and specialty

installers. Arvin sells to Ford, General Motors and Chrysler, with Ford accounting for 29 percent of sales, GM accounting for 18 percent of sales and the company's five principal customers combined accounting for approximately 64 percent of sales.

Appliance and Hardware

Arvin's stereo systems are sold primarily to Sears, Roebuck and Company and to J.C. Penney Company, Inc., which retail the items under their own brand names. The company also sells a wide variety of hardware and appliance products to mass merchandisers and hardware companies.

Government and Industry

Arvin has about 13 percent of its sales to U.S. government agencies and industrial companies. The profit margins of this business are lower than for the other of Arvin's markets and this market area contributes only 5 percent of Arvin's profits.

2.2.2 Products

Arvin's major automotive products include mufflers, exhaust and tailpipes, catalytic converters and coated steel. Exhaust systems are supplied to all three of the major domestic auto manufacturers, and catalytic converters are sold to two of them—Ford and Chrysler. Approximately 3,500 different replacement exhaust system part numbers are inventoried by the company to provide coverage and availability in excess of 95 percent for domestic and imported cars, recreational vehicles and light trucks. Arvin also makes coated steel which is coated with a zinc-rich primer that inhibits rust. In addition, the automotive segment produces various other stampings and assemblies and offers comprehensive restraint system testing and tire testing services.

Arvin has been engaged in automotive emissions control research and development since 1958 and is presently the largest supplier of catalytic converters to both Ford and Chrysler. The need to reduce the levels of nitrogen oxides in the exhaust system is causing catalytic converters to assume new sizes, shapes and degrees of sophistication. The dual-bed, "three-way" oxidation reduction converter has been a part of Arvin's engineering programs for more than ten years.

Arvin also has developed a new "air-gap" exhaust pipe which will help improve the overall performance of the exhaust system. This pipe keeps the exhaust gases hot until they reach the catalytic converter, thereby bolstering the converter's ability to remove pollutants.

In addition, more stringent noise requirements for cars and new technology such as diesel engines have led Arvin to develop a variety of new engineered exhaust systems that are more expensive and increase overall sales for the company.

2.3 CORPORATE STRATEGY

Arvin has developed both a marketing and a financial/operating strategy for its business. These are described below.

2.3.1 Marketing Strategy

Arvin feels that the company's future success will be determined, in part, by its ability to develop products that will fit the new market for exhaust systems. According to the company, the last few years have brought some fundamental changes in the original equipment market it serves. Formerly, market trends were controlled by customers as they reacted to consumer needs and wants. Today, many products are designed primarily to meet government regulations dealing with pollution, noise and mileage standards.

Thus, to sell its product, Arvin must excel in product design, quality control and related manufacturing processes. In order to meet these challenges and the increasing complexities of the industry, Arvin has substantially enlarged its technology base and engineering capabilities. Recently a new Automotive Technical Center was completed at the company's test track site near Columbus, Indiana. The new center provides Arvin with increased capability to meet the challenge of industry changes. In addition, awareness of Arvin's need for an expanded technology base figured in the company's recent acquisition of Calspan Corporation. Calspan possesses a unique range of research and development capabilities in numerous fields, many of which are related to the company's present businesses.

2.3.2 Financial/Operating Strategy

Arvin has formulated an overall financial policy which incorporates financial objectives and operating requirements to meet these objectives.

Financial Objectives/Accomplishments

Arvin's financial policy objectives are:

- To maintain an average return on equity superior to most U.S. companies while significantly reducing the variability of return on equity relative to past financial performance of the company
- To achieve an "A" rating from major financial rating services
- To provide reserves of financial capability adequate to maintain investment commitments and to take advantage of investment opportunities independently of economic cycles without permanently impairing the quality of the balance sheet
- To provide growth in the payment of cash dividends or common stock commensurate with the company's financial performance.

According to Arvin, 1979 marked the fifth year of progress toward meeting its stated financial objective. For example:

- Management believes that the company should quality for an "A" rating sometime in 1981 because of its financial position.
- Major capital investments completed during 1979 reflect the company's ability to take advantage of investment opportunities without lowering the quality of its balance sheet.

Operating Requirements

Arvin feels that accomplishing the above objectives requires:

- Managing Arvin's current businesses for continued superior performance, while allocating the resources necessary to maintain leading competitive positions
- Pursuing opportunities for market share expansion which meet Arvin's return-on-investment criteria
- Continuing development of new products from within the company while supplementing the growth of certain existing businesses through acquisition of related companies or product lines
- Expanding the company's financial capability through debt, equity or improved cash flow.

2.4 PRODUCTION AND OPERATIONS

Arvin occupies 17 major facilities with a total of approximately 4,546,000 square feet of floor space. About 60 percent of the facility space is dedicated to automotive products. Properties include manufacturing plants and warehouses in Indiana, Alabama, Arkansas, Georgia, Kentucky, Mississippi, Missouri and New York.

2.4.1 Principal Automotive Facilities

Arvin has seven plants which are almost totally dedicated to automotive production, all of which manufacture exhaust systems. Data on each of these plants is provided in Figures 2-3 through 2-9. The plants are located in:

- Franklin, Indiana (1,000 employees)
- Fayette, Alabama (600 employees)
- Dexter, Missouri (525 employees)
- Columbus, Indiana
- Monticello, Arkansas (400 employees)
- Greenwood, Indiana (350 employees)
- North Vernon, Indiana (200 employees)

2.4.2 New Plants and Expansions

During the past three years, Arvin has been engaged in two major capital spending programs. One program involved bringing on stream new varieties of catalytic converters designed to meet specific problems since several exhaust systems now use catalytic converters in various combinations. The program also included the three-way converters in use on many 1980 models. The other program is a capacity expansion underway at Roll Coater, Inc.'s Kingsbury, Indiana, plant. This expansion was necessitated by the growing use of zinc-coated steel by U.S. automotive manufacturers to reduce rust and corrosion on car bodies.

In addition to the above two programs, Arvin has also announced the formation of a Brazilian joint venture automotive parts production company. The new company will produce exhaust systems for the Brazilian market and will establish the first independent automotive engineering technical center in the history of the Brazilian auto industry. Arvin's partner in the venture is Eluma S/A, a major Brazilian manufacturer of steel, non-ferrous metals and automotive parts.

Company Arvin Industries **County** Johnson **Plant Size**

Plant Franklin **Congressional District** 6

Address North Hurricane
Franklin, IN 46131 **Standard Metropolitan Statistical Area** 3480 **No. of Employees** 1,000

Telephone (317) 736-7111 **Primary SIC Code(s)** 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.*	N.C.A.	Approximately 90 percent OEM automotive

* Not Currently Available

FIGURE 2-3. FRANKLIN PLANT DATA

Company Arvin Industries | County Fayette | Plant Size

Plant Fayette | Congressional District 4

Address 800 Columbus Street, Fayette, AL 35555 | Standard Metropolitan Statistical Area | No. of Employees 600

Telephone (205) 932-6735 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.	N.C.A.	Approximately 90 percent OEM automotive

FIGURE 2-4. FAYETTE PLANT DATA

Company Arvin Industries | County Stoddard | Plant Size

Plant Dexter | Congressional District 10

Address 1207 Arvin Road
Dexter, MO 63841 | Standard Metropolitan Statistical Area | No. of Employees 525

Telephone (314)624-7411 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.	N.C.A.	Approximately 90 percent OEM automotive

FIGURE 2-5. DEXTER PLANT DATA

Company Arvin Industries | County Bartholomew | Plant Size

Plant Columbus | Congressional District 9

Address 1531 13th Street
Columbus, IN 47201 | Standard Metropolitan Statistical Area | No. of Employees

Telephone (812) 372-7271 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.	N.C.A.	Approximately 90 percent OEM automotive

FIGURE 2-6. COLUMBUS PLANT DATA

Company Arvin Industries **County** Johnson **Plant Size**

Plant Greenwood **Congressional District** 6

Address Walnut Street
Greenwood, IN 46142

Standard Metropolitan Statistical Area 3480 **No. of Employees** 350

Telephone (317) 881-2551 **Primary SIC Code(s)** 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.	N.C.A.	Approximately 90 percent OEM automotive

FIGURE 2-7. GREENWOOD PLANT DATA

Company Arvin Industries County Jennings Plant Size

Plant North Vernon Congressional District 9

Address Madison Avenue
North Vernon, IN
47265

Standard Metropolitan Statistical Area

No. of Employees 200

Telephone (812) 346-5750 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.	N.C.A.	Approximately 90 percent OEM automotive

FIGURE 2-8. NORTH VERNON PLANT DATA

Company: Arvin Industries
County: Drew
Plant Size:

Plant: Monticello
Congressional District: 4

Address: Monticello, AR
Standard Metropolitan Statistical Area:
No. of Employees: 400

Telephone: (501) 367-3481
Primary SIC Code(s): 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust system components	N.C.A.	N.C.A.	Approximately 90 percent OEM automotive

FIGURE 2-9. MONTICELLO PLANT DATA

2.5 FINANCIAL STATUS

Over the last five years, Arvin has undergone tremendous swings in its profitability and capital structure. Despite declining profits in 1979, the company appears to be a much stronger company than it was five years ago. Although there are several reasons for this, certainly an important part of the change was due to the introduction of catalytic converters to American cars in the middle 1970s.

2.5.1 Operations Analysis

Although sales have steadily built up since 1974, Arvin's earnings have had wide fluctuations. (See Figure 2-10.) Earnings in 1976 of $23.4 million were nearly five times as high as its earnings of $4.8 million in 1975. The reasons for this growth have been:

- A rebounding economy
- Arvin's development of the catalytic converter and more sophisticated mufflers and other devices to meet new accoustical standards set by noise-control legislation
- Improvements in the consumer and metals sections of the business.

Arvin's outstanding jump in earnings in 1976, however, was not matched by a proportionate boost in its stock price, and thus the price-earnings ratio fell that same year (see Figure 2-11). This event has been interpreted by stock analysts as an indication that investors did not feel Arvin would be able to maintain the high earnings level.

Earnings grew again in 1977, but in 1978 earnings began to fall. This resulted primarily from a decrease in margins (indicated in the ratio of operating income or net income to sales) due to price pressures on the automotive exhaust system product lines. In addition, a three-year investment recovery program between Arvin and its two catalytic converter customers (Ford and Chrysler) was concluded.

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	493	20.4	12.8	10.3
78	489	23.1	16.0	13.1
77	460	29.0	25.4	15.9
76	400	23.4	25.9	16.0
75	340	4.8	6.6	8.4
74	281	4.2	5.8	7.6

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	6.6	1.61	4.1
78	7.8	1.66	4.7
77	10.9	1.73	6.3
76	9.5	1.64	5.8
75	1.9	1.36	1.4
74	1.9	1.27	1.5

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 2-10. ARVIN OPERATIONS ANALYSIS

			Sources			
Year	Sales	P/E Ratio[1]	Earnings	Depreciation	Changes in Long-Term Debt	Changes in Owners' Equity Other Than Retained Earnings
79	493	7.4	20.4	13.8	(14.2)	0.6
78	489	5.3	23.1	12.6	(2.5)	5.9
77	460	3.1	29.0	7.8	(3.0)	(0.1)
76	400	3.7	23.4	7.3	42.4	23.2
75	340	9.8	4.8	6.9	(1.9)	0
74	281	12.7	4.2	5.4	13.7)	1.2

		Uses					
Year	Change in Working Capital	Capital Expenditures	Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	(12)	23.7	8.3	32.1	5.6	7.8	4.1
78	2.0	27.5	7.9	37.5	7.0	9.6	4.0
77	15.1	15.9	6.5	38.3	9.1	6.0	5.4
76	89.8	7.2	4.6	43.2	6.9	2.9	3.5
75	6.2	7.0	.8	41.4	2.1	2.8	1.4
74	(25.8)	43.4	2.9	44.0	1.6	20.0	1.2

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 2-11. ARVIN CAPITAL ANALYSIS

Earnings continued to fall in 1979. Sales for 1979 were $493 million, up from 1978's comparable sales of $489 million. However, earnings declined from $23.1 million to $20.4 million. This was due to:

- The drop in new automobile production. Even though average dollar sales per new automobile for the period were up due to substantially expanded use of catalytic converters on 1980 models, this increase was not sufficient to offset the drop in auto production.

- Expense associated with changing part production. Eighty-five to ninety percent of the original equipment parts produced by Arvin were changed from 1979 to 1980 models and, according to the company, this required considerable expense.

Arvin's 1980 performance is further down from 1979, with sales down 19 percent in the first half of the year.

2.5.2 Capital Analysis

Arvin has been maintaining a heavy debt level in its capital structure for many years (see Figure 2-11). The company sold over $20 million of preferred stock in 1976 to help improve its debt position but it also increased its long-term debt by $42.4 million. However, the ratio of long-term debt to capitalization has decreased in recent years and is now below 33 percent. Arvin has stated it hopes to achieve an "A" rating by the major financial services. The company's Standard and Poor's rating is currently B+. Arvin may require outside financing in the near future to support projected capital expenditures. The current debt structure of the company, however, suggests that debt financing will be possible.

2.6 RESEARCH AND DEVELOPMENT

Arvin has significantly expanded its research and development capability. The new Automotive Technical Center provides capacity for the development and production of exhaust pipe, muffler and catalytic converter prototypes. It also includes a new engineering test facility which increases Arvin Automotive's ability to conduct physical, mechanical, dynamometer and emission testing.

Arvin's recent acquisition, Calspan Corporation, is a leading researcher for the Department of Transportation, especially in the area of safety. In particular Calspan has done considerable work on the Research Safety Vehicle, a prototype safety car of the future.

Arvin continues its research in new mufflers, catalytic converters and exhaust systems designed so that the new cars of the '80s will meet noise and pollution requirements.

2.7 GOVERNMENT AND LABOR RELATIONS

Arvin's present catalytic converter business stems from the Clean Air Act of 1970, and its increasingly prosperous muffler business has been bolstered by noise regulations. Thus, the company has not been critical of government regulation. The company, however, gives considerable publicity to its employee programs. Arvin states that its philosophy provides for specific persons being assigned responsibility for particular functions, given the authority necessary to discharge those responsibilities and then being measured by their results. The company considers the quality and dedication of its people to be one of its most important resources. Arvin has also established the Arvin Foundation to support private charitable, educational and youth activities and other community needs on a continuing basis.

3. CHAMPION

Champion Spark Plug Company is the world's largest manufacturer of spark plugs. It is also one of the leading suppliers of parts and components to the automotive industry, ranking twelfth in sales and tenth in income. Sales of automotive components account for over three-quarters of revenues. Ten percent of automotive component sales are to the original equipment market.

Downsizing of automobiles is reducing the number of cylinders and, therefore, spark plugs per vehicle. This potential loss in sales for Champion is balanced by other trends. There are more vehicles on the road, more attention is being paid to frequent tune-ups and the average age of cars in the U.S. is increasing.

Over the last few years, however, the company has been shifting the focus of its sales effort. It is actively pursuing the overseas spark plug market, which is growing more rapidly than the domestic market. Through acquisitions, it has also diversified its operations into the manufacture of windshield wipers and industrial spraying equipment. The company commitment to the wiper blade business is reflected by large investments in a new production plant in Belgium. Since 90 percent of its automotive components are sold as replacement parts, Champion has traditionally carried out a strong sales effort aimed at the individual car owner. Champion feels its marketing expertise in this market will enable it to successfully develop the wiper blade product line. Champion also continues to emphasize research and development activities to keep its products in line with changing engine and fuel requirements.

3.1 CORPORATE SIZE AND STRUCTURE

Champion supplies spark plugs to practically every automobile manufacturer in the United States, Europe and Japan. In 1968, the company acquired DeVilbiss Company, a manufacturer of spraying equipment and medical products. In the last three years, Champion has purchased the Anderson Company (Anco) and two European firms, all of which manufacture windshield wipers and other automobile service parts. Anco is the largest supplier of windshield wipers to the U.S. aftermarket. In 1975, the company also bought Baron Drawn Steel Company, a producer of steel bars and coils.

3.1.1 Revenue, Profit and Employment Statistics

Sales in 1979 were $807 million, and sales of automotive components accounted for 75 percent of the total. Sales of original equipment were about 10 percent of the automotive component total. Foreign sales represented 38 percent of total revenues. Profits in 1979 were $56.8 million. The company employed about 16,000 persons at the end of 1979. (See Table 3-1.)

TABLE 3-1. CHAMPION REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$807	$56.8
1978	693	55.3
Average Number of Employees: 16,000 (1979)		

3.1.2 Corporate Organization

Champion is headquartered in Toledo, Ohio, and is organized into operating groups as follows (see Figure 3-1):

- Automotive Components Group. The automotive components manufactured by Champion are primarily spark plugs and windshield wiper products. Three plants in the U.S. and three abroad manufacture the ceramic components of the plugs, and four U.S. and ten overseas plants assemble the final product. Windshield wipers and related products are produced in two Indiana plants and six foreign facilities.

- DeVilbiss Coating Application Equipment. The coating equipment operations include the manufacture of a wide range of spraying, painting and finishing equipment. The group operates three domestic and seven foreign plants.

- DeVilbiss Health Care Equipment Group. The health care group operates one plant, located in Pennsylvania, where humidifiers, vaporizers and oxygen concentrators are manufactured.

- Baron Cold Drawn Steel Group. The steel group is comprised of one steel processing plant in Ohio that produces steel bars and coils, primarily for use in the manufacture of the company's other products.

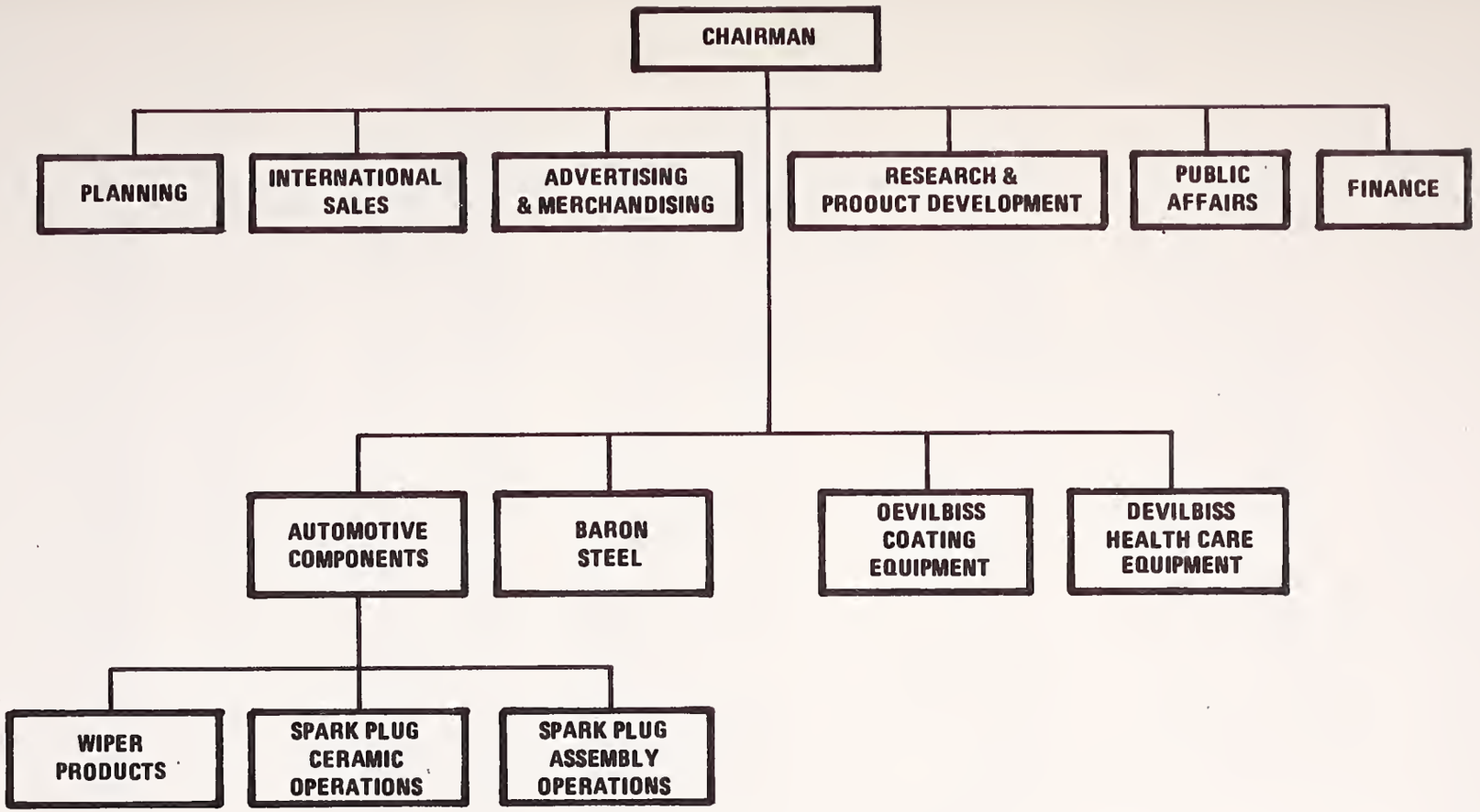

FIGURE 3-1. CHAMPION CORPORATE ORGANIZATION

3.2 MAJOR MARKETS AND PRODUCTS

Figure 3-2 presents a summary of the major market information for Champion.

MARKET DATA	
Major Markets:	Auto replacement market, auto manufacturers, commercial painting industry, health care industry
Percent of Sales to Auto Industry:	8 percent OEM
Supplies to:	All major U.S., European, and Japanese auto manufacturers
Major Products:	Spark plugs, windshield wipers, automated spraying equipment

FIGURE 3-2. CHAMPION MARKET DATA

3.2.1 Major Markets

The customers for Champion spark plugs include virtually every manufacturer of internal combustion engines, including manufacturers of cars, trucks, machinery and boats. Customers for wiper products are manufacturers of cars, trucks, buses, boats, aircraft, locomotives and heavy construction equipment. Approximately 8 percent of plug and wiper sales are to the automotive original equipment market.

Spark plugs and wiper products for the aftermarket are sold to 900 distributors who resell the products to approximately 31,000 jobbers. Both distributors and jobbers resell to about 11,000 fleet operators and 300,000 to 400,000 dealers. The DeVilbiss groups supply equipment to manufacturers using sprayers for high-speed production lines, including the automakers, and to the health care industry.

3.2.2 Products

The following is a listing of Champion's primary products, organized by corporate group.

- The Automotive Components Group produces spark plugs, jet igniters, other ignition items, windshield wiper blades, arms and refills.

- The Coating Equipment Group manufacturers facilities and systems for the application of liquid, mastic and powder coatings used by the industry for production painting and by service trades for refinishing and maintenance painting.

- The Health Care Group produces vaporizers, nebulizers and ultrasonic nebulizers which are used for treatment of respiratory diseases.

- The Baron Drawn Steel Corporation, a wholly-owned subsidiary, produces cold drawn steel bars and coils.

Table 3-2 shows 1978 and 1977 sales by major product groupings.

TABLE 3-2. 1978 AND 1979 SALES BY PRODUCT GROUP

Segment	1978 Sales*	% of Total	1979 Sales*	% of Total
Automotive components	529.9	76	604.2	75
Coating application equipment	117.5	17	154.6	19
Other business (Net)	45.2	7	47.7	6
TOTAL	692.6	100	806.5	100

* All sales figures are before adjustments and eliminations.

Sales Strategy

Champion's 1979 domestic sales of spark plugs increased 16 percent over 1978. It attributes that gain to the following factors:

- Increased market penetration

- Growing interest among consumers in improving fuel economy

- Effective merchandising

- Expanded distribution

- Strong field sales support.

To promote its products, Champion conducts an aggressive advertising and information campaign aimed primarily at the individual car owner. The campaign includes radio and television spots during sporting events, sponsorship of sporting events, and the well-publicized use of Champion products by racing car drivers. Recently, the company also began a public information program to inform car owners about the importance of tune-ups in increasing fuel economy. Champion created a mobile test unit, called the Mobile Proving Ground (MPG), to travel in the U.S. and Europe and conduct tests of the fuel consumption and emission levels of individual cars. Editorial material, based on the tests, has been placed in newspapers throughout the country.

New Product Plans

While Champion maintains an active research and development effort for its spark plug product line, the recent emphasis in new products has been on Anco windshield wiper products. The company sees a new market opportunity in the increasing use of large rear car windows requiring a third windshield wiper and has been developing new products to meet this need. It has also begun marketing a new line of "snow blades" designed to be more effective and durable in clearing snow from car windshields. In conjunction with the Big Three automakers, Champion is working on the development of a variety of plastic windshield wipers and blades. In 1979, the company was awarded a contract to fill 50 percent of Chrysler's plastic blade requirements, and it is providing the wiper assemblies for the GM X-body vehicles, increasing sales of wiper products to GM by 33 percent in the 1980 model year over 1979.

3.3 CORPORATE STRATEGY

Champion foresees a continuing decline in the percentage of its total revenues represented by U.S. passenger car spark plug sales. In 1969, passenger car spark plug sales in the U.S. accounted for 41 percent of the company's total sales. In 1978, that figure dropped to about 28 percent, and by 1988 the company estimates the percentage will have declined to 18. Champion points to three factors in explaining this trend: the growth of spark plug sales in foreign markets, the growth of spark plug sales for non-automotive uses and the growth in sales of Champion products other than spark plugs.

The company now has approximately 40 percent of the international spark plug market, and its goal for the 1980s is to increase that share to 50 percent. Champion's Market Research Department expects worldwide spark plug unit sales to increase at an annual rate of 3 percent over the next decade, while U.S. unit sales are expected to grow by only 1 percent annually. New successes have already been achieved in the firm's stepped-up overseas sales effort. Champion plugs are being installed as original equipment in Subaru and Honda cars for export from Japan to Canada. Hyundai, of Korea, is installing Champion plugs in its Pony. Spark plugs being factory-installed in Datsuns assembled in Australia and Toyotas being built in South Africa will be supplied by Champion.

While the company is diversifying into the wiper products field and into the array of DeVilbiss products, it remains publicly optimistic about domestic spark plug sales. Two developments that may dampen spark plug sales—smaller engines and electronic ignition systems—will not present serious problems, according to company planners. Their optimism is based on several trends, including an increase in the number of vehicles in use, an older average vehicle age, and an increased owner interest in vehicle maintenance. Champion is also hoping to increase its sales to the "do-it-yourself" market which now accounts for 50 percent of aftermarket spark plug sales. Champion feels that this market is characterized by brand name loyalty.

3.4 PRODUCTION AND OPERATIONS

Champion operates 14 domestic plants and 26 facilities overseas. In the U.S., spark plug assembly plants are located in Toledo, Ohio; Hellertown, Pennsylvania; and Burlington, Iowa. Spark plug ceramic plants are located in Detroit and in Cambridge, Ohio. Plants in Gary and Valparaiso, Indiana, produce wiper products. DeVilbiss products are manufactured in Toledo, Ohio; Belleville, Michigan; Angola, Indiana; and Somerset, Pennsylvania. The Baron Cold Drawn Steel Plant is in Toledo, Ohio.

3.4.1 Major Automotive Facilities

Data on Champion's plants that produce for the passenger car original equipment market are presented in Figures 3-3 through 3-7.

Company Champion Spark Plug County _____ Plant Size _____

Plant Toledo Congressional District _____

Address 900 Upton Avenue Toledo, OH 43607 Standard Metropolitan Statistical Area _____ No. of Employees 2,400

Telephone (419)535-2567 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Spark Plugs	N.C.A.	Machine Assembly	10 percent OEM automotive: Chrysler American Motors Volkswagen

FIGURE 3-3. TOLEDO PLANT DATA

Company Champion Spark Plug County _____ Plant Size _____

Plant Hellertown Manuf. Co. Congressional District _____

Address Main Street
Hellertown, PA 18055 Standard Metropolitan Statistical Area _____ No. of Employees 338

Telephone (215)867-4684 Primary SIC Code(s) _____

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Spark Plugs	N.C.A.	Machining Assembly	10 percent OEM automotive

FIGURE 3-4. HELLERTOWN PLANT DATA

Company Champion Spark Plug County _____ Plant Size _____

Plant Detroit Congressional District _____

Address 20000 Conner Ave.
Detroit, MI 48211

Standard Metropolitan Statistical Area _____ No. of Employees 800

Telephone (313)891-4040 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Ceramic material	N.C.A.	N.C.A.	15 percent OEM automotive Chrysler American Motors Volkswagen

FIGURE 3-5. DETROIT PLANT DATA

Company Champion Spark Plug County _____ Plant Size _____

Plant Cambridge Congressional District _____

Address US Route 40 West
Cambridge, OH 43725 Standard Metropolitan Statistical Area _____ No. of Employees 350

Telephone (614)432-2393 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Ceramic material	N.C.A.	N.C.A.	15 percent OEM automotive: Chrysler American Motors Volkswagen

FIGURE 3-6. CAMBRIDGE PLANT DATA

Company Champion Spark Plug County _____ Plant Size _____

Plant Anderson Company Congressional District _____

Address 1075 Grant
Gary, IN 46404 Standard Metropolitan Statistical Area _____ No. of Employees 1,000

Telephone (219) 885-4361 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Windshield wipers, arms, etc.	N.C.A.	N.C.A.	30 percent OEM automotive

FIGURE 3-7. GARY PLANT DATA

Toledo Plant

The Toledo plant machines and assembles spark plugs for sale to Chrysler, American Motors and Volkswagen. Ten percent of the plant's output is for passenger car original equipment. The facility employs 2,400 people.

Hellertown Plant

The Hellertown Manufacturing Company is a wholly-owned subsidiary of Champion. It machines and assembles spark plugs, and 10 percent of its output goes to OEM sales. The company employs 338 people.

Detroit Plant

The Detroit plant manufactures the ceramic material used for spark plug insulators. Fifteen percent of its production goes to produce spark plugs for OEM sales, primarily to Chrysler, American Motors and Volkswagen. The plant employs 800 people.

Cambridge Plant

Ceramic material is also produced at the Cambridge plant with 15 percent of its output going for OEM sales to Chrysler, American Motors and Volkswagen. The plant employs 350 people.

Gary Plant

The Anderson Company (Anco) plant in Gary, Indiana, manufacturers windshield wipers, arms and blades. Thirty percent of its production is sold to the OEM market. The plant employs 1,000 people.

3.4.2 New Plants

Champion acquired two new U.S. plants, in Gary and Valparaiso, Indiana, when it purchased the Anderson Company, but it has not made public any current plans for U.S. plant expansion or construction. A new highly-automated wiper products plant was completed in Belgium in 1979.

3.5 FINANCIAL STATUS

Champion has achieved steadily increasing sales over the last five years but has experienced difficulty in keeping its earnings growth at the same pace. (See Figure 3-8.) The company, however, seems financially sound and capable of meeting its obligations without outside financing. (See Figure 3-9.)

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	807	56.8	14.8	16.2
78	693	55.3	15.5	19.3
77	569	49.6	15.0	19.7
76	514	45.3	14.8	20.9
75	458	46.7	16.6	23.0
74	435	47.4	18.5	23.4

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	9.5	1.4	7.0
78	10.5	1.3	8
77	10.9	1.25	8.7
76	10.8	1.23	8.8
75	11.9	1.17	10.2
74	13.2	1.21	10

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 3-8. CHAMPION OPERATIONS ANALYSIS

Year	Sales	P/E Ratio[1]	Sources: Earnings	Depreciation	Changes in Long-Term Debt	Changes in Owners' Equity Other Than Retained Earnings
79	807	9.2-6.0	56.8	17.0	(5)	1.3
78	693	8.9-6.2	55.3	16.4	29.1	.4
77	569	11.3-7.5	49.6	13.1	(1.2)	0
76	514	11.5-9.1	45.3	11.2	(5.1)	5.0
75	458	11.3-7.2	46.7	9.7	(0.7)	0
74	435	14.2-5.7	47.4	10.0	1.3	0

Year	Change in Working Capital	Uses: Capital Expenditures	Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	20.6	21.6	29.8	9.6	18.0	3.6	3.0
78	27.7	32.3	27.1	11.3	21.3	6.1	2.9
77	14.3	19.0	25.9	5.4	43.4	4.2	3.3
76	14.2	19.1	25.0	6.1	45.9	4.6	3.7
75	14.4	22.1	23.0	7.9	47.2	5.6	4.1
74	27.2	17.8	21.1	8.7	43.5	4.9	3.8

Dollar figures are in millions

[1] Range for the Year

[2] Capitalization Defined as Total Liabilities – Current Liabilities

[3] Operating Profit/Interest

FIGURE 3-9. CHAMPION CAPITAL ANALYSIS

3.5.1 Operations Analysis

Earnings fell off during 1975 and 1976 although they have rebounded somewhat in the last three years. The ratio of operating income to sales, however, has declined steadily over the last five years, indicating an erosion of profit margins. The company has attributed its increased costs and expenses to greater unit shipments, escalating costs of materials, salaries and wages and most recently, the additional costs and expenses of the Anderson Company. Cost pressures are further reflected in the regular decrease in the ratio of earnings to sales. Return on equity has not been hurt as much as operating margins since increasing sales have served to compensate for the lower margins.

Champion's sales for 1979 of $807 million represented a 16 percent increase over 1978 sales. The increase was primarily due to three factors:

- Growth in volume
- Price increases
- Inclusion of the Anderson Company sales for a full year.

Champion's 1980 performance, however, has been significantly worse than 1979, reflecting slow sales of wipers and spark plugs. According to Moody's, however, moderate long-term growth still seems attainable as cars are expected to have more tune-ups in the 80's to improve fuel economy or reduce emissions.

3.5.2 Capital Analysis

The company issued stock in 1976 during the acquisition of Baron Drawn Steel Corporation, and it issued bonds in 1978 at the same time that it purchased Anderson Company for $38.1 million in cash. The 1978 bond issue is reflected in the rise in long-term debt and the long-term debt-to-capitalization ratio in that year. Even with the recent bond issue, however, the company's debt is still low as a percentage of capitalization. Capital expenditures have been on the decline over the last five years, rising only in 1978 with the Anderson acquisition. The firm appears fully capable of covering its future capital expenditures through the generation of internal funds.

3.6 RESEARCH AND DEVELOPMENT

In 1979, the company began construction of a $1.2 million addition to its existing research and development facility at its headquarters in Toledo, Ohio. The plant will provide additional space for the development of glow plugs for diesel and gas turbine igniters as well as conventional spark plugs for internal combustion engines. The expansion, which will be about 12,000 square feet, will increase the company's main research facility by about one-third. The company employs 182 people at the facility.

Champion is currently working on the following research and development projects.

3.6.1 Glow Plugs

Champion has for many years manufactured glow plugs for use in diesel engines on tractors and other heavy equipment. The company is now investigating the suitability of one type of glow plug—the enclosed coil—for use in diesel engine passenger cars.

3.6.2 Alternative Fuels

The company is testing alternative fuels and fuel extenders to determine their effect on spark plug performance. The fuel extenders being tested include gasohol blends, methanol, and oxygenated hydrocarbon blends. Preliminary results, according to the company's vice president for research and development, do not indicate any appreciable performance loss with the extenders. The company is also investigating the effects on plugs of pure methanol and ethanol and evaluating different plugs for use in hydrogen-fueled vehicles using metal hydride storage tanks.

3.6.3 Nissan Engine Design

The Nissan Company has been working for several years on a new spark ignition engine design that utilizes a hemispheric combustion chamber and two spark plugs per cylinder. Champion is collaborating with Nissan in testing the new engine. Initial reports indicate that the new design may yield a 30 percent improvement in fuel economy and a reduction in emissions.

3.7 GOVERNMENT RELATIONS

Champion has not been significantly affected by Federal environmental regulations, but its acquisition of the Anderson Company is under review by the Federal Trade Commission for possible violation of anti-trust statutes.

The company has been a vocal critic of the government's "interference" with the "free market." Company statements and speeches by officers have taken issue with the government's regulation of the automobile industry and its handling of the energy shortage. On energy, the company favors a "realistic conservation program" and deregulation of oil and gas.

4. DANA

Dana is a 75-year-old manufacturer and supplier of parts and components to the automotive industry. Growing steadily over the last decade through expansion and acquisitions, the company now ranks fifth in revenues and second in income among U.S. parts suppliers. Approximately 10 percent of Dana's sales are to the passenger car original equipment market with frames, axles, universal joints, gaskets and driveshafts accounting for most of the sales.

Original equipment for passenger cars accounted for the majority of Dana's sales for the company's first 50 years of business, but the firm has shifted heavily into production for light and heavy trucks and is now actively diversifying into the service and industrial markets. The firm has new opportunities for growth in the markets for downsized light trucks and front-wheel-drive cars.

4.1 CORPORATE SIZE AND STRUCTURE

The Dana Corporation is a Fortune 500 company founded in 1914 as a manufacturer of universal joints. It currently operates 342 facilities worldwide, has 68 international affiliate companies and does business in 23 countries.

4.1.2 Revenue, Profit and Employment Statistics

Sales in 1979 were $2.76 billion, compared to $2.25 in 1978. Vehicular sales accounted for approximately 79 percent of the revenues. Profits in 1978 were $134 million. Both 1979 sales and earnings set records for the eighth consecutive year. The company employed around 36,500 people in 1979. (See Table 4-1.)

TABLE 4-1. DANA CORPORATION REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$2,761	$164
1978	2,253	134
Average Number of Employees: 36,500 (1979)		

4.1.3 Corporate Organization

Dana is organized into a tripod structure consisting of a service group, an industrial group and a vehicular group. The vehicular group is further organized into four parts as follows (see Figure 4-1):

- Heavy Truck Group. The Heavy Truck Group includes Garrison Hydraulics, the Spicer Clutch Division, Spicer Universal Joint Division, Spicer Transmission Division and Heavy Truck Marketing.

- Light Truck Group. The Light Truck Group includes Hayes-Dana Ltd., Spicer Axle Division, Spicer Front Drive Systems Division and Spicer Heavy Axle.

- Engine Parts Group. The Engine Parts Group is composed of Perfect Circle Division and Victor Products Division.

- Parish Division. The Parish Division, producer of the largest proportion of passenger car parts, is divided into C&M Spring and Suspension, C&M Trailer Axle and Frame Operations.

Dana recently announced that its current chairman, Ren C. McPherson, will leave the company in a year to become dean of Stanford University's graduate business school. Gerald B. Mitchell, formerly Dana's president, became chief executive officer at the start of 1980.

4.2 MAJOR MARKETS AND PRODUCTS

Figure 4-2 presents a summary of the major market information for Dana.

4.2.1 Major Markets

Dana's major markets are the truck and auto manufacturers and the truck and car service market. The company also manufactures products for the farm machinery, marine, mining, power generation and industrial markets. Dana's 1978 sales by market were as follows:

- Approximately 10 percent of Dana's sales are to the original equipment passenger car manufacturers.

- An additional 50 percent are OEM sales for other vehicles (light and heavy trucks).

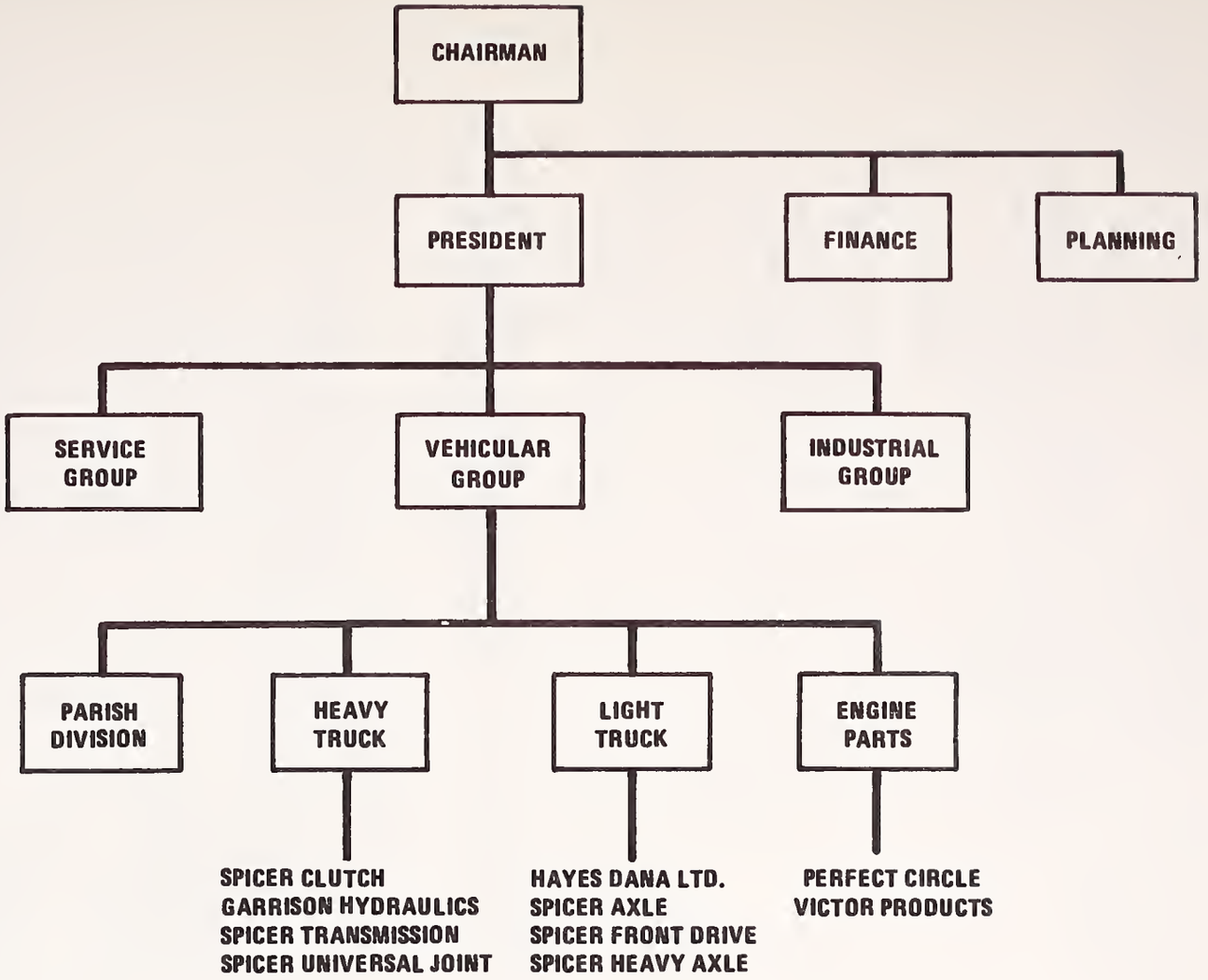

FIGURE 4-1. DANA CORPORATE ORGANIZATION

- About 21 percent of sales are to service markets and 19 percent to industrial markets.

MARKET DATA

Major Markets: Trucks, passenger cars, vehicular aftermarket, farm machinery, marine, mining, power generation and industrial markets

Percent of Sales to Passenger Car Auto Industry: 10%

Supplies to: Ford, General Motors, American Motors

Major Automotive Products: Axles, gaskets and seals, pistons, piston rings, truck and car frames, universal joints, transmissions and clutches

FIGURE 4-2. DANA MARKET DATA

Ford and General Motors are Dana's two largest customers, accounting for 23 percent and 17 percent of sales, respectively. Table 4-2 shows approximate sales by market segment.

TABLE 4-2. DISTRIBUTION OF SALES BY MARKET*

Market	Percent of Total
Vehicular	
Heavy Truck	14
Light Truck	40
Passenger Car	11
Subtotal	65
Service	
Industrial	7
Vehicular	21
Subtotal	28
Industrial	7
TOTAL	100

* Based on 1977 available statistics.

4.2.3 Products

The major products that Dana sells to the vehicle manufacturers are axles, gaskets and seals, pistons, piston rings, frames, universal joints, transmissions and clutches. Table 4-3 shows approximate sales broken down by product group.

TABLE 4-3. DISTRIBUTION OF SALES BY PRODUCT*

Product	Percent of Total
Axle Parts	31
Transmissions, U-joints, Clutches	20
Industrial	19
Engine Parts	15
Frame and Chassis Parts	15
TOTAL	100

* Based on available 1977 statistics.

Sales Strategy

Dana promotes its vehicular products by stressing the following points:

- Reputation as supplier of vehicle parts for 75 years
- Engineering skill necessary to design and produce parts that are lighter and more fuel-efficient
- Concern for product reliability and safety
- Loyal, stable workforce with many years of company and industry service.

In 1979, the company ran television spots during sporting events to promote its aftermarket products.

New Products

Several new products for release during FY1980 include:

- New heavy-duty axle housings
- Heavy-duty axles

- Driveshafts for the Ford Thunderbird and Cougar
- Axles for the Chevrolet Corvette
- New parts for American Motors' four-wheel-drive vehicles.

The acquisition of Wix Corporation in 1978 has also expanded the company product offering to include a full line of oil, air and fuel filters. Wix's annual sales were approximately $130 million.

4.3 CORPORATE STRATEGY

Dana's future strategy centers around the sale of products to the vehicular market. Given the uncertainty of that market, however, the company is seeking to diversify its operations and thereby achieve a closer balance between the different segments of its "tripod." According to the company, "Traditionally, motor vehicle sales have a cycle which has adversely affected the profitability of all segments every third year. Dana endeavored to break its cyclical performance pattern, doing so in 1974 and again in 1977. We achieved this by reducing our dependence upon any single customer or market segment. Our current and future strategy continues to deemphasize that dependence."

To achieve this goal of diversification, the firm has set the objective of increasing service and industrial sales each to 30 percent of the company total, and of decreasing the proportion of vehicular sales to 40 percent of corporate revenues. Along with the plan to shift the company's product mix, Dana's directors have established a set of corporate objectives for financial performance. The objectives include a 14 percent annual growth in sales, a 14 percent annual growth in earnings per share and consistent increases in dividends.

4.4 PRODUCTION AND OPERATIONS

In 23 states and Canada, Dana operates 130 facilities, of which 63 manufacture products for the original equipment vehicle market. In aggregate, the facilities occupy approximately 15,200,000 square feet. Corporate headquarters are

located in a suburban area of Toledo, Ohio, in a 60,000 square-foot building with 115 employees.

4.4.1 Major Automotive Facilities

Production for passenger car original equipment is spread out among Dana's facilities with only one plant—the Parish Division in Reading, Pennsylvania—producing a sizable percentage of auto parts. The following sections describe the characteristics of the Reading, Pennsylvania, plant plus other Dana plants which supply the auto industry. The "other" plants are divided into the following categories:

- Drivetrain plants
- Engine component plants
- Gasket and seal plants.

Reading, Pennsylvania

The Parish Division plant in Reading, Pennsylvania, manufactures passenger car frames, light truck frames, truck siderails, heavy-duty stampings, leaf springs and axles. (See Figure 4-3.) The production of passenger car frames accounts for approximately 20 percent of Dana's output for the original equipment passenger car market. The plant employs 2,000 persons.

Drivetrain Plants

Axles, universal joints, and driveshafts are manufactured at five plants located in Edgerton, Wisconsin; Fort Wayne and Marion, Indiana; Lima, Ohio; and Pottstown, Pennsylvania. (See Figures 4-4 through 4-8.) The plants manufacture primarily truck parts and components, but each facility produces some parts for passenger cars. The largest are the Fort Wayne and Marion plants which employ 2,500 people each. Edgerton, Pottstown and Lima employ 1,300, 1,230 and 600 people, respectively.

Engine Component Plants

Four plants in the Perfect Circle Division produce pistons, piston rings and valves for light and heavy trucks, and a small portion of the output of each plant is for passenger cars. (See Figures 4-9 through 4-12.) The largest is a plant in Hagerstown, Indiana, that employs 3,700 people. The others are in Rushville and Richmond, Indiana, and Pueblo, Colorado, and together they employ 1,250 people.

Company Dana (Parish Div.) County _____ Plant Size _____

Plant Reading Congressional District _____

Address PO Box 858 or 1422 Reading, PA 19603 Standard Metropolitan Statistical Area _____ No. of Employees 2,000

Telephone (215) 373-4211 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Passenger car frames, truck siderails, heavy-duty stampings, light truck frames, leaf springs, trailer suspension and axles	N.C.A.	N.C.A.	20 percent

FIGURE 4-3. READING PLANT DATA

Company Dana (Spicer Div.) County _____ Plant Size _____

Plant Marion Congressional District _____

Address 400 South Miller
Marion, IN 46952 Standard Metropolitan Statistical Area _____ No. of Employees 2,500

Telephone (317) 664-1281 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Universal joints driveshafts	N.C.A.	N.C.A.	Small amount

FIGURE 4-4. MARION PLANT DATA

Company Dana | County | Plant Size

Plant Fort Wayne | Congressional District

Address 2100 West State, Fort Wayne, IN 46808 | Standard Metropolitan Statistical Area | No. of Employees 2,500

Telephone (219) 483-7174 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Axles	N.C.A.	N.C.A.	Small amount

FIGURE 4-5. FORT WAYNE PLANT DATA

Company Dana (Spicer Div.) County _____ Plant Size _____

Plant Edgerton Congressional District _____

Address PO Box 112
Edgerton, WI 53534 Standard Metropolitan Statistical Area _____ No. of Employees 1,300

Telephone (608) 884-3488 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Front driving axles, transfer cases, 4-wheel drive systems	N.C.A.	N.C.A.	Small amount

FIGURE 4-6. EDGERTON PLANT DATA

Company Dana (Spicer Div.) County _____ Plant Size _____

Plant Pottstown Congressional District _____

Address 125 S. Keim
Pottstown, PA
19464

Standard Metropolitan Statistical Area _____

No. of Employees 1,230

Telephone (215) 323-4200 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Universal joints	N.C.A.	N.C.A.	Minimal amounts

FIGURE 4-7. POTTSTOWN PLANT DATA

Company Dana (Spicer Div.) County _____ Plant Size _____

Plant Lima Congressional District _____

Address 1095 Bible Road
Lima, Ohio 45801 Standard Metropolitan Statistical Area _____ No. of Employees 600

Telephone (419) 227-2001 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Universal joints	N.C.A.	N.C.A.	Small amount

FIGURE 4-8. LIMA PLANT DATA

Company Dana (Perfect Circle Div.) County _____ Plant Size _____

Plant Hagerstown Congressional District _____

Address 552 South Washington
Hagerstown, IN 47346 Standard Metropolitan Statistical Area _____ No. of Employees 3,700

Telephone (317) 489-4561 Primary SIC Code(s) 3592

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Engine components . Piston rings . Pistons . Valves	N.C.A.	N.C.A.	Minimal amount

FIGURE 4-9. HAGERSTOWN PLANT DATA

Company Dana (Perfect Circle Div.) County _____ Plant Size _____

Plant Richmond Congressional District _____

Address Williamsburg Pike
PO Box 1166
Richmond, IN 47374 Standard Metropolitan Statistical Area _____ No. of Employees 500

Telephone (317) 962-8561 Primary SIC Code(s) 3321

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Pistons, piston rings, valve seals, cylinder sleeves, cylinder liners, camshafts, water pumps, air compressors, misc. small castings, and speed controls Engine and chassis parts	N.C.A.	N.C.A.	Small amount

FIGURE 4-10. RICHMOND PLANT DATA

Company Dana (Perfect Circle Div.) County _____ Plant Size _____

Plant Pueblo Congressional District _____

Address Memorial Airport
Box 666
Pueblo, CO 81002
Standard Metropolitan Statistical Area _____ No. of Employees 500

Telephone (303) 948-3311 Primary SIC Code(s) 3592

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Engine components . Pistons . Piston rings . Valves	N.C.A.	N.C.A.	Small amount

FIGURE 4-11. PUEBLO PLANT DATA

Company Dana (Perfect Circle Div.) County _____ Plant Size _____

Plant Rushville Congressional District _____

Address Box 111, Route 3 Rushville, IN 46173 Standard Metropolitan Statistical Area _____ No. of Employees 250

Telephone (317) 932-4191 Primary SIC Code(s) 3321

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Internal engine components	N.C.A.	N.C.A.	Less than 5 percent

FIGURE 4-12. RUSHVILLE PLANT DATA

Gasket and Seal Plants

Three plants produce gaskets and seals for the automobile market. (See Figures 4-13, 4-14 and 4-15.) The largest is a Victor Division plant in Chicago that employs 1,180 people and produces gaskets, oil seals, sheet packing and rubber-molded products. The other two plants are in Robinson, Illinois, and Churubusco, Indiana, and they employ 400 and 500 people, respectively.

4.4.2 New Plants

Dana has not recently announced plans for new or expanded plants that would produce auto parts, but the acquisition of the Wix Corporation expanded the company's facilities. Wix produces filters in five plants in South Carolina with a combined area of 1,503,000 square feet. In addition, Wix has warehouses in Miami, Des Moines, St. Louis, Dallas, Los Angeles and Fresno.

4.5 FINANCIAL STATUS

Dana has achieved eight successive years of record sales and profits. (See Figure 4-16.) However, for the nine months ended May 31, 1980, sales were down by 8 percent and profits were off by 32 percent. In the longer term, the company appears to be strong, having diversified gradually into the industrial, replacement and overseas markets.

4.5.1 Operations Analysis

Dana's profits and sales more than doubled in the period from 1975 to 1977, and the company has increased its dividends over this period. Profits and sales in fiscal 1979 rose 22 percent and 23 percent, respectively. Return on equity rose steadily from 1976-1978 reaching or exceeding 19 percent. The ratio of operating income to sales has fluctuated slightly but has remained in the 14 to 15 percent range. The earnings-to-assets ratio has also varied while the ratio of earnings to sales has held steady in the vicinity of 6 percent.

Dana's current decline in profits is due in large part to the rapid decline in the market for light trucks. Although the current slump in auto orders should hold down Dana's profit growth in the short term, the company appears to be sufficiently diversified to weather the slump. The replacement market should not reflect the downturn in new vehicle orders, and the firm's industrial sales should continue to grow at a steady rate. In the medium term, Dana is

Company Dana (Victor Div.) County _____ Plant Size _____

Plant Chicago Congressional District _____

Address P.O. Box 1333, or 5750 W. Roosevelt Road Chicago, IL 60650 Standard Metropolitan Statistical Area _____ No. of Employees 1,180

Telephone (312) 287-6180 Primary SIC Code(s) 3293

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Gaskets, sheet packing, oil seals, rubber-molded products	N.C.A.	N.C.A.	Less than 5 percent

FIGURE 4-13. CHICAGO PLANT DATA

Company Dana County Plant Size

Plant Churubusco Congressional District

Address PO BOX 245
Churubusco, IN
46723

Standard Metropolitan Statistical Area

No. of Employees 500

Telephone (219) 693-2111 Primary SIC Code(s) 3293

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Gaskets	N.C.A.	N.C.A.	Minimal amount

FIGURE 4-14. CHURUBUSCO PLANT DATA

Company Dana (Victor Div.) County _____ Plant Size _____

Plant Robinson Congressional District _____

Address Eaton Road
Robinson, IL 62454
Standard Metropolitan Statistical Area _____ No. of Employees 400

Telephone (618) 544-8651 Primary SIC Code(s) 3293

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Gaskets	N.C.A.	N.C.A.	Minimal amount

FIGURE 4-15. ROBINSON PLANT DATA

Year**	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	2761	164	18.8	13.1
78	2253	134	19.6	14.2
77	1794	108	19.2	14.6
76	1444	89	19.0	15.1
75	1136	62	15.2	14.0
74	1078	61	16.5	13.9

Year**	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	9.9	1.68	5.9
78	10.5	1.75	6.0
77	10.3	1.72	6.0
76	9.9	1.60	6.2
75	7.9	1.44	5.5
74	8.8	1.54	5.7

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

**Ending August 31

FIGURE 4-16. OPERATIONS ANALYSIS

in a good position to profit from expected downsizing in the light truck market and the new products that this effort will require. Similarly Detroit's increasing production of front-wheel-drive and four-wheel-drive vehicles will present the company with new growth opportunities. While noting the possibility of stagnating profits in the short run, the analysts predict steady growth for the company in the longer term and recommend the stock to investors.

4.5.2 Capital Analysis

Owner's equity rose sharply in 1977 and 1978, but most of the increases resulted from the acquisitions of the Weatherhead, Wichita Clutch and Wilson companies. (See Figure 4-17.) The ratio of capital expenditures to assets averaged 6 percent from 1975 to 1977, rising to 9 percent in 1978. Both the ratio of long-term debt to capitalization and the current ratio showed a downward trend from 1975-1978 but rose in 1979. The long-term debt to capitalization was only 22.3 percent in 1979. The company is thus in a good position to borrow if it decides on major expansion.

4.6 RESEARCH AND DEVELOPMENT

Many of Dana's divisions are involved in research to develop lighter materials for vehicle parts and components. Particular emphasis is being placed on the development of lighter driveshafts. The Universal Joint division is experimenting with driveshafts made of plastic reinforced with glass and graphite fibers. The division is also testing the replacement of steel with aluminum in driveshafts, a change that could reduce the weight of the component by two-thirds. Both new alternatives are still in the experimental stages as Dana engineers seek solutions to welding and joining problems with the new materials.

4.7 LABOR RELATIONS

In December 1979, Dana signed a new three-year contract with the United Auto Workers (UAW) covering 8,000 workers at 24 of its plants. The contract, modeled after the 1979 auto settlement, covers skilled, office and technical employees. It provides for wage increases, pension increases, new cost of living arrangements and a provision giving preferential hiring at new Dana plants to workers at existing UAW-covered plants producing the same product.

Year *	Sales	P/E Ratio[1]	Sources: Earnings	Sources: Depreciation	Sources: Changes in Long-Term Debt	Sources: Changes in Owners' Equity Other Than Retained Earnings
79	2761	9.2	164	52.8	99	85
78	2253	6.1	134	46.0	(9)	36
77	1794	7.2	108	39.6	1	20
76	1444	8.0	89	42.7	3	7
75	1136	13.0	62	32.5	69	0
74	1078	4.7	61	27.7	18	1

Year *	Uses: Change in Working Capital	Uses: Capital Expenditures	Uses: Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	140.6	157	46	22.3	12.2	9.9	2.4
78	21.9	120	40	19.5	16.2	9.6	2.1
77	59.4	64	29	23.6	15.1	6.2	2.8
76	59.5	48	23	26.8	12.8	5.4	2.7
75	106.2	49	20	29.6	9.6	6.2	3.1
74	3.5	70	19	23.4	12.4	10.1	2.0

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

*Ending August 31

FIGURE 4-17. CAPITAL ANALYSIS

Dana places a strong emphasis on the growth and development of its employees. The company operates its own university and in 1978 employees attended a total of 1,437 weeks of training at the school. Dana set a goal of a 40 percent increase in attendance in 1979. There is a corporate policy of promoting from within, and the company develops about 70 percent of its management and supervisory personnel through its university training classes and its Management Resource Program. More than 16,600 Dana people are shareholders in the company under a voluntary stock purchase plan. The company believes that its emphasis on the growth of its people has been an important factor in the increase of sales per employee from $26,000 in 1971 to $76,000 in 1979.

5. DELCO REMY

Delco Remy is unlike other companies covered in this report—it is owned by a major auto manufacturer, General Motors. However, as a group, GM's Delco divisions constitute one of the most important suppliers of parts to the auto industry. Delco Remy is one of the largest component divisions in General Motors Corporation and is the world's leading manufacturer of automotive electrical systems, supplying many industries and companies besides its parent. Downsizing has resulted in a changing product mix for Delco Remy and different specifications for many of the company's parts, such as starting motors and alternators.

5.1 CORPORATE SIZE AND STRUCTURE

Delco Remy employs approximately 18,000 people and has plants throughout the United States. The company's headquarters and major manufacturing facility are in Anderson, Indiana.

Delco Remy is one of the largest of five Delco divisions. The others are Delco Moraine, Delco Electronics, Delco Products and Delco Air Conditioning. These are described below.

- Delco Moraine manufactures power brakes, master cylinders, wheel cylinders, combination valves, disc and drum brake assemblies, engine bearings and friction components. The company has recently introduced a lightweight aluminum and plastic master brake cylinder used on "X" cars, as well as new lightweight disc brake calipers offered on many GM cars. The division operates out of a large plant with 1,700 employees in Dayton, Ohio.

- Delco Electronics makes auto radios, tape players, integrated circuits, automotive electronic components and spacecraft control systems. It has recently developed the computer-controlled catalytic converter system used on some GM cars. The division operates plants in Shreveport, Louisiana; Kokomo, Indiana and Oak Creek, Wisconsin.

- Delco Products makes shock absorbers, industrial motors, power accessory actuators and windshield wipers. The division operates out of Delco facilities in Dayton, Ohio, and Rochester, New York.

- Delco Air Conditioning makes automobile air conditioner compressors and controls and operates out of the Delco facilities in Dayton, Ohio.

5.2 MAJOR MARKETS AND PRODUCTS

A summary of the major market information for Delco Remy is presented in Figure 5-1.

MARKET DATA
Major Markets: Automotive, truck, off-highway vehicle markets
Automotive Customers: Predominantly General Motors, but also other manufacturers
Automotive Products: Batteries, starter motors, alternators, ignition systems

FIGURE 5-1. DELCO REMY MARKET DATA

5.2.1 Major Markets

Delco Remy is a leading supplier of electrical equipment to many industries—automotive, truck and off-highway vehicle industries, supplying more than 400 original equipment manufacturers.

- Automotive. Passenger cars are the largest single market for Delco Remy. Major customers are General Motors Divisions—Chevrolet, Pontiac, Oldsmobile, Buick and Cadillac. Delco Remy is also a significant supplier to other car manufacturers.

- Truck. A large portion of the total Delco Remy business is devoted to electrical systems for the truck industry. The equipment is supplied for a wide range of truck sizes and is used by all major truck manufacturers.

- Off-Highway. Delco Remy is also a leading supplier of electrical equipment for farm machinery, construction machinery, marine motors, industrial trucks, lawn and garden tractors and on-site power.

5.2.2 Major Products

Delco Remy makes batteries, maintenance-free batteries, starter motors, alternators, ignition systems, horns, switches, solenoids, vacuum actuators, emission control equipment and warning systems. These products are made for passenger cars and light trucks and in heavy-duty versions for heavy trucks and off-highway vehicles. Delco Remy produces over 30,000 electrical sets daily.

Sales Strategy

Delco Remy advertises its products in automotive journals and stresses the company's large size and years of experience in the automotive ignition area. Recent advertising campaigns have focused on heavy-duty ignition system parts and on the company's new maintenance-free battery. The advertisements address the technical benefits and the specifications of the various products.

New Products Plans

Delco Remy has come out with several important new products in the last few years as described below.

- Maintenance-Free Battery. Delco Remy's most publicized new product is its "Freedom" or maintenance-free battery. The company's engineers developed a battery grid which virtually eliminates gassing and water loss in batteries, and Delco became the first manufacturer with a full line of maintenance-free products. The company is advertising its new battery heavily and has already sold over twenty-five million of them.

- High-Energy Electronic Ignition System. Delco Remy is manufacturing GM's new high-energy electronic ignition systems. The systems which were introduced in the mid '70s use modern electronic technology to improve ignition life and spark plug firing. More sophisticated automotive electronic parts, such as control modules, are manufactured by Delco Electronics.

- New Lightweight Starter Motors and Alternators. As it has with other companies, automotive downsizing has resulted in some changes in emphasis in the size and specification of Delco Remy parts. Thus, Delco Remy now offers a new line of starter motors from weight-saving passenger car designs to models for all sizes of diesel engines. Light duty alternators are also available with outputs from 32 to 100 amps.

Delco, in conjunction with GM's product plans to produce electric vehicles in the mid-1980's, is working on plans to produce electric vehicle batteries. Currently, Delco is focusing its efforts primarily on a zinc/nickel oxide battery.

5.3 PRODUCTION AND OPERATIONS

Delco Remy is a complete manufacturing operation, processing over 600 tons of steel, 100 tons of copper, 6,200 different raw material items and 9,000 standard, purchased parts every working day. The company uses iron, zinc and aluminum casting, thermoset and thermoplastic molding, cold forming, machining and various winding operations in its manufacture of electrical products. Much of the specialized equipment and many of the processing techniques employed are developed by Delco Remy process engineers.

Delco Remy divides its plants into electrical manufacturing facilities and battery plants. Each are discussed below.

5.3.1 Electrical Manufacturing Facilities

Electrical manufacturing facilities are located in Anderson, Indiana; Laurel and Meridan, Mississippi.

Anderson Plant

The Anderson Plant is a huge five-million-square-foot facility situated on 550 acres in Anderson, Indiana. (See Figure 5-2.) The plant employs 4,500 people and includes the headquarters for the division. The site has 16 plants, 11 of which are directly engaged in the processing of raw materials or the manufacturing of finished products. The other five plants provide support and administrative functions.

The 11 manufacturing facilities include plants making:

- Starting motors for cars, light trucks, industrial trucks and farm tractors
- Motor generators, DC generators and service parts

Company Delco Remy **County** Madison **Plant Size** More than 5 million square feet
550 acres

Plant Anderson **Congressional District** 5

Address 2401 Columbus Ave.
Anderson, Indiana
46011

Standard Metropolitan Statistical Area 0400

No. of Employees 4500

Telephone (317) 644-5581 **Primary SIC Code(s)** 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Starters Generators Alternators Ignition components Batteries	N.C.A.	N.C.A.	

FIGURE 5-2. ANDERSON PLANT DATA

- Voltage regulators, relays and emission control solenoids
- Horns and switches and aluminum and zinc die castings
- Heavy-duty starting motors
- Ignition distributors, coils, contact points and condensers
- High-energy ignition systems
- Alternators, vacuum actuators, thermoplastic molded parts.

The complex also includes a grey iron foundry.

Laurel Plant

The Laurel, Mississippi, plant, known as plant 28, is a new plant now employing only 50 people. (See Figure 5-3.) The plant was built to rebuild cranking motors and alternators for the heavy-duty truck and off-road market.

Meridan Plant

The Meridan, Mississippi, plant is known as plant 25 and is a 250,000 square foot facility. (See Figure 5-4.) The plant has been used for production of the new small-size starting motors for cars equipped with engines up to about 300 cubic inches.

5.3.2 Battery Plants

Battery manufacturing plants are located in five different cities throughout the country to serve the original equipment market and provide batteries for national distribution to the replacement market.

Every Delco battery plant is a complete and self-contained manufacturing facility capable of producing finished batteries from raw materials. Each has its own Production Control and Quality Control departments and uses identical specifications for materials, tests and processes.

The largest plants are located in Muncie, Indiana; New Brunswick, New Jersey; and Olathe, Kansas. (See Figures 5-5 through 5-7.) These three plants employ 1,500, 820 and

Company Delco Remy | County Jones | Plant Size

Plant Laurel Plant 28 | Congressional District 5

Address Laurel Airport
Industrial Park
Laurel, MS 39440

Standard Metropolitan Statistical Area

No. of Employees 50

Telephone (601) 428-4122 | Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Rebuilt cranking motors and alternators for the heavy-duty truck and off-road market.	N.C.A.	N.C.A.	N.C.A.

FIGURE 5-3. LAUREL PLANT DATA

Company Delco Remy County Lauderdale Plant Size 250,000 square feet

Plant Meridian Plant 25 Congressional District 3

Address Industrial Park
Box 4396
Meridian, MS 39301

Standard Metropolitan Statistical Area

No. of Employees 200

Telephone (601) 485-5122 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
New small-size starting motors	N.C.A.	N.C.A.	N.C.A.

FIGURE 5-4. MERIDIAN PLANT DATA

Company Delco Remy County Delaware Plant Size

Plant Muncie Congressional District 10

Address 1200 W. Willard St.
Muncie, IN 47302
Standard Metropolitan Statistical Area 5280 No. of Employees 1500

Telephone (317) 747-2269 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Batteries	N.C.A.	N.C.A.	N.C.A

FIGURE 5-5. MUNCIE PLANT DATA

Company Delco Remy County Middlesex Plant Size

Plant New Brunswick Congressional District 5

Address Jersey Avenue
New Brunswick, NJ
08903

Standard Metropolitan Statistical Area 5460

No. of Employees 820

Telephone (201) 246-5000 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 5-6. NEW BRUNSWICK PLANT DATA

Company Delco Remy **County** Johnson **Plant Size**

Plant Olathe **Congressional District** 3

Address 400 W. Dennis
Olathe, Kansas
66061

Standard Metropolitan Statistical Area

No. of Employees 750

Telephone (913) 764-4300 **Primary SIC Code(s)** 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 5-7. OLATHE PLANT DATA

750 people, respectively. The other plants are located in Fitzgerald, Georgia, where 330 people are employed, and Anaheim, California, where 425 people are employed. (See Figures 5-8 and 5-9.)

5.3.3 New Plants and Expansions

In order to increase capacity for maintenance-free battery designs, Delco Remy recently built a new plant in Muncie, Indiana, replacing an older existing facility. The Laurel plant in Mississippi was also recently built to add to Delco's electrical parts rebuilding capability.

5.4 FINANCIAL STATUS

Delco Remy is owned by General Motors, and information on the division's performance is not readily available.

5.5 RESEARCH AND DEVELOPMENT

Delco Remy has a 225,000-square-foot engineering and research center located in Anderson, Indiana, which is devoted to automotive-type electrical systems. The center employs nearly 500 people and has facilities for cold testing, vibration testing and durability testing of various engine electrical system parts. The primary responsibility of the center is to design appropriate automotive electrical systems for the more than 400 Delco Remy customers.

One major R&D activity of this center has focused on the development of new automotive applications of powdered metal. New powdered metal applications investigated by the division include drive clutches used in heavy duty cranking motors and magnetic rotating components for alternators. Eventually the division may develop an entire family of electric motors in which powdered metal inner frames will be used.

For many years Delco's automotive cranking motors were produced with wrapped steel frames. Some of the problems associated with that design are greatly reduced or eliminated with the switch to powdered metal frames. Powdered metal parts also have the advantage that they can save weight, are produced with fewer machining operations and reduce scrap.

Company Delco Remy **County** Ben Hill **Plant Size**

Plant Fitzgerald **Congressional District** 8

Address Perry House Road
Box 1071
Fitzgerald, Georgia
31750

Standard Metropolitan Statistical Area

No. of Employees 330

Telephone (912) 423-5461 **Primary SIC Code(s)** 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 5-8. FITZGERALD PLANT DATA

Company Delco Remy County Orange Plant Size

Plant Anaheim Congressional District 23

Address 1201 N. Magnolia
Anaheim, California
92805

Standard Metropolitan Statistical Area 0360

No. of Employees 425

Telephone (714) 527-2233 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 5-9. ANAHEIM PLANT DATA

6. EATON

Eaton Corporation is a manufacturer of advanced technology products serving worldwide transportation and industrial markets. Its products include truck and automobile components, electrical and electronic systems and subsystems, materials handling vehicles and systems, industrial power transmission systems and components and appliance controls.

Eaton's automotive products primarily include engine components, emission and climate controls and selected castings. While the vehicle downsizing trend may result in a decrease in sales of some engine components, Eaton is planning to balance this trend through increased sales of emission control devices, safety-related components and speed controls. In addition, the firm is working on the development of new products which will improve vehicle fuel economy. Thus, the downsizing trend may contribute to an expansion of Eaton's automotive product line.

6.1 CORPORATE SIZE AND STRUCTURE

Eaton is a major manufacturer of motor vehicle components with total annual sales of over $3 billion. The company is s structured to reflect its principal markets, transportation products and industrial products.

6.1.1 Revenue, Profit and Employment

In 1979 Eaton had record sales of $3,360 million and earnings of $154 million. In 1979, Eaton employed about 57,800 people, 16,000 of whom were involved in the production of automotive components. Table 6-1 summarizes Eaton's revenues, profit and employment.

TABLE 6-1. EATON REVENUES, PROFIT AND EMPLOYMENT.

Year	Revenues (Millions)	Profits (Millions)
1979	$3,360	$154
1978	2,791	131
Average Number of Employees: 57,800 (1979)		

6.1.2 Corporate Organization

In 1979, a new operating management team was put into place, effective July 1. In addition, the company organized into a four group structure. These groups are listed below. (See Figure 6-1.)

- Automotive Components Group
- Industrial Group
- Instruments and Diversified Products Group
- Truck Components Group.

6.2 MAJOR MARKETS AND PRODUCTS

Although Eaton has traditionally concentrated its major activities in automotive or truck-related markets and products, the company has recently completed an aggressive acquisition campaign to broaden and diversify its product base. New areas of emphasis include high-technology product and market areas viewed as critical for growth in the 1980s. Figure 6-2 summarizes the major market information for Eaton.

MARKET DATA

Major Markets: Automotive, truck and off-highway vehicle components, materials handling, agricultural equipment, electronics manufacturing, construction, industrial and military controls

Percent of Sales to the Auto Industry: 12 percent

Supplies to the Following Automotive Companies: GM, Ford, Chrysler

Major Automotive Products: Engine valves, hydraulic valve lifters, leaf springs, EGR valves, viscous fan drives, locking differentials, cruise controls, tire valves, thermostats, fasteners, automatic temperature controls, heaters, air conditioning equipment, backpressure transducers

FIGURE 6-2. MARKET DATA FOR EATON

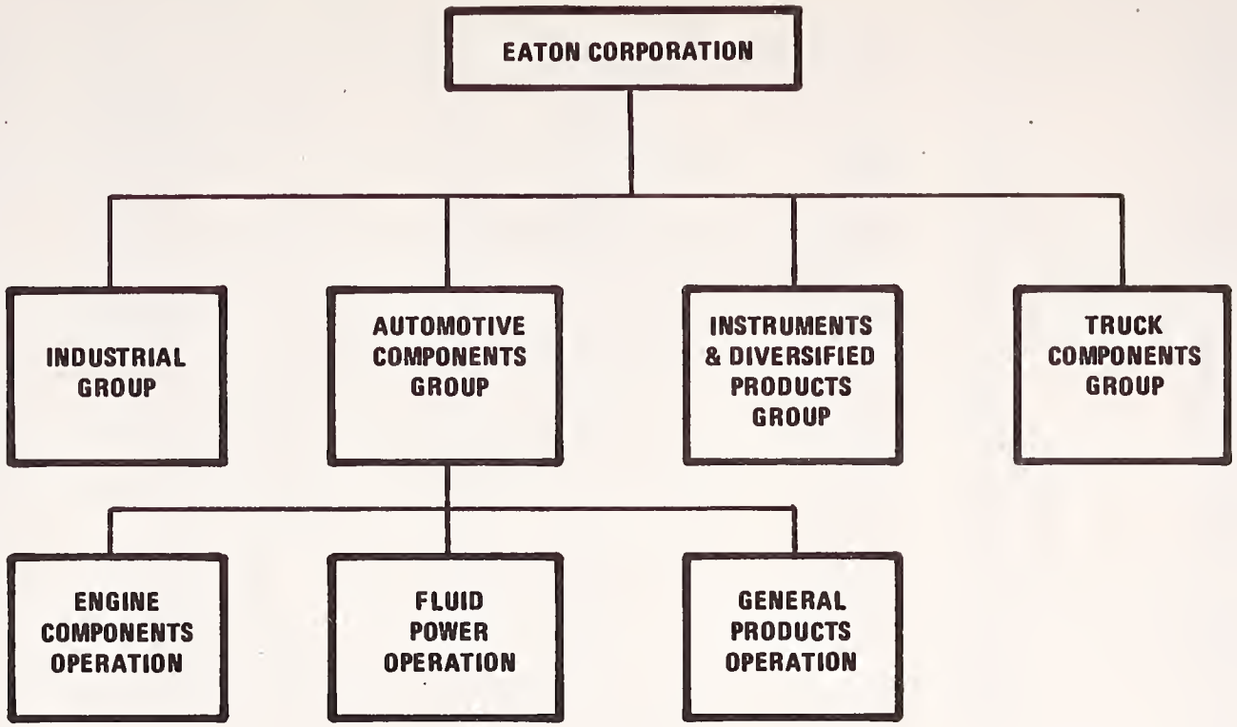

FIGURE 6-1. EATON ORGANIZATION, 1979

6.2.1 Major Markets

While motor vehicle components (automotive and truck) have traditionally been the major market for Eaton, the 1978 acquisition of Cutler-Hammer has broadened the firm's market area to include advanced electronic systems and electrical distribution products. The following is a summary of Eaton's 1979 sales by product markets:

- Motor vehicle components: 49 percent
- Materials handling vehicles: 14 percent
- Industrial—including electrical and electronic: 37 percent.

The major markets for Eaton's industrial products (i.e., all products except motor vehicle components) include the agriculture, construction, forestry, appliance and shipping industries.

6.2.2 Products

Eaton is best known for its truck components. These include heavy-duty transmissions, brakes and single and tandem axles. In addition, Eaton is the only supplier of complete drivetrains for trucks. Truck components accounted for 40 percent of the company's total sales in 1979.

Passenger car components accounted for 9 percent of Eaton's 1979 sales. These products include:

- Engine Components - Hydraulic valve lifters, valve seat inserts, engine valves, rocker arms, EGR valves, backpressure transducers, cruise control systems and gears
- Fluid Power Components - Power steering pumps, viscous fan drives and limited slip differentials for light trucks

- General Automotive Components - includes leaf springs, tire valves, air conditioning and heating systems, thermostats, fasteners and automotive forgings.

Other Eaton products include couplings, lift trucks, tractor shovels, hoists, dynamometers, speed reducers, fasteners, wire, timber haulers, conveyors, stacker cranes, connectors and electronics.

Sales Strategy

In promoting and selling its automotive products Eaton emphasizes its size and success as a manufacturing firm. Specific promotional statements include claims that Eaton:

- Has been the leading supplier of fan systems for the automotive market for over 20 years
- Is the largest valve gear component manufacturer in the world
- Has achieved market leadership in hydraulic and electronic technologies
- Experiences increased demand for its valves and valve lifters from year to year.

Recent promotional statements have emphasized the balance of manufacturing and engineering skills which the firm offers and the importance of designing sophisticated components for the future.

New Product Plans

Much of Eaton's automotive product development effort is aimed at solving car manufacturer problems in fuel consumption, pollution controls and safety, as well as continuing to improve the basic operation and structure of vehicles. Among new automotive product plans which are under consideration by the company are:

- Low Tire Pressure Monitoring System. Future tires will have stiff sidewalls and will not deflect noticeably when deflated. However, the advanced tires will continue to function after deflation for a total distance of 40 miles. Eaton is planning to manufacture a warning system to alert motorists when these tires are low on pressure or flat.

- New Hydraulic Lifter Designs. Eaton has developed four new hydraulic lifter designs engineered specifically for its growing European and Japanese OEM markets.

- Turbocharger Components. Eaton is studying various methods of producing low cost turbocharger components. Turbochargers are considered to fit well into Eaton's existing automotive business, and the current industry capacity is considered insufficient for this developing field.

Other new products include components destined for the truck market, such as the new lightweight, heavy-duty truck transmission designed to match fuel efficient low rpm engines.

6.2.3 Marketing Strategy

Eaton is committed to maintaining its traditional products and markets, such as engine valves, while at the same time branching out into new automotive growth areas, such as electronic controls and new vehicle component designs. The company is also directing efforts toward expanding its foreign automotive markets. Recently, Eaton purchased a minority interest in Nittan Valve Company of Japan to achieve product and technological penetration of the Japanese automotive market. Other foreign market strategies include joint venture agreements for the manufacture of vehicle components in Brazil and Hungary. In Europe, better roads and the energy crunch are helping speed the growth of the European truck market. Eaton sees a growing worldwide need for heavy trucks.

6.3 CORPORATE STRATEGY

Eaton's overall goal is to have a broad and balanced base of business, with growing involvement in the production of advanced technology for industry. Eaton is striving to gain recognition as an industrial and capital goods firm and to counteract the cyclical nature of the auto industry by diversification into other sectors. Eaton searched for a good-sized acquisition to smooth out the peaks and valleys of the automotive supply business. The successful acquisition of Cutler-Hammer, Inc., and other firms has provided a more balanced thrust for the company's future. Companies recently acquired by Eaton include:

- Cutler-Hammer, Inc. Cutler-Hammer is a sophisticated guidance systems developer and manufacturer of electronic equipment and semiconductor manufacturing and testing equipment.

- Kenway, Inc. Kenway manufactures automated material storage and retrieval systems.

- Samuel Moore & Company. This company manufactures hose, cable and wire products including fiber-reinforced pressure hose, high-performance air brake nylon tubing and plastic resins.

Eaton's strategic planning process has identified more than 400 product lines where the company's goal is to be first or second in the marketplace or, in some cases, to be reliable cash generators. Failure to reach the desired market position in a reasonable time and with adequate corporate support means that the product line will be considered for phase-out or spin-off. This has happened with several smaller operations including the Water Cooler Division and the Construction Equipment unit which made front end loaders. Eaton has used the proceeds from the sale of these divisions to promote growth for its stronger product areas.

6.3.1 Production and Operations

Eaton operates manufacturing plants, warehouses, research facilities and offices in 83 locations in the United States and 49 locations outside of the United States. Domestically, the Automotive Components Group manufactures parts and components in 21 facilities employing over 10,000 workers.

6.3.2 Major Automotive Facilities

The following sections contain brief summaries of Eaton's principal automotive manufacturing plants. Due to the large number of plants (21) they are grouped according to major products. Individual summaries of each plant are provided in Figures 6-3 through 6-23. The principal product categories are:

- Engine Components
- Automotive Controls
- Hydraulic and Transmission Equipment
- Fasteners
- Forgings.

Plants Which Manufacture Engine Components

Eaton manufactures automotive engine components primarily in 11 plants located in the states of North Carolina,

Illinois, Missouri, Michigan and Nebraska. The plants, summarized individually in Figures 6-3 through 6-13, include the following:

- Kearney Plant
- West Plains Plant
- Battle Creek Plant
- Saginaw Plant
- Savanna Plant
- Warren Plant
- Rochelle Plant
- Hanover Plant
- Botavia Plant
- Carol Stream Plant
- Sanford Plant.

The principal engine components which these facilities produce include valves, valve lifters, thermostats and gears. Many of the plants are devoted solely to the production of automotive components while others have as little as 33 percent of production devoted to the automotive market.

Plants Which Manufacture Automotive Controls

Four of Eaton's plants, summarized in Figures 6-14 through 6-17, are involved in the production of engine and other controls and related hardware. Among the products manufactured at these plants are computer control systems, speed controls, climate controls, heating and ventilating equipment, tire valves, and miscellaneous special controls and gauges. The plants, spread geographically from North Carolina to Utah, include:

- Harrodsburg Plant
- Roxboro Plant
- Cleveland Plant (E. 80th St.)
- Bountiful Plant.

Plants Which Manufacture Hydraulic and Transmission Equipment

Automotive hydraulic and transmission equipment is manufactured by Eaton Plants in Michigan, Iowa and Ohio. These plants, summarized in Figures 6-18 through 6-20, include:

- Marshall Plant
- Shenandoah Plant
- Airflex Plant.

Company Eaton | County | Plant Size

Plant Kearney | Congressional District 3

Address East Lincoln Hwy, Kearney, Nebraska 68847 | Standard Metropolitan Statistical Area | No. of Employees 409

Telephone 308-234-1841 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Valves	N.C.A.	N.C.A.	Ford

FIGURE 6-3. KEARNEY PLANT DATA

Company Eaton County _____ Plant Size _____

Plant West Plains Congressional District 8

Address 210 Allen St.
West Plains, Missouri
65775
Standard Metropolitan Statistical Area _____ No. of Employees 159

Telephone 417-256-7171 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostats Valves	N.C.A.	N.C.A.	GM Ford

FIGURE 6-4. WEST PLAINS PLANT DATA

Company Eaton | County | Plant Size

Plant Battle Creek | Congressional District 3

Address 463 N. 20 St.
Battle Creek, MI
49016 | Standard Metropolitan Statistical Area | No. of Employees 1426

Telephone 616-962-7571 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Valves/lifters	N.C.A.	N.C.A.	GM Ford Chrysler

FIGURE 6-5. BATTLE CREEK PLANT DATA

Company Eaton | County | Plant Size

Plant Saginaw | Congressional District 8

Address 100 Rust St.
Saginaw, MI 48601 | Standard Metropolitan Statistical Area | No. of Employees 939

Telephone 517-753-5461 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Valves/lifters Engine Components	N.C.A.	N.C.A.	GM Ford Chrysler

FIGURE 6-6. SAGINAW PLANT DATA

Company Eaton | County | Plant Size

Plant Savanna | Congressional District 19

Address 199 Viaduct Rd.
Savanna, Illinois
61074 | Standard Metropolitan Statistical Area | No. of Employees 278

Telephone 815-273-7731 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostats & Valves	N.C.A.	N.C.A.	Approximately 33% automotive GM Ford

FIGURE 6-7. SAVANNA PLANT DATA

Company Eaton | County | Plant Size

Plant Warren | Congressional District 16

Address 604 S. Railroad St.
Warren, Illinois
61087 | Standard Metropolitan Statistical Area | No. of Employees 183

Telephone 815-745-2161 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostats/Valves	N.C.A.	N.C.A.	Approximately 33% automotive GM Ford

FIGURE 6-8. WARREN PLANT DATA

Company: Eaton | County: | Plant Size:

Plant: Rochelle | Congressional District: 16

Address: Wood Street at Avenue G, Rochelle, Ill. 61068 | Standard Metropolitan Statistical Area: | No. of Employees: 307

Telephone: 815-562-2107 | Primary SIC Code(s): 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostats/Valves	N.C.A.	N.C.A.	Approximately 33% automotive GM Ford

FIGURE 6-9. ROCHELLE PLANT DATA

Company Eaton | County | Plant Size

Plant Hanover | Congressional District 16

Address 107 Washington St.
Hanover, Ill.
61041 | Standard Metropolitan Statistical Area | No. of Employees 230

Telephone 815-591-2228 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostats/Valves	N.C.A.	N.C.A.	Approximately 33% automotive GM Ford

FIGURE 6-10. HANOVER PLANT DATA

Company Eaton | County | Plant Size

Plant Batavia | Congressional District 15

Address 204 S. Water St.
Batavia, Ill.
60510 | Standard Metropolitan Statistical Area | No. of Employees 162

Telephone 312-879-1772 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostat/Valves	N.C.A.	N.C.A.	Approximately 33% automotive GM Ford

FIGURE 6-11. BATAVIA PLANT DATA

Company Eaton | County | Plant Size

Plant Carol Stream | Congressional District 14

Address 191 E. North Ave.
Carol Stream, Ill.
60187 | Standard Metropolitan Statistical Area | No. of Employees 284

Telephone 312-682-8439 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Thermostat/Valves	N.C.A.	N.C.A.	Approximately 33% automotive GM Ford

FIGURE 6-12. CAROL STREAM PLANT DATA

Company Eaton County Plant Size

Plant Sanford Congressional District 3

Address Lee Ave. Extension
Sanford, NC 27330

Standard Metropolitan Statistical Area

No. of Employees 540

Telephone 919-776-8451 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Gears Valves Engine Components	N.C.A.	N.C.A.	GM Ford

FIGURE 6-13. SANFORD PLANT DATA

Company Eaton | County | Plant Size

Plant Harrodsburg | Congressional District 6

Address Danville Rd.
Harrodsburg, KY
40330 | Standard Metropolitan Statistical Area | No. of Employees 527

Telephone 606-734-7711 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Heating and Ventilating Equipment Climate Controls	N.C.A.	N.C.A.	Ford American Motors White

FIGURE 6-14. HARRODSBURG PLANT DATA

Company: Eaton | County: | Plant Size:

Plant: Roxboro | Congressional District: 2

Address: Rt. 501, South
Roxboro, NC 27573 | Standard Metropolitan Statistical Area: | No. of Employees: 551

Telephone: 919-599-1141 | Primary SIC Code(s): 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Special Controls Valve parts & accessories Gauges Tire valves Air controls	N.C.A.	N.C.A.	Chrysler (25%)

FIGURE 6-15. ROXBORO PLANT DATA

Company Eaton | County | Plant Size

Plant Cleveland | Congressional District 21

Address 3249 E. 80th St.
Cleveland, Ohio | Standard Metropolitan Statistical Area | No. of Employees 317

Telephone 216-523-5000 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Speed reducers Worm gears	N.C.A.	N.C.A.	GM Ford

FIGURE 6-16. CLEVELAND PLANT DATA

Company Eaton | County | Plant Size

Plant Bountiful | Congressional District 1

Address Eaton-Kenway
Bountiful, Utah | Standard Metropolitan Statistical Area | No. of Employees 400

Telephone | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Computer control systems	N.C.A.	N.C.A.	GM

FIGURE 6-17. BOUNTIFUL PLANT DATA

Company Eaton | County | Plant Size

Plant Marshall | Congressional District 3

Address 1101 W. Hanover St.
Marshall, Michigan
49068 | Standard Metropolitan Statistical Area | No. of Employees 1,017

Telephone 616-781-2811 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Hydraulic Pumps Viscous Fan Drives Differentials	N.C.A.	N.C.A.	GM Ford

FIGURE 6-18. MARSHALL PLANT DATA

Company Eaton | County | Plant Size

Plant Shenandoah | Congressional District 5

Address 1600 Airport Rd.
Shenandoah, Iowa
51601 | Standard Metropolitan Statistical Area | No. of Employees 547

Telephone 712-246-1905 | Primary SIC Code(s)

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Transmissions	N.C.A.	N.C.A.	GM Ford Chrysler

FIGURE 6-19. SHENANDOAH PLANT DATA

Company Eaton | County | Plant Size

Plant Airflex | Congressional District 20

Address 9919 Clinton Rd.
Cleveland, Ohio
44144 | Standard Metropolitan Statistical Area | No. of Employees 360

Telephone 216-281-2211 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Clutches Brakes	N.C.A.	N.C.A.	GM Ford Chrysler

FIGURE 6-20. CLEVELAND PLANT DATA

Products manufactured at these facilities include hydraulic pumps, viscous fan drives, differentials and transmissions. In addition, the Airflex plant manufactures clutches and brakes.

Plants Which Manufacture Automotive Fasteners

Eaton's Cleveland, Ohio, plant on Brookpark Road and the Massillon, Ohio, plant both manufacture automotive fasteners. These fasteners include a variety of resistant screws and clamp assemblies which are sold to GM, Ford and Chrysler. (See Figures 6-21 and 6-22.)

Forging Plant

Eaton's Cynthiana, Kentucky, plant, summarized in Figure 6-23, manufactures forgings for the automotive market. The principal buyer for the forgings is GM's Delco Division.

6.3.3 New Plants and Expansions

Eaton is working on a number of expansion projects directed at improving productivity and capacity and ultimately raising profitability. Most of these are directed toward the heavy truck market. Ongoing and approved projects include $30 million to be spent for new plants and expansions in fluid power products in Minneapolis, Spencer, Iowa and Shawnee, Oklahoma, and $7 million for the last phase of a truck axle plant in Humboldt, Tennessee. Eaton also plans to build a major forging plant to extend its successful precision gear forging operations to allow production of larger gears for trucks. Eaton has not announced any recent planned expansions related specifically to the passenger car market.

6.3.4 Financial Status

Figures 6-24 and 6-25 summarize principal operating and capital indicators of Eaton Corporation for the five years ending in 1979. The company's financial position changed significantly during 1978 due to major acquisitions that year. The increased debt which the company incurred to broaden its base of industrial products is being reduced partially through selective divestitures of non-mainstream operations. According to Eaton, capital required to support new acquisitions will be generated by existing operations and not through increased debt.

Company Eaton | County | Plant Size

Plant Cleveland | Congressional District 20

Address 8700 Brookpark Rd.
Cleveland, Ohio
44129 | Standard Metropolitan Statistical Area | No. of Employees 642

Telephone | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Variety of resistant screws & clamp assemblies	N.C.A.	N.C.A.	GM Ford Chrysler

FIGURE 6-21. CLEVELAND PLANT (2) DATA

Company Eaton | County | Plant Size

Plant Massillon | Congressional District 16

Address 815 Oberlin Rd., S.W.
Massillon, Ohio | Standard Metropolitan Statistical Area | No. of Employees 441

Telephone 216-832-1511 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Variety of resistant screws & clamp assemblies	N.C.A.	N.C.A.	GM Ford Chrysler

FIGURE 6-22. MASSILLON PLANT DATA

Company Eaton | County | Plant Size

Plant Cynthiana | Congressional District 6

Address New Lair Rd.
Cynthiana, Ky
41031 | Standard Metropolitan Statistical Area | No. of Employees 234

Telephone 606-234-1704 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Forgings	N.C.A.	N.C.A.	Delco (GM)

FIGURE 6-23. CYNTHIANA PLANT DATA

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	3360	154	17.7	13.3
78	2791	120	15.6	14.1
77	2111	106	15.5	15.3
76	1808	91	14.6	14.2
75	1558	47	7.9	11.6
74	1760	90	16.5	14.0

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	6.5	1.41	4.6
78	6.1	1.42	4.3
77	7.0	1.4	5.0
76	6.7	1.34	5.0
75	3.7	1.23	3.0
74	7.3	1.43	5.1

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 6-24. EATON OPERATING ANALYSIS

Year	Sales	P/E Ratio[1]	Sources: Earnings	Sources: Depreciation	Sources: Changes in Long-Term Debt	Sources: Changes in Owners' Equity Other Than Retained Earnings
79	3360	4.4	154	93.4	(53)	9.1
78	2791	4.9	120	74.5	305	(3.2)
77	2111	6.6	106	54.5	(31)	1.7
76	1808	7.1	91	51.6	52	2.7
75	1558	9.4	47	47.6	55	.2
74	1760	4.7	90	43.3	5	N.A.

Year	Uses: Change in Working Capital	Uses: Capital Expenditures	Uses: Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	(37.8)	135	43.1	37.4	5.1	5.7	2.1
78	130.0	342	40.4	42	5.8	17.5	2.1
77	21.3	81	36.0	31	6.3	5.4	2.8
76	108.5	74	33.4	35	6.5	5.4	2.9
75	46.9	87	32.4	34	4.9	6.8	3.1
74	9.1	99	32.0	31	7.2	8.1	2.2

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 6-25. EATON CAPITAL ANALYSIS

Although the automotive market has begun to experience a softening, Eaton's industrial products, electronics and fluid power operations are expected to provide moderate growth for the company over the next several years.

6.3.5 Operations Analysis

Eaton Corporation has experienced steadily increasing sales and earnings over the past five years. (See Figure 6-24.) The company's operating ratio and returns on equity have also been consistent during that period as shown in Figure 6-24. From 65 to 75 percent of Eaton's operating profits have been generated by the automobile, truck and off-highway components operations, while the industrial drives and power transmissions operation has contributed from 10 to 14 percent of operating income. Eaton's materials handling vehicles operation has shown a steady decline in recent years due to the shrinking market and stiff competition from European manufacturers of forklift trucks.

In 1979 profits were up by about 28 percent over the previous year. Security analysts point out that Eaton's acquisition of Cutler-Hammer, Samuel Moore and Kenway in 1978 provided solid long-term potential for the firm by introducing more diversified product lines and markets. The move by the company to smooth out the cyclical impact of the automotive market is the principal element in the firm's good operations outlook.

Eaton is making a concerted effort to increase its international as well as its U.S. earnings. The firm recently completed construction of a new axle plant near Barcelona, Spain, and is aggressively developing increased production capability in Western and Eastern Europe and in South America. These expanded international operations, in conjunction with growing foreign truck and industrial equipment markets, are expected to contribute to greater profitability for Eaton over the next several years.

6.3.6 Capital Analysis

Eaton Corporation borrowed heavily ($230 million) during 1978 to finance the cash acquisitions of Cutler-Hammer, Kenway and Samuel-Moore, Inc. As shown in Figure 6-25, the 1978 debt-to-capitalization ratio of 42 was considerably increased over the same ratio of 31 for 1977 and was historically high for the company. The decline of the current ratio during 1978 to 2.1 also reflected the addition of some current debt during the year.

As can be seen by the 1979 figures, Eaton is attempting to reduce the amount of its debt as quickly as possible by selling certain assets and by the generation of internal funds. Four operations were sold for cash during 1978, including the firm's worldwide security products business which was sold for $56 million.

Eaton completed a number of capital expansions in 1978, including new plants in one overseas and three domestic cities. Capital expenditures for 1979 of $135 million were concentrated in reducing costs and improving operating efficiencies, primarily in existing plants. Eaton management has stated it is optimistic the company can self-finance future capital requirements and generate sufficient discretionary cash to be able to finance an acquisition in the $500 milllion-$1 billion range in the mid-1980's.

Eaton has paid dividends since 1923, and shareholders have received increases for the past four years. The dividend for 1979 was $1.61, up from $1.50 in 1978.

6.4 RESEARCH AND DEVELOPMENT

Eaton's principal research and development facility is in Southfield, Michigan, where more than 300 scientists, engineers and support personnel are employed. Other important research facilities are located near Cleveland, Ohio, and in Philadelphia, Pennsylvania. In addition, the company is building a North American headquarters and R&D complex for its transmission division in Kalamazoo, Michigan. The new facility will cost about $8 million and is scheduled for completion at the end of 1980.

Eaton's R&D budget has increased from $31 million in 1977 to $50 million in 1979. The Cutler-Hammer division also performs some government-sponsored research. The main thrust of Eaton's R&D has been the development of new products and the improvement of existing product lines including tougher, more efficient transmissions, axles and braking systems for trucks and sophisticated electronics and mechanical controls for appliances, automobiles and industry. Examples of ongoing R&D programs include the following:

- Valve Selector System. Eaton has been working on a valve selector system which deactivates selected engine valves by means of a solenoid located on the rocker arms. The selector gives the engine the capability to deactivate unneeded cylinders when power requirements are low, such as during cruising speed or at idle.

This capability implies the delivery of improved fuel efficiency. Although Ford Motor Company dropped a similar research program when the fuel economy benefits proved to be less than expected, Eaton is continuing work on its valve selector concept.

- Cobalt Substitute. Cobalt is used by Eaton to maintain certain heat tolerances in sophisticated valve systems. The supply of this expensive element is subject to disruption such as the recent war in Zaire which shut down the cobalt mines indefinitely. Eaton has devoted three years of R&D effort to developing a newly patented family of alloys that will reduce Eaton's dependence on cobalt by 57 percent.

6.5 GOVERNMENT RELATIONS

Generally, Eaton has had few confrontations with government regulations. Two examples, however, may illustrate the manner in which Eaton has conformed with strict government mandates. In 1977 the U.S. Justice Department charged that Eaton's recent acquisition of McQuay-Norris would lessen competition. In assessing the time, money and energy that would have been required to appeal and pursue the case, Eaton decided that the resources could be better spent on more profitable activities. Thus, the firm quickly found a buyer for the St. Louis piston ring manufacturer and avoided a contest with the government.

Another illustration in which Eaton has responded to government regulations involves the development of new methods to dispose of plant wastes in order to meet environmental regulations. A plant waste problem at many Eaton facilities is the disposal of cutting fluids and coolants used in machining. Following some bad experiences in the past, the company has centralized its management of cutting fluid, lubricant and parts washer liquids disposal instead of leaving these functions up to the individual plant managers. Thus, Eaton has elevated compliance with at least one environmental regulation to a corporate level function.

7. FRUEHAUF

Fruehauf Corporation is a major supplier of trailers for the trucking industry. In 1973 the company acquired Kelsey-Hayes, a major supplier of wheels and brake systems to the automotive community.

The challenge of automotive downsizing has been met by Kelsey-Hayes in several ways. The company has developed a method of manufacturing high-volume aluminum wheels using conventional stamping equipment and has sold many such wheels to Chrysler Corporation. In addition the company has developed smaller, lighter brake systems for downsized cars. Kelsey-Hayes is also increasing its sales to the aftermarket.

Fruehauf continues to set record sales, and the company seems fully capable of responding to the changing automotive market.

7.1 CORPORATE SIZE AND STRUCTURE

Fruehauf is one of the largest companies that supply parts and components to the automotive industry. Its automotive segment by itself, accounting for 32 percent of the company's business, would represent a major industry supplier. Fruehauf is the world's largest manufacturer of truck trailers and containers, and Kelsey-Hayes is the largest domestic producer of car wheels, disc brakes and skid-control systems.

7.1.1 Revenue, Profit and Employment Statistics

Fruehauf's 1979 sales were $2.45 billion, up from $2.24 billion in 1978. Income rose 16 percent from $77 million to $89 million. (See Table 7-1.) Fruehauf employed about 33,100 people in 1979.

TABLE 7-1. FRUEHAUF CORPORATION
REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$2,451	88.7
1978	2,245	76.7
Average Number of Employees: 33,100 (1979)		

7.1.2 Corporate Organization

As shown, Fruehauf is divided broadly into three business areas:

- Trailer operations
- Automotive and aerospace operations (Kelsey-Hayes)
- Maritime operations.

The various business areas/divisions of Fruehauf are indicated in Figure 7-1. Each is described below.

Trailer Operations

The divisions under "trailer operations" contain the core of the original Fruehauf company. The divisions are engaged in the manufacture, sale and lease of truck trailers, truck bodies, containers, and container chassis along with related parts and services. Fruehauf Finance is a captive subsidiary that finances trailers. The subsidiary has achieved record earnings for nine consecutive years.

Automotive and Aerospace Operations

Kelsey-Hayes is a Fruehauf subsidiary and generates most of the company's automotive sales. The firm was acquired by Fruehauf in 1973 and is operated as a separate company. Kelsey-Hayes is the largest producer of passenger car wheels, disc brakes, brake valves and skid-control systems for cars and trucks in the United States. Most sales are made directly to original equipment manufacturers (OEM). The company was the first to supply the U.S. auto industry with disc brakes in the '60s and introduced its single-piston disc brake in 1967. Kelsey also pioneered the development of skid-control systems for land vehicles.

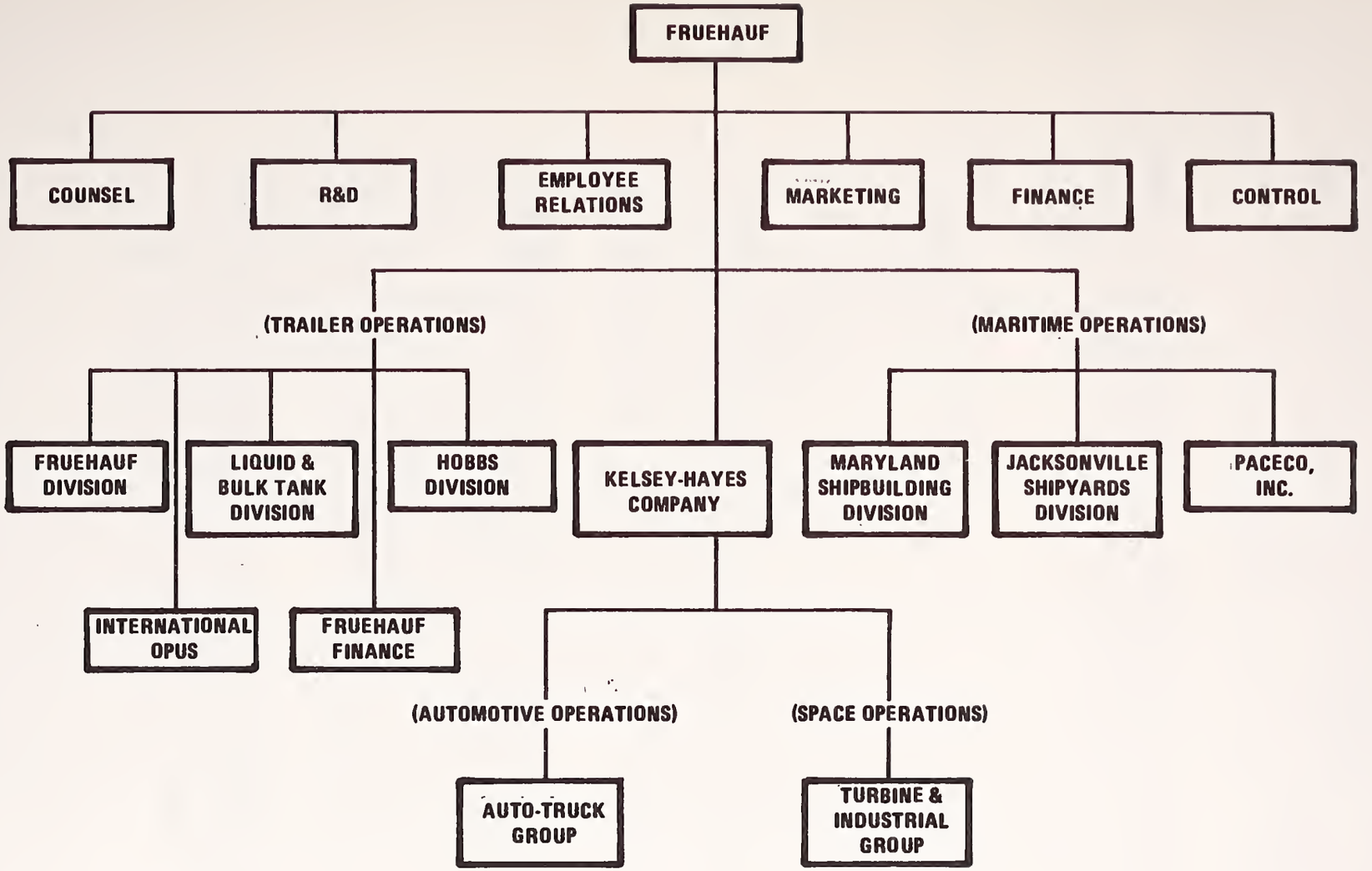

FIGURE 7-1. FRUEHAUF CORPORATE ORGANIZATION

Kelsey-Hayes' aerospace products include helicopter transmissions and parts for use in jet engines. This segment comprises about 6 percent of Kelsey's sales and the parts are primarily made for prime contractors under subcontract agreements.

Maritime Operations

Fruehauf does ship repair work for United States and foreign ships and has a total of 10 drydocks. The company, through Paeco, Inc., is engaged in the design and manufacture of materials handling equipment for container and bulk handling, primarily for use in dockside loading and unloading in ports throughout the world.

7.2 MAJOR MARKETS AND PRODUCTS

Figure 7-2 summarizes the major market information for Fruehauf.

7.2.1 Major Markets

Almost all of Fruehauf's markets are transportation-related. The company sells its trailer products to the trucking, rail and maritime industries and to companies with truck fleets. Commercial and government shipping operations use Fruehauf's maritime services.

MARKET DATA
Major Markets: Trucking industry, OEM automotive market, automotive aftermarket, shipping industry, jet engine manufacturers
Percent of Sales to the Auto Industry: 32
Supplies to the Following Automotive Companies: Ford, GM, Chrysler
Major Automotive Products: Wheels, brake drums, disc brakes, skid-control systems

FIGURE 7-2. FRUEHAUF MARKET DATA

The market for Fruehauf's automotive operations is about 70 percent OEM and 30 percent aftermarket. Ranked in order of purchases, the principal customers are Ford, GM and Chrysler. Kelsey-Hayes has been doing business with these major customers for many years. Sales by Kelsey-Hayes to the automobile replacement parts business are made through independent distributors with more than 500 locations.

Fruehauf's Kelsey-Hayes subsidiary also provides manufacturers of turbine and jet engines and airframe manufacturers with selected high-technology products.

7.2.2 Products

Fruehauf's major automotive products are trailers, wheels, brakes and anti-skid devices.

- Trailers. The most important Fruehauf trailers include vans, refrigerated cars, platform cars, tank cars, dump trucks and heavy-duty flat deck trailers. The trailers are marketed under the names "Fruehauf" and "Hobbs."

- Wheels. The Auto-Truck Group of Kelsey-Hayes is the world's largest manufacturer of wheels for cars and light trucks, producing them for every automaker in the United States and Canada. The company makes regular and styled wheels and manufactures over 30 million wheels a year.

- Brakes. The company has also for many years designed and manufactured brakes and brake drums. The drums are used by every manufacturer of cars and light trucks. Kelsey is also a pioneer in and North America's largest independent manufacturer of disc brake components. The production facilities for disc brakes are the most modern in the industry and all parts are subjected to 100 percent automated inspection during and after manufacture.

- Anti-Skid Devices. Skid control systems are a Kelsey-Hayes specialty. The company was the first to develop skid control for cars and trucks and has more on-the-road miles of experience than any other manufacturer.

New Products

Automotive downsizing has provided the stimulus for some new products from Fruehauf including aluminum wheels and lighter brakes and trailers.

- Aluminum Wheels. Kelsey-Hayes developed a process to fabricate aluminum wheels using the same type of high-volume wheel manufacturing equipment that is used for steel wheels. The wheels weigh 15 pounds each compared to 25 pounds for some steel wheels. In 1979 the wheels were offered as lightweight options for some cars in the New Yorker, Newport and Dodge St. Regis lines. Kelsey-Hayes is currently promoting the designer series of fabricated aluminum wheels emphasizing the design flexibility of the product and the large potential weight savings. The company also points out the excellent physical characteristics of the wheels. Reynolds Metals Co., Richmond, Virginia, helped Kelsey-Hayes develop the Chrysler wheel.

- Lightweight Brakes. Kelsey has also developed new lightweight disc brakes for the lighter, smaller cars now being produced. Chrysler's Omni and Horizon use Kelsey-Hayes disc brake rotors and calipers, as do Ford's Mustang and Capri. The new brakes have fewer parts, are less complex and are much lighter than previous systems. Volkswagen Rabbits now being assembled in the U.S. also use a disc brake designed by Kelsey-Hayes.

- Lightweight Trailers. Fruehauf, in conjunction with National Steel, has developed a means of using special high-strength low alloy (HSLA) coiled sheet steel as a substitute for carbon-steel junior I-beams. The new product saves 400 pounds in the weight of a Fruehauf trailer and avoids the problems involved with periodic shortages of I-beams. Fruehauf makes the welded I-beams out of the HSLA steel through use of a coil-slitting line and a high-frequency beam-welding unit.

Sales Strategy

Kelsey-Hayes has been promoting its aluminum wheels through press releases and advertisements in automotive journals. The releases are aimed at automotive executives and emphasize the light weight and design flexibility of the wheels. The literature appears to target the wheel use for specialty options rather than for standard use.

In addition, the literature the company has prepared for the auto industry stresses the quality reputation of the company. "You Can Count on Kelsey-Hayes" is the theme. The company recounts its many years of service to the auto industry, its strong research and development capability and its experience in engineering and design service.

7.3 PRODUCTION AND OPERATIONS

Fruehauf has 50 manufacturing facilities in the United States. These are largely concentrated in California, Michigan, Ohio, Indiana, Iowa and Pennsylvania. The company also has more than one facility in Britain, Germany, Venezuela, Sweden, Spain, South Africa, Mexico, Holland and France.

7.3.1 Major Automotive Facilities

Kelsey-Hayes manufactures wheels, brakes and axles in separate operations. Each are described below.

Wheel Plants

The company manufactures wheels at two major locations—Romulus, Michigan, and Sedalia, Missouri. The Romulus plant is very large with 1270 employees and manufactures steel and aluminum wheels. The Sedalia plant employs 207 people and has the capacity to make 10 million steel wheels per year. (See Figures 7-3 and 7-4.)

Brake Plants

Kelsey-Hayes has seven brake plants that supply passenger cars. Two of the six plants are located in Fremont, Ohio. One is a foundry operation employing 430 people (see Figure 7-5) and the other is a machining operation employing 260 people (see Figure 7-6). The location and products of the other plants are as follows (see Figures 7-7 through 7-11).

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Romulus

Congressional District

Address 38481 Huron River Dr
Romulus, Mich. 48174

Standard Metropolitan Statistical Area

No. of Employees 1270

Telephone 313-941-2000

Primary SIC Code(s)

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Wheels, steel and aluminum	30 million wheels/year	N.C.A.	N.C.A.

FIGURE 7-3. ROMULUS PLANT

Company Fruehauf Kelsey-Hayes . County _____ Plant Size _____

Plant Sedalia Congressional District _____

Address Rt. 3 Sedalia, Missouri Standard Metropolitan Statistical Area _____ No. of Employees 207

Telephone 816-827-3640 Primary SIC Code(s) _____

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Wheels	10 million wheels/year	N.C.A.	N.C.A.

FIGURE 7-4. SEDALIA PLANT

Company Fruehauf / Kelsey-Hayes County ____ Plant Size ____

Plant Fremont Plant (1) Congressional District ____

Address 4600 Oak Harbor Rd. / Fremont, OH 43420 Standard Metropolitan Statistical Area ____ No. of Employees 430

Telephone 419-334-3811 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Brake components	N.C.A.	Foundry operation	N.C.A.

FIGURE 7-5. FREMONT PLANT (1)

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Fremont (2)

Congressional District

Address 1017 Dickenson Ave.
Fremont, OH 43420

Standard Metropolitan Statistical Area

No. of Employees 260

Telephone 419-334-3811

Primary SIC Code(s)

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Disc brake components	N.C.A.	Machining operation	N.C.A.

FIGURE 7-6. FREMONT PLANT (2)

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Jackson Plant

Congressional District

Address 512 N. Wisner St.
Jackson, MI 49202

Standard Metropolitan Statistical Area

No. of Employees 495

Telephone 517-788-9700

Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Brake parts - conventional and disc	N.C.A.	N.C.A.	N.C.A.

FIGURE 7-7. JACKSON PLANT

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Mt. Vernon Plant

Congressional District

Address Blackjack Rd.
R.R. #4
Mt. Vernon, OH 43050

Standard Metropolitan Statistical Area

No. of Employees 85

Telephone 614-397-3155

Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Brake components	N.C.A.	N.C.A.	N.C.A.

FIGURE 7-8. MT. VERNON PLANT

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Detroit Plant
-Livernois

Congressional District

Address 5300 Livernois St.
Detroit, MI 48210

Standard Metropolitan Statistical Area

No. of Employees 300

Telephone (313) 895-5211

Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Drums Brake components	N.C.A.	N.C.A	N.C.A.

FIGURE 7-9. DETROIT PLANT

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Milford Plant

Congressional District

Address 101 Oak St.
Milford, MI 48042

Standard Metropolitan Statistical Area

No. of Employees 225

Telephone 313-685-1573

Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Proportioning valves for braking systems	N.C.A.	N.C.A.	N.C.A.

FIGURE 7-10. MILFORD PLANT

Company Fruehauf
Kelsey-Hayes

County

Plant Size

Plant Brighton Plant

Congressional District

Address 7250 Whitmore Lake Rd.
Brighton, MI 48116

Standard Metropolitan Statistical Area

No. of Employees 52

Telephone 313-229-9556

Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Skid Control 121 system	N.C.A.	N.C.A.	Mostly truck. Small passenger car application

FIGURE 7-11. BRIGHTON PLANT

- Jackson, Michigan; conventional and disc brake parts
- Mt. Vernon, Ohio; brake components
- Detroit, Michigan; drum brake components
- Milford, Michigan; proportioning valves
- Brighton, Michigan; skid control 121 system.

Axle Plants

A certain amount of axles manufactured by the Fruehauf Division are used in passenger cars. These are made at a plant in Delphos, Ohio. (See Figure 7-12.)

7.3.2 New Plants and Expansions

In 1978 Kelsey-Hayes opened a new, highly automated plant in Sedalia, Missouri. The plant has increased the company's wheel production capacity to over 40 million wheels per year. Special rim-forming lines using automatic weld-control systems are used in the facility.

Kelsey-Hayes has also acquired Composite Engineering Corporation, a small research-oriented company, which provides a capability in reinforced plastics that Kelsey hopes to utilize in its development of lightweight automotive parts.

Kelsey has recently announced it will construct a $1.8 million assembly plant for the development and production of engineered automotive axle assemblies.

7.4 FINANCIAL STATUS

Fruehauf was seriously affected by the recession of 1974-75 but now appears to be quite strong.

7.4.1 Operations Analysis

Although Fruehauf has had higher earnings in each of the past five years, sales were down in 1975 and return on equity was substantially down in 1974 and 1975. (See Figure 7-13.) The poor results in 1974 were largely due to poor margins whereas the 1975 performance was penalized by low sales. During the last four years Fruehauf has had nearly constant margins with substantial growth in sales.

Company Fruehauf / Kelsey-Hayes County _____ Plant Size _____

Plant Delphos Plant Congressional District _____

Address Spencerville Rd. / Delphos, OH 45833 Standard Metropolitan Statistical Area _____ No. of Employees 125

Telephone 419-692-6015 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Axles for cars	N.C.A.	N.C.A.	N.C.A.

FIGURE 7-12. DELPHOS PLANT

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	2451	88.7	17.9	9.5
78	2245	76.7	17.4	10.7
77	1797	61.0	15.6	9.7
76	1473	48.3	13.4	9.8
75	1094	25.1	7.3	9.9
74	1315	22.7	6.7	8.0

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	6.1	1.69	3.6
78	6.0	1.76	3.4
77	5.5	1.62	3.4
76	5.0	1.52	3.3
75	2.6	1.13	2.3
74	2.4	1.41	1.7

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 7-13. FRUEHAUF OPERATIONS ANALYSIS

This has led to improved return on equity and return on assets. Increases in sales in 1978 of 25 percent were largely due to improved trailer operations. Sales of automotive operations increased 6 percent and earnings increased by 11 percent due to both increased demand for products and inflation.

For 1979, total Fruehauf sales increased 11 percent and income was up by 16 percent. Although the current slump in the auto industry is hurting the company, earnings will be helped by increases in market share, greater foreign volume, growth in the aftermarket and strong performance by the finance subsidiary. Several investment analysts regard the long-term prospects for Fruehauf as good.

7.4.2 Capital Analysis

Fruehauf has had almost no change in its stockholders' equity accounts in the last five years other than retained earnings (see Figure 7-14). Long-term debt was significantly increased in 1976 and 1978. As a result, the long-term debt to capitalization ratio rose from 34.2 percent in 1974 to 42.5 percent in 1979. This is considered slightly high by some analysts.

7.5 RESEARCH AND DEVELOPMENT

Fruehauf has research and development centers in Detroit and Ann Arbor, Michigan, employing about 120 engineers, scientists and technicians. Some of the major recent accomplishments and/or ongoing activities of these centers include the following:

- The development of two special process control tools used in the production of passenger car wheels. One monitors final wheel production and the other monitors a flash welding operation in the Romulus plant.

Year	Sales	P/E Ratio[1]	Sources: Earnings	Sources: Depreciation	Sources: Changes in Long-Term Debt	Sources: Changes in Owners' Equity Other Than Retained Earnings
79	2451	4.5	88.7	76.0	(01)	1.7
78	2245	4.6	76.7	69.2	61	0 6
77	1797	5.7	61.0	61.3	10	0.5
76	1473	5.9	48.3	57.7	91	(1.0)
75	1094	8.3	25.1	51.7	13	(0.6)
74	1315	10.2	22.7	50.2	14	(0.4)

Year	Change in Working Capital	Uses: Capital Expenditures	Uses: Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	(13.3)	163	28	42.5	3.2	11.2	1.7
78	56.2	96	25	40.5	4.4	7.5	1.7
77	(1.4)	64	22	39.3	4.0	5.8	1.8
76	96.6	61	21	40.7	3.5	6.3	2.0
75	7.6	52	21	34.8	2.9	5.4	1.7
74	(2.7)	83	21	34.2	2.4	8.8	1.4

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 7-14. FRUEHAUF CAPITAL ANALYSIS

- The development of programs for computer design of major automotive product lines. This technique has successfully been used for the production of automobile wheels.

- The development of a new lightweight, glass-reinforced, plastic, refrigerated trailer. This is believed by the company to be a major innovation in the motor freight transportation industry.

7.6 GOVERNMENT RELATIONS

Fruehauf has recently been involved in two issues closely connected to the government. These involve an excise tax disagreement with the Internal Revenue Service and an antitrust case with the Federal Trade Commission.

7.6.1 Excise Tax Issue

Several years ago, Fruehauf Corporation and two of its officers, Robert D. Rowan, president and chief executive officer, and William E. Grace, then chairman of the board, now a director, were charged with conspiracy in the evasion of corporate excise taxes from 1956 through 1965. The dispute was over the method of computing the taxes. On July 17, 1975, the company and the officers were found guilty and fined $10,000 each.

By late 1978, all appeals had been exhausted and the two corporate officers involved resigned. They were granted leaves of absence by the board of directors. The two were put on supervised probation for two years by the court and were required to perform community service for four months.

Fruehauf established a committee to examine the implications of reinstating the two officers when they finished their service. The committee felt that reinstating the officers might give the company bad publicity but that overall it would benefit the stockholders. In 1979, both officers were reelected to their former positions.

The fine and back taxes relating to this excise tax case have yet to be determined. Some estimates put the amount owed near $50 million.

7.6.2 Anti-trust Issue

Fruehauf acquired Kelsey-Hayes in 1973 and operated the company as a subsidiary. On July 8, 1974, the Federal Trade Commission (FTC) charged that the acquisition violated antitrust laws and on March 13, 1978, the FTC ordered Fruehauf to either divest itself of Kelsey-Hayes' automotive operations or to divest itself of two particular plants—one producing heavy duty wheels and the other producing heavy-duty anti-skid braking devices. The FTC felt that there was a reasonable probability that the union of Kelsey-Hayes and Fruehauf would lead to a substantial lessening of competition in the manufacture and sale of truck trailers, heavy duty wheels and heavy-duty anti-skid braking devices for trucks.

In 1979 an appellate court refused to enforce the FTC order. The court noted that the market for anti-skid braking systems "appears to have been stripped of any significance" because of government and other court actions. Truck and trailer buyers, the court concluded, will not buy anti-skid devices in the absence of a government mandate. Fruehauf said the decision of the court affirms the company's position that the acquisition of Kelsey-Hayes in 1973 did not violate antitrust laws.

8. GOULD

Gould is an integrated manufacturer of electric, electronic, battery and industrial products. Although the company has a broad range of products, substantially all of them have origins in one or more of four related technologies—electronics, electrochemistry, electromechanics and electrometallurgy.

The sale of parts and components to automotive original equipment manufacturers (OEM) accounts for approximately 7 percent of Gould's annual revenues. The principal products manufactured for this market include batteries, bearings, bushings and other engine and electrical components. Automotive aftermarket (replacement products) are approximately 16.5 percent of Gould's total sales. The trend to fuel-efficient vehicles is expected to spur Gould's development of new, more lightweight batteries and to provide a future market for its products in electric vehicles.

8.1 CORPORATE SIZE AND STRUCTURE

Gould is a Fortune 500 corporation and a leader in the electrical products/electronics market, competing with such companies as General Electric, Westinghouse and TRW. Gould sells about 20 percent of all replacement lead-acid batteries, and, in volume of business, is the largest producer of copper foil and torpedoes in the United States.

Gould is structured into seven major groups reflecting the principal products and technologies it offers. Total Gould facilities number 107 plants in the United States and 37 in foreign countries.

8.1.1 Revenue, Profit and Employment Statistics

Total sales for Gould in 1979 were $2.02 billion with net earnings of $106 million. Electrical and electronic equipment accounted for a little more than half of Gould's revenues while sales to the OEM Detroit passenger car market accounted for about 7 percent of total sales. Gould employed about 36,400 persons at the end of 1979. Table 8-1 summarizes the company's revenues and profits for 1978 and 1979.

TABLE 8-1. GOULD REVENUES,
PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$2,024	$106
1978	$1,870	$101
Average Number of Employees: 36,400 (1979)		

8.1.2 Corporate Organization

Gould's corporate structure is presented in Figure 8-1. The major operating groups of the company are as follows:

- Battery Group. This group manufactures automotive and industrial batteries, sealed nickel-cadmium batteries and zinc-air cells for hearing aids, calculators and watches.

- Electrical Products Group. Gould's electrical products include electric motors, alternating current generators, medium power transformers and industrial control equipment. The assets of this group were entered into a joint venture with Brown Baveri, a Swiss company.[1]

- Fluid Power Group. Products of the fluid power group include hoses, couplings, valves and valve fittings.

- Government Systems Group. Gould manufactures and develops electronic systems, sonar devices, simulation and training devices, torpedoes and other products for the U.S. government.

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[1] In January 1979, Gould completed a 50-50 joint partnership with Brown Baveri of Switzerland to produce high-voltage switch gears, circuit breakers and insulators.

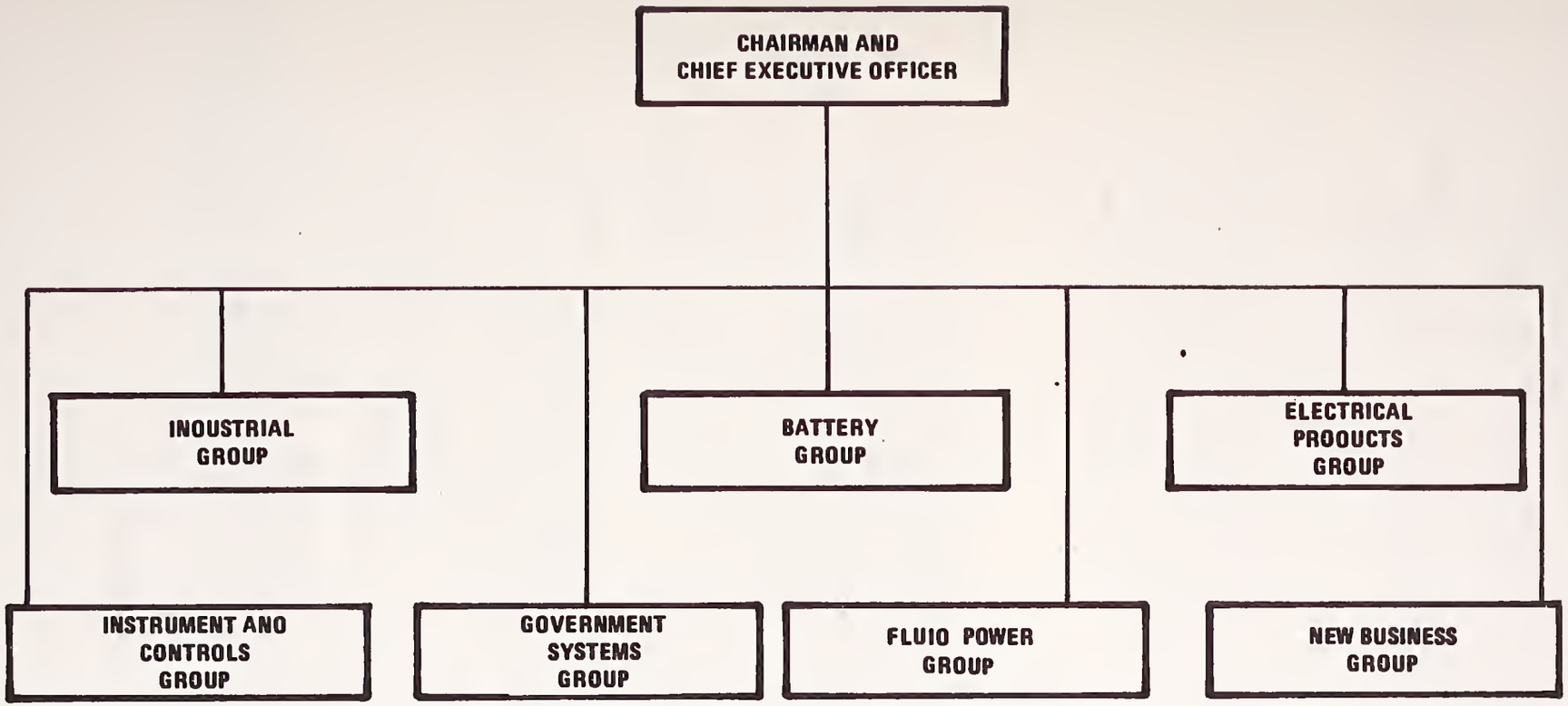

FIGURE 8-1. GOULD CORPORATE ORGANIZATION

- Industrial Group. Industrial products include custom-engineered bearings, bushings and mechanical seals, rubber-metal elastomer products, brake drums and numerous other parts and components.

- Instrument and Controls Group. Electrodeposited copper foil, a principal element of electronic instruments, is a leading product. Instruments and Controls include: oscilloscopes, waveform recorders, digital logic analyzers and transducers.

- New Products Group. This group manages the development of product lines that are judged to be mature enough to exist outside the laboratory environment but are not yet robust enough to justify full division status. Current products being developed include zinc-bromine and nickel-zinc batteries.

8.2 MAJOR MARKETS AND PRODUCTS

Gould markets its electrical/electronic products and systems to clients ranging from the U.S. Department of Defense to railroads and construction companies. Gould's principal automotive product is the storage battery which it sells to the aftermarket as well as to Ford Motor Company and selected truck OEM manufacturers. Figure 8-2 summarizes Gould's principal market data.

MARKET DATA

Major Markets:	Capital goods and heavy equipment, replacement parts, consumer-related products, construction and government
Percent of Sales to the Auto Industry:	7
Supplies to:	Ford, Chrysler, General Motors and American Motors
Major Automotive Products:	Batteries, bearings, bushings, brake drums, discs, pistons, hose couplings, elastomer products

FIGURE 8-2. GOULD MARKET DATA

8.2.1 Major Markets

Gould serves a broad range of markets in order to provide both cyclical stability and growth opportunities for the company. In the past, the approximate distribution of Gould's sales among major markets has been as follows:

Capital goods and heavy equipment	39%
Replacement market (includes automotive aftermarket products)	31
Consumer-related products (includes OEM automotive products)	12
Construction	11
Government	7
TOTAL	100%

Sales to the OEM automotive market, which are grouped with consumer-related products, represent approximately 7 percent of total sales. The percentage of sales to the automotive market is declining in terms of Gould's overall market picture. However, Gould's substantial and stable replacement market depends at least in part upon its success in OEM products. Automotive aftermarket products account for approximately 16.5 percent of Gould's total annual sales. Thus, approximately one-quarter of Gould's revenue comes from automotive products.

8.2.2 Products

Table 8-2 summarizes Gould's major products in the company's four product classifications:

- Electrical products
- Electronic products
- Battery products
- Industrial products.

Automotive products manufactured by Gould include batteries, bearings, bushings, brake drums and discs, pistons, hose couplings and elastomer products. Gould produces a successful maintenance-free, calcium-lead battery which is

TABLE 8-2. GOULD'S MAJOR PRODUCTS

Electrical Products

- Electric Motors
- Generators
- Electrical Distribution Equipment
- Safety Switches
- Circuit Breakers
- Load Centers
- Fuses
- Metering Devices
- Switchboards
- Panelboards
- Electrical Busway Systems
- Relays
- Terminals
- Electrical Hand Tools

Electron Products

- Electrostatic Printer/ Plotters
- Oscilloscopes
- Transducers
- Waveform Recorders
- Digital Logic Analyzers
- Electric Vehicle Power and Control Systems
- Copper Foil
- MK48 Torpedoes
- Marine Instruments
- Sonar Systems
- Communications Systems

Battery Products

- Automotive Batteries
- Industrial Batteries
- Battery Chargers
- Inverter Systems
- Lead
- Lead Oxide
- Plastic Battery Cases
- Appliance Batteries

Industrial Products

- Bearings
- Bushings
- Mechanical Seals
- Rubber-Metal Elastomer Products
- Automotive Brake Drums and Discs
- Pistons
- Cylinder Sleeves and Liners
- Compressor Valves
- Custom Castings
- P-M Structural Parts
- Hose Couplings
- Tube Fittings
- Hydraulic Check Valves
- Pressure Controls
- Refrigeration Components

sold by J.C. Penney. Gould is also the leading producer of a lead-aluminum bearing that is becoming increasingly popular among Detroit automakers. Rubber-metal elastomer products made by the company are used in controlling noise and vibration and reducing shock. They are used principally in the suspension and drive mechanisms of automobiles, trucks, buses and off-the-road equipment.

8.2.3 Sales Strategy

The two principal themes which run through all of Gould's promotion literature are "growth" and "technology." Gould presents itself to potential customers as a rapidly growing firm which is making significant contributions in high-technology areas. To support this image, Gould references the consistently high percentage of its earnings which is dedicated to research and development (4 percent) and the fact that Gould has introduced over 100 new products in the past year.

Gould attempts to project this high-technology image, for example, to the bearing market. Here Gould states that it produces a broader range of steel-backed materials for bearings than any other manufacturer in the business. Also, the company claims that through innovations in materials technology, it has pioneered most major bearing breakthroughs over the past 50 years. It claims to be the recognized leader in high-quality plain bearing and bushing materials.

8.2.4 Market Strategy

Gould's broad market strategy is to emphasize growth markets, particularly those which lend themselves to technological innovation. Thus, Gould's principal targets for market development are electrical products requiring any of four Gould technical specialties:

- Electromechanics
- Electronics
- Electrochemistry
- Metallurgy.

In the product areas where Gould has attained technical leadership, high market penetration has consistently followed. These areas have also generally commanded well above average margins. Thus, Gould seeks technological leadership followed by high market penetration in all the products it manufactures.

Gould, and many of its customers, feel that electricity will continue to supply an increasing percentage of power in the United States. Thus, in pursuing its market strategy, Gould has taken advantage of recent trends in its electrical markets including:

- An increase in demand for electrical equipment for industrial and commercial applications
- Growing demand for Gould batteries
- Excellent market acceptance of its new electrical products.

Gould is also giving increasing emphasis to the replacement and heavy duty equipment markets. It feels that these markets offer above average growth and profitability.

8.3 CORPORATE STRATEGY

In 1968, with net sales of $370 million, Gould established the goal of becoming a major industrial enterprise in the electrical field based on products that transmit, store, convert, measure and control energy. Today the firm has reached sales of over $2 billion per year and continues to seek growth and expansion. The principal elements of Gould's corporate strategy are:

- Expansion through acquisition
- Emphasis on research and development
- Concentration on domestic production.

Each of these strategies is described below, along with some specific examples.

8.3.1 Expansion Through Acquisition

Much of Gould's growth over the past decade has been accomplished through acquisition. Companies have been acquired for the following reasons:

- To add a new product line that fills certain needs
- To extend a product line
- To provide an additional service
- To fill a market requirement in Gould's distribution system.

In a ten-year period (1968-1978) Gould made 33 acquisitions. Principal among these was I-T-E Imperial Corporation (in 1976), a top power station equipment maker, which doubled Gould's sales and tripled earnings. Other major acquisitions include:

- Clevite Corporation. Acquired in 1969, this electrical equipment business helped Gould to outbid Westinghouse for Navy torpedo contracts worth $100 million.

- Hoffman Electronics. This recent acquisition (1978) manufactures government electronic and navigation systems.

- Bio-Mation Corporation. Bio-Mation manufactures transient recorders and digital logic analyzers used in the maintenance and testing of electronic products.

Gould's current chairman and chief executive officer, William T. Ylvisaker, is described by Forbes Magazine as "a whiz" at the acquisition game.[2] He is credited with outmaneuvering both TRW and Raytheon Company in separate acquisition moves.

8.3.2 Emphasis on Research and Development

Gould's commitment to developing new and improved products is evidenced by the firm's relatively heavy investment in research and development. Gould annually spends approximately 4 percent of its revenues on R&D, a percentage that is among the highest in the industry.

8.3.3 Concentration on Domestic Operations

Gould Chairman William T. Ylvisaker has expressed the view that the United States is the best place for Gould to invest in production. He cites the trend toward socialism in Europe as a major drawback to expanding operations there, particularly due to the accompanying high labor rates, fringe benefits and overall labor costs. Thus, Gould has tended to withdraw from European markets, and has sold off operations in Germany and Italy. Net sales generated by Gould's

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[2] Fortune, June 26, 1978, p. 81.

foreign operations have been fairly stable in recent years representing approximately 13-15 percent during the period 1975 to 1979.

8.4 PRODUCTION AND OPERATIONS

Gould operates a total of 107 plants in the United States, either directly or through subsidiaries. Automotive components are manufactured in approximately 18 percent of these plants.

Gould maintains a limit on the number of people employed at its plants. The basic plant size criterion on a two-shift basis is 400 people or less. Gould management believes that there is greater productivity and less overhead in a small plant and that people can generally be managed better than in a large plant.

8.4.1 Major Automotive Facilities

Gould manufactures automotive parts and components in 19 U.S. plants. Over 60 percent of these plants produce automotive storage batteries, and the other 40 percent manufacture various engine components, hydraulic products and foundry products. Detailed summaries of each of the 19 plants are presented in Figures 8-3 through 8-21. They are organized in the following groups:

- Battery plants
- Engine components plants
- Hydraulic products plants
- Foundry and powdered metal products plants.

Battery Plants

Gould operates 12 battery plants which make batteries for automobiles. The plants are widely distributed across 11 states from Florida to California, with two plants located in Minnesota. The plants are summarized in Figure 8-3 through 8-14. They include:

- Industry Plant: Industry, California
- Orlando Plant: Orlando, Florida
- St. Paul Plant: St. Paul, Minnesota
- Zanesville Plant: Zanesville, Ohio
- Memphis Plant: Memphis, Tennessee
- Leavenworth Plant: Leavenworth, Kansas
- Farmers Branch Plant: Farmers Branch, Texas

Company Gould | County | Plant Size

Plant Industry | Congressional District

Address 14500 Nelson
City of Industry,
CA 91749 | Standard Metropolitan Statistical Area | No. of Employees 150

Telephone (213) 336-4571 | Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-3. INDUSTRY PLANT DATA

Company Gould County Orange Plant Size

Plant Orlando Congressional District 9

Address 11331 Satellite
Box 13010
Orlando, FL 32809

Standard Metropolitan Statistical Area 5960

No. of Employees 100

Telephone (305) 855-4550 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-4. ORLANDO PLANT DATA

Company Gould **County** Ramsey **Plant Size**

Plant St. Paul **Congressional District** 4

Address 1025 Lexington Ave.
St. Paul, MN 55104 **Standard Metropolitan Statistical Area** 5120 **No. of Employees** 139

Telephone (612) 425-1500 **Primary SIC Code(s)** 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A	N.C.A.	N.C.A.

FIGURE 8-5. ST. PAUL PLANT DATA

Company Gould County Muskigun Plant Size

Plant Zanesville Congressional District 10

Address 1606 Moxahala
Zanesville, OH
43701

Standard Metropolitan Statistical Area

No. of Employees 140

Telephone (614) 452-2748 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-6. ZANESVILLE PLANT DATA

Company Gould County Plant Size

Plant Memphis Congressional District 6

Address 2215 E. Person Ave.
Memphis, TN 38114
Standard Metropolitan Statistical Area 4920
No. of Employees 120

Telephone (901) 458-8553 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-7. MEMPHIS PLANT DATA

Company Gould County Leavenworth Plant Size

Plant Leavenworth Congressional District 2

Address 1901 South 4 St.
Leavenworth, KS
66048

Standard Metropolitan Statistical Area

No. of Employees 240

Telephone (913) 682-1551 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-8. LEAVENWORTH PLANT DATA

Company Gould County Dallas Plant Size

Plant Farmers Branch Congressional District 3

Address 1880 Valley View Ln
Farmers Branch, TX
75234

Standard Metropolitan Statistical Area 1920

No. of Employees 375

Telephone (214) 243-1011 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-9. FARMERS BRANCH PLANT DATA

Company Gould County Denver Plant Size

Plant Denver Congressional District 5

Address 7801 E. 40th St.
Denver, CO 80207
Standard Metropolitan Statistical Area 2080 No. of Employees 139

Telephone (303) 399-2928 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-10. DENVER PLANT DATA

Company Gould **County** Lackawanna **Plant Size**

Plant Dunmore **Congressional District** 10

Address 1707 Dunham Dr.
Dunmore, PA 18512 **Standard Metropolitan Statistical Area** **No. of Employees** 70

Telephone (717) 961-8700 **Primary SIC Code(s)** 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-11. DUNMORE PLANT DATA

Company Gould County Campbell Plant Size

Plant Lunchburg Congressional District 6

Address 2800 Carroll Ave.
Lynchburg, VA
24501

Standard Metropolitan Statistical Area 4640 No. of Employees 100

Telephone (804) 845-1223 Primary SIC Code(s)

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-12. LYNCHBURG PLANT DATA

Company Gould County Ramsey Plant Size

Plant St. Paul Congressional District 4

Address 931 N. Vandalia St.
St. Paul, MN 55114
Standard Metropolitan Statistical Area 5120
No. of Employees 240

Telephone (612) 452-1500 Primary SIC Code(s) 3691

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Storage batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-13. ST. PAUL PLANT DATA

Company Gould County Caddo Parish Plant Size

Plant Shreveport Congressional District 4

Address 6901 Westport Road
P.O. Box 3800
Shreveport, LA 71103

Standard Metropolitan Statistical Area 7680

No. of Employees 500

Telephone (318) 687-6120 Primary SIC Code(s) 3692

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Batteries	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-14. SHREVEPORT PLANT DATA

- Denver Plant: Denver, Colorado
- Dunmore Plant: Dunmore, Pennsylvania
- Lynchburg Plant: Lynchburg, Virginia
- St. Paul Plant: St. Paul, Minnesota
- Shreveport Plant: Shreveport, Louisiana.

Engine Component Plants

Gould manufactures automotive bearings, gears and other engine components in three plants:

- Bridgeport Plant: Bridgeport, Ohio
- Cleveland Plant (St. Clair): Cleveland, Ohio
- Caldwell Plant: Caldwell, Ohio.

Figures 8-15 through 8-17 provide detailed information on each of the engine components plants.

Hydraulic Products Plants

Hoses, couplings, valves, fittings and other automotive hydraulic components are manufactured at two Gould plants located in Nebraska and Wisconsin:

- Lincoln Plant: Lincoln, Nebraska
- Eau Claire Plant: Eau Claire, Wisconsin.

They are summarized in Figures 8-18 and 8-19.

Foundry and Powdered Metal Products Plants

Gould operates a foundry and a powdered metal products plant which make automotive components. The Lake City Foundry is located in Minnesota and manufactures castings such as pistons, brake discs and drums. The Salem Plant is located in Indiana and manufactures powdered metal products, including electrodes and terminals. The two plants are summarized in Figures 8-20 and 8-21.

8.5 FINANCIAL STATUS

Gould's sales increased by 142 percent between 1975 and 1979 and earnings almost tripled over that period. Acquisitions in recent years have substantially increased Gould's sales of electrical-electronic products and batteries and have introduced other stable but high-return product areas. Gould's profits are expected to continue the current

Company Gould County Belmont Plant Size

Plant Bridgeport Congressional District

Address 1700 Bearing Road
Bridgeport, OH
43912

Standard Metropolitan Statistical Area

No. of Employees 240

Telephone (614) 635-1551 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Internal engine components Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-15. BRIDGEPORT PLANT DATA

Company Gould County Cuyahoga Plant Size

Plant Cleveland Congressional District 21

Address 17000 St. Clair
Cleveland, OH
44110

Standard Metropolitan Statistical Area 1680

No. of Employees 1500

Telephone (216) 481-7221 Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Internal engine components Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-16. CLEVELAND PLANT DATA

Company Gould | County Noble | Plant Size

Plant Caldwell | Congressional District 18

Address Rt. 3 OFF Rt. 821
Caldwell, OH 43724 | Standard Metropolitan Statistical Area | No. of Employees 400

Telephone (614) 865-4784 | Primary SIC Code(s) 3568

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Bearings Gears	N.C.A.	Machining	N.C.A.

FIGURE 8-17. CALDWELL PLANT DATA

Company Gould **County** Lancaster **Plant Size**

Plant Lincoln **Congressional District** 1

Address Hwy 34 East
P.O. Box 81247
Lincoln, NB 68501

Standard Metropolitan Statistical Area

No. of Employees 350

Telephone (402) 489-6536 **Primary SIC Code(s)**

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Hydraulic products	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-18. LINCOLN PLANT DATA

Company Gould County Eau Claire Plant Size

Plant Eau Claire Congressional District 3

Address 200 Spring
Eau Claire, WI
54701

Standard Metropolitan Statistical Area 2290

No. of Employees 261

Telephone (715) 834-2091 Primary SIC Code(s) 3592

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Hydraulic parts	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-19. EAU CLAIRE PLANT DATA

Company Gould County Wabasha Plant Size

Plant Lake City Congressional District

Address 8th & Doughty St.
Lake City, MN 55041 Standard Metropolitan Statistical Area No. of Employees 350

Telephone (612) 345-4541 Primary SIC Code(s) 3599

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Foundry operation	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-20. LAKE CITY PLANT DATA

Company Gould County Washington Plant Size

Plant Salem Congressional District 8

Address P.O. Box 312
Salem, IN 47167
Standard Metropolitan Statistical Area
No. of Employees 250

Telephone (812) 883-3381 Primary SIC Code(s) 3568

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Powdered metal products	N.C.A.	N.C.A.	N.C.A.

FIGURE 8-21. SALEM PLANT DATA

long-term uptrend, aided by increasing capital and research expenditures, acquisitions, and improvements in manufacturing efficiency.[3]

8.5.1 Operations Analysis

Over the past five years, Gould's sales and profits have shown a steady upward trend. Sales have grown from $736 million in 1975 to $2.0 billion in 1979. Also, earnings went from $38 million to $106 million over the same period. As shown by the summary of operating data in Figure 8-22, Gould's profit margin on sales has increased from 4.8 to 5.2 in the last five years. The company's ratio of net profit to total assets and its return on equity have also improved during this period, with the exception of a slight downturn in 1978-1979.

Gould's 1978 sales rose 15.5 percent over 1977. One automotive product which contributed to this increase in sales was Gould's maintenance-free battery which competes with Delco's sealed battery. Gould increased its market share for replacement lead-acid batteries from 11 to 20 percent following the introduction of its new battery.

During 1979, Gould's sales rose 8.2 percent over the same period in 1978. A decrease in demand for high-voltage electrical equipment was partly responsible for the somewhat less than expected growth during this period. Another factor affecting Gould this years has been an increase in the cost of battery lead.

8.5.2 Capital Analysis

Figure 8-23 summarized Gould's capital structure and performance. Overall, the company has increased debt at a moderate rate and shows a strong ability to finance capital expenditures with internally generated funds. Gould's dividends have increased at a modest pace.

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3 Standard and Poor's Stock Report on Gould, November 5, 1979.

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	2024	106	N/A	11.4
78	1870	101	15.0	13
77	1620	94	16.4	13
76	1225	66	12.8	12
75	773	37	13.0	11
74	740	30	13.4	11

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	6.9	1.33	5.2
78	7.4	1.37	5.4
77	8.1	1.40	5.8
76	6.1	1.13	5.4
75	6.3	1.31	4.8
74	6.0	1.46	4.1

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 8-22. GOULD OPERATIONS ANALYSIS

Year	Sales	P/E Ratio[1]	Sources: Earnings	Sources: Depreciation	Sources: Changes in Long-Term Debt	Sources: Changes in Owners' Equity Other Than Retained Earnings
79	2024	7.9-6.1	106	49.4	155	43
78	1870	7.7	101	45.6	77	17.4
77	1620	8.4	94	37.2	(20)	17.3
76	1225	7.2	66	29.8	82	179.4
75	773	6.3	37	18.3	39	4.3
74	740	5.4	30	15.0	23	29.7

Year	Change in Working Capital	Uses: Capital Expenditures	Uses: Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	112.8	107	47.0	35.8	4.3	7.1	2.5
78	22.7	103	41.4	29.1	7.2	8.0	2.1
77	(15.1)	66	33.6	25.6	8.3	5.9	2.3
76	28.5	61	21.9	29.7	5.8	7.1	2.7
75	189.5	38	14.6	33.5	4.0	6.5	2.1
74	.9	29	12.1	31.7	5.3	5.7	2.2

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 8-23. GOULD CAPITAL ANALYSIS

Long-Term Debt

Gould's long-term debt picture has been fairly steady with the exception of a substantial increase in debt in 1976 when Gould acquired I-T-E Imperial Corporation. This acquisition significantly changed the company and increased its earnings by nearly 60 percent. Since that year, Gould has increased its debt moderately. In 1978 Gould acquired five companies and made minority investments in three others. Part of the cost of these ventures, however, was offset by the sale of 11 businesses and product lines during the same year. Increased debt in 1979 was used to augment working capital and to help finance the formation of Gould-Brown Boveri.

Capital Expenditures

Gould has increased its capital expenditure budget from $29 million in 1974 to $132 million in 1979. The company's ratio of capital expenditures to total assets was 8 percent in 1979.

Principal goals for capital expenditures in the near future are to modernize some of its overage facilities and to reduce overall manufacturing costs. Gould also is expanding production capability for its high-demand products such as batteries, circuit breakers, copper foil and bearings. Gould's cash flow picture is sound and the company shows a strong capability to finance its capital investments without increasing long-term debt.

Dividends

Dividends for Gould shareholders have increased from $.62/share in 1968 to $1.66 in 1979. Gould's payout ratio is approximately 45 percent. The company feels that this rate will provide for a steady reduction of debt without inhibiting the supply of cash resources needed for further growth.

8.6 RESEARCH AND DEVELOPMENT

Gould dedicates R&D funds to each of its key technology development fields: electronics, electrochemistry, electromechanics and electrometallurgy. A major current developmental program is directed toward the improvement of battery

technology for electric vehicles and/or utility load leveling application. Principal battery development programs presently underway at Gould include the zinc-bromine, nickel-zinc and lithium-iron sulfide batteries. Each of these programs is partially funded by the U.S. Department of Energy.

- Zinc-Bromine Battery. The long term target for the zinc-bromine battery is mass production of a free-standing, 400-kilowatt-hour battery which will operate unattended for electrical storage. If successful, this battery would be used to provide electric utilities with the capability of storing electrical energy during off-peak hours for recapture and use during peak load periods.

- Nickel-Zinc Battery. Development of the nickel-zinc battery is part of Gould's ongoing research in the development of an electric vehicle. Gould is recognized by the industry as a leader in electric vehicle battery technology. The nickel-zinc battery may be capable of propelling an electric car for a range of approximately 100-150 miles on a single charge. Gould also manufactures the motors, control system and chargers used in electric vehicles.

- Lithium-Iron Sulfide Battery. The lithium-iron sulfide battery is also primarily for use in an electric vehicle, although it is not as advanced in development as the nickel-zinc battery. Gould is working on the development, construction and testing of a prototype 50-kilowatt-hour capacity lithium-iron sulfide battery.

8.7 GOVERNMENT RELATIONS

Gould Chairman William T. Ylvisaker has frequently publicly asserted his dissatisfaction with government regulations. He believes that government regulation has reached the point at which it is inhibiting business development in the United States. One example of such an inhibiting regulation for Gould is the blood lead level standard. Recently, OSHA and EPA announced quite stringent standards for manufacturing facilities in the control of workers' blood lead levels. While all the implications of the new standards are not conclusively known, Gould could suffer a severe economic setback if a low blood lead level is enforced.

Currently Gould is hoping that the financial impact of the new standards will be manageable within the context of present and projected capital expenditures.

8.8 LABOR RELATIONS

Approximately 40 percent of Gould's employees are represented by collective bargaining units. The company believes its employee relations have been generally satisfactory, although there have been periodic strikes during the last five years. Gould management is not sympathetic to unionization of its plant personnel. Gould believes that in a small plant, the managers can more effectively manage operations, develop a better working environment based on effective employee/supervisor relationships, and achieve higher productivity levels.

9. MOTOROLA

Motorola is an important supplier of radios to the auto industry and has recently emerged as a major supplier of electric engine control modules. The company was important in the consumer television market until 1974 when it sold its Quasar television division. Since that time, the company has redirected its efforts toward new uses of electronics in industry. Motorola sees major growth potential in sales of the electronic control modules that will become prevalent in cars of the '80s.

9.1 CORPORATE SIZE AND STRUCTURE

Motorola is one of the world's leading manufacturers of electronic equipment and components. The company is a leader in microprocessor manufacturing and one of the leading suppliers of radios to the auto industry.

9.1.1 Revenue, Profit and Employment Statistics

Motorola's 1979 sales were $2.7 billion, up from 1978's $2.2 billion. Income also rose from $125 million to $154 million. Motorola employed about 75,000 people in 1979. (See Table 9-1.)

TABLE 9-1. MOTOROLA, INC., REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$2,713	$154
1978	2,220	125
Average Number of Employees: 75,000 (1979)		

9.1.2 Corporate Organization

Motorola has corporate staffs for finance, manufacturing, engineering and planning (see Figure 9-1), and

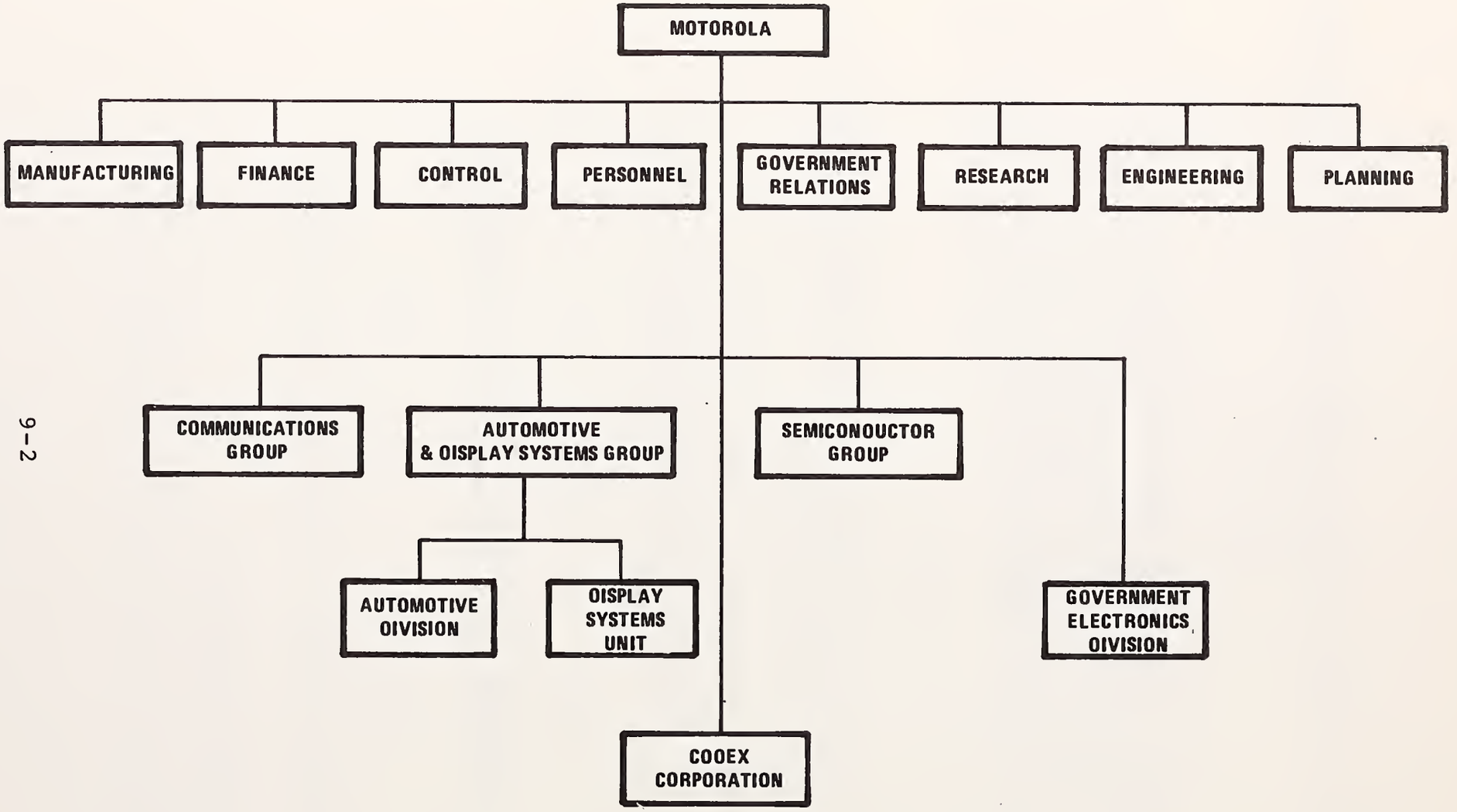

FIGURE 9-1. MOTOROLA CORPORATE ORGANIZATION

it is also divided into operating groups by product. They are:

- The Communications Group
- The Semiconductor Group
- The Automotive and Display Systems Group.

Table 9-2 shows the sales and profits by product line. The functions of the various groups are described below.

TABLE 9-2. MOTOROLA, INC., CONTRIBUTIONS BY PRODUCT LINES, 1979

Product Line	Sales	Operating Profits
Communications	41%	44%
Semiconductors	36	51
Automotive	7	(5)*
Other	16	10

* Parentheses denote operating loss.

The Communications Group

The Communications Group is a major supplier of mobile and portable two-way radio communications systems. The principal customers for these products include police departments, utilities, telephone companies, taxis and Federal agencies. The equipment uses semiconductors and integrated circuits and is known for its advanced design.

The Semiconductor Group

The Semiconductor Group manufactures discrete devices such as transistors and integrated circuits such as microprocessors and memories. The products are supplied to original equipment manufacturers and to other Motorola divisions. The group maintains an expensive research and development program in advanced semiconductor technology.

The Automotive and Display Systems Group

The Automotive and Display Systems Group is composed of the Automotive Division and the Display Systems Unit.

- The Automotive Products Division manufactures and sells automobile radios and 8-track tape players, alternator charging systems, solid state electronic ignition systems and citizens band radios. These products are purchased by both original equipment manufacturers and aftermarket dealers.

- The Display Systems Unit assemblies cathode ray tube displays for computer peripheral equipment and for coin-operated electronic games.

Other Units

The Government Electronics Division produces military and space electronic equipment, and Codex Corporation designs, markets and manufactures data communications products. Motorola sold its Quasar television business on May 28, 1974.

9.2 MAJOR MARKETS AND PRODUCTS

Figure 9-2 summarizes the major market information for Motorola.

MARKET DATA	
Major Markets:	State and local government, consumer CB markets, automobile industry, electronics industry
Percent of Sales to the Auto Industry:	7
Supplies to the Following Automotive Companies:	AMC Volkswagen, Deere and Co., International Harvester, Ford, British Leyland, Caterpillar Tractor, Citroen, Renault
Major Automotive Products:	Radios, 8-track players, alternator charging systems, solid state electronic ignition systems, citizens band radios

FIGURE 9-2. MARKET DATA FOR MOTOROLA

9.2.1 Major Markets/Products

Most of Motorola's automotive sales come from two units: the Automotive Division and the Semiconductor Group.

- The Automotive Division of Motorola supplies its products to original equipment car manufacturers, truck and off-highway vehicle manufacturers, owners of commercial fleets and automotive parts

distributors. The company also sells to aftermarket distributors and retailers. Products made by the division include: alternator charging systems, AM/FM radios, automotive pressure and position sensors, 8-track tape and cassette players, citizens band radios and antennas, electronic engine controls, solid state ignition systems, speedometers and tachometers.

- The Semiconductor Group sells its products to original equipment manufacturers, many in the electronics industry. It also sells to other Motorola divisions, such as the automotive group. The products it makes are used extensively in automotive radios, electronic ignition modules and in electronic engine control systems. Products made by the Semiconductor Group include semiconductors that can be used in automotive products. The group has also done design work for automotive microprocessor systems.

Important markets for other groups in Motorola include local governments and utilities for radio equipment and the Federal Government for military and defense equipment. Motorola has customers throughout the auto industry. Specific customers are as follows:

- Radios are sold for original installation in vehicles made by AMC, Volkswagen, Deere & Co., International Harvester and British Leyland.

- Ford, Volkswagen and AMC purchase combination tape/radio players. Additionally Ford purchases citizens band radios from Motorola.

- Alternators and solid state voltage regulators are sold to Volkswagen, Deere & Co., Caterpillar Tractor, Thermo Electron Engine Corporation, J.I. Case Co., Citroen, Renault, other equipment manufacturers, owners of commercial fleets and automotive parts distributors.

- Solid state electronic ignition systems are sold to Ford, manufacturers of outboard marine engines and the aftermarket.

Sales Strategy

Motorola advertises its products in automotive industry publications. Sound quality, variety of features and an extensive warranty program are the stressed characteristics of the company's radio lines. More technical products, such as electro-magnetic sensors and automotive alternators, are covered in news releases which stress the products' technical characteristics, their reliability, and ease of installation and repair. Motorola also emphasizes in its releases to the aftermarket that its position as an original equipment supplier of many of these products guarantees they will meet all specifications and durability requirements.

New Products

Motorola has recently emerged as one of the important suppliers of automotive electronic engine controls for the sophisticated catalytic converter systems being introduced in the early 1980s. These new systems should make the automobile the largest market for microprocessors throughout the next decade.

Early in 1977, Motorola won a bitterly contested fight with other suppliers to develop the microprocessor for General Motors' engine control module. The development contract is a good indication that Motorola will eventually supply the microprocessors to GM. The company will have an excellent chance of winning the supply contract because the microprocessors GM selects will be to Motorola's specifications.

In August 1977 Motorola was awarded a contract to supply an electronic control module system to Ford Motor Company beginning with the 1980 model year. The contract was won over bids by Texas Instruments and Intel Corporation. In addition, Ford has awarded to Motorola a portion of its 1981 feedback carburetor module business, the only outside vendor participating in this program.

Motorola is now supplying a distributorless ignition for Citroen. This represents the company's first major electronic engine control product for the European market, and Motorola is hopeful it will lead to other sales in Europe. In addition, in 1978, Motorola began production of dual pressure sensors which are used to monitor both barometric and manifold absolute pressure. The company hopes to continue to meet growing demand for different types of sensors.

9.3 CORPORATE STRATEGY

Motorola believes that the long-term outlook for the electronics industry and for Motorola looks more positive now than at any time in the past. The company's business strategy in the past ten years has been to develop Motorola into a technologically advanced electronics company that markets its products primarily to commercial, government and industrial users with less emphasis than in past years on consumer products. These markets are still seen to hold the greatest potential.

Motorola in addition hopes to:

- Increase international sales. Motorola has greatly increased its international sales over the last ten years and the company feels successful growth in the long term is, in part, dependent on increased involvement in international markets.

- Achieve $3 billion in sales by 1981.

- Identify expanding areas in the electronics field that build on Motorola's traditional strengths and pursue these markets. Two areas have already been identified:

    - The market for digital transmission equipment and data communications services

    - The market for electronic engine controls in the automotive industry.

  The engine control market will affect both Motorola's automotive electronics and semiconductor businesses.

9.4 PRODUCTION AND OPERATIONS

Motorola's principal executive offices are located in Schaumburg, Illinois. The company has 19 major U.S. facilities and operates manufacturing or distribution facilities in 29 other countries.

9.4.1 Principal Automotive Facilities

Motorola plants in the Semiconductor Group and the Automotive Products Division supply parts to the automotive industry.

Automotive Products Division Plants

The Automotive Products Division's headquarters are located in Schaumburg, Illinois. The major manufacturing facilities are at Arcade, New York, and Sequin, Texas. (See Figures 9-3 and 9-4.) The Arcade plant employs 1,000 people and makes underhood electrical components, electronic ignition components and alternators. The Texas plant makes car radios and CB radios. A plant in Franklin Park, Illinois, employs 500 people and makes control mechanisms. (See Figure 9-5.)

Semiconductor Group Plants

The Semiconductor Group is headquartered in Phoenix, Arizona and has important facilities in Mesa, Arizona, and Austin, Texas. Overseas facilities are in France, Germany, Hong Kong, Korea, Malaysia, Mexico and Scotland. (See Figures 9-6 and 9-7.)

9.4.2 New Plants and Expansions

In 1979, Motorola Semiconductor announced it had started construction of a 120,000-square-foot plant in Tempe, Arizona, on a 160-acre site. The building will house Motorola's Microsystems unit which will build microcomputer development "tools" known as Micromodule and Exorciser systems.

John R. Welty, Motorola senior vice president and general manager of the Semiconductor Group, said Microsystems "is deeply involved in providing the new microcomputing technology to a wide variety of industries. Since this is one of the fastest growing areas of our business, and a key to the further development of semiconductor technology, locating it in a new and expandable facility will greatly enhance our ability to continue growing in the future."

Other expansions in the Semiconductor Group include plant additions in Mesa, Arizona, which will expand bipolar digital and MOS wafer processing capabilities, and a major expansion program at the Austin, Texas, facility.

9.5 FINANCIAL STATUS

After some faltering years in the middle '70s, Motorola is now performing quite well. For four consecutive years (1976-1979), sales, earnings and dividends reached record heights.

Company Motorola County Wyoming Plant Size

Plant Arcade Plant Congressional District

Address 406 Main Street
Arcade, NY 14009 Standard Metropolitan Statistical Area No. of Employees 1,000

Telephone 716-492-1234 Primary SIC Code(s) 3651

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Underhood Electrical Components Electronic Ignition Components Alternators	N.C.A.	N.C.A.	N.C.A.

FIGURE 9-3. ARCADE PLANT DATA

Company Motorola County Guadalupe Plant Size

Plant Sequin Plant Congressional District 23

Address Route 1, Box 1289
Sequin, TX 78155
Standard Metropolitan Statistical Area No. of Employees 1,000

Telephone 512-379-8850 Primary SIC Code(s) 3651

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Car Radios CB Radios	N.C.A.	N.C.A.	N.C.A.

Company Motorola County Cook Plant Size

Plant Franklin Park Plant Congressional District 11

Address 2553 N. Edgington Ave.
Franklin Park, IL
60131 Standard Metropolitan Statistical Area No. of Employees 500

Telephone 312-451-1000 Primary SIC Code(s) 3662

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Control Mechanisms	N.C.A.	N.C.A.	N.C.A.

FIGURE 9-5. FRANKLIN PARK PLANT DATA

Company Motorola County Travis Plant Size

Plant Austin Plant Congressional District 10

Address 3501 Ed Bluestein Blvd.
Austin, TX 78721

Standard Metropolitan Statistical Area 0640 No. of Employees 450

Telephone 512-928-2600 Primary SIC Code(s) 3674

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Semiconductors	N.C.A.	N.C.A.	N.C.A.

FIGURE 9-6. AUSTIN PLANT DATA

Company Motorola County Maricopa Plant Size

Plant Mesa Plant Congressional District 1

Address 2200 W. Broadway
Mesa, AZ 85201

Standard Metropolitan Statistical Area 6200

No. of Employees 2,000

Telephone 602-962-2011 Primary SIC Code(s) 3674

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Semiconductors	N.C.A.	N.C.A.	Less than 20 percent Automotive OEM

FIGURE 9-7. MESA PLANT DATA

9.5.1 Operations Analysis

Motorola had a dramatic drop in earnings in 1975 (see Figure 9-8). The poor performance was due in part to troubles in the company's Integrated Circuit Division which was losing millions of dollars annually. New management was recruited from Texas Instruments and the division, as well as Motorola, has been rebounding since. Over the last four years the company has had almost constant returns on sales and assets and return on equity has increased.

In 1978, Motorola had an overall increase in sales of 19.8 percent, largely due to a 16.8 percent increase in communication products sales and a 24.6 percent increase in sales of semiconductor products. Automotive sales increased only 2.8 percent. Strong sales increases in electronic engine modules and engine control modules and large increases in sales to Latin America and Europe compensated for a decrease in sales of entertainment products to original equipment manufacturers. These fell off significantly as Ford increased its own production of auto entertainment products.

For 1979, Motorola achieved record sales and earnings. Earnings for 1979 were over $154 million, about 23 percent higher than 1978.

In 1979 Motorola's Automotive Group incurred an operating loss due to the downturn in U.S. new car sales and a reduction in entertainment equipment business from original equipment manufacturers. Even though Motorola's sales of car radios have been falling, the company's connection with the auto industry is considered by investment analysts to be part of the strength the company will have in the 1980s when it will sell increasing numbers of semiconductor engine control products for automotive use.

9.5.2 Capital Analysis

Motorola has maintained a conservative capital structure and its debt-to-capitalization ratio has not been above 25 percent in the last five years. Equity issues have not been a major source of financing. Capital expenditures have been constantly strong, even during the difficult 1975 period. Capital expenditures for 1979 exceeded $250 million, a sizable jump from $157 million in 1978. Debt financing was used to provide the necessary funds. (See Figure 9-9.)

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	2,714	154	16.3	15.3
78	2,220	125	14.8	14.9
77	1,848	106	14.0	16.0
76	1,504	88	13.5	15.6
75	1,312	41	6.9	12.0
74	1,367	73	13.1	15.5

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	8.7	1.53	5.7
78	8.1	1.45	5.6
77	8.0	1.40	5.8
76	8.1	1.40	5.8
75	4.0	1.29	3.1
74	7.0	1.32	5.3

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 9-8. MOTOROLA OPERATIONS ANALYSIS

			Sources			
Year	Sales	P/E Ratio[1]	Earnings	Depreciation	Changes in Long-Term Debt	Changes in Owners' Equity Other Than Retained Earnings
79	2,714		154	111	98	2.9
78	2,220	11.1	125	83.3	(2)	4.7
77	1,848	12.9	106	83.1	106	1.9
76	1,504	16.6	88	58.9	(25)	12.5
75	1,312	31.4	41	58.6	(29)	9.1
74	1,367	18.6	73	51.4	(2)	10.4

		Uses					
Year	Change in Working Capital	Capital Expenditures	Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	88.6	280	38.9	22.7	11.6	15.7	2.3
78	54	157	32.2	18	12.0	10	2.2
77	146	147	26.4	20	12.9	11	2.5
76	24	102	21.1	12	14.3	10	2.2
75	(16)	80	19.7	16	7.7	8	2.6
74	(16)	148	16.8	20	7.8	14	2.3

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 9-9. MOTOROLA CAPITAL ANALYSIS

9.6 RESEARCH AND DEVELOPMENT

Recent research and development activities concentrated on the development of a new AM stereo concept, development of new sensors and advanced power devices, and the creation of a new corporate R&D department. Each is described below.

- New AM Stereo Concept. Motorola is doing considerable research and development work and promotion of an AM stereo concept together with the Federal Communications Commission and the National Association of Radio Broadcasters. The AM car stereo would offer longer range of reception compared to FM-stereo.

- New Sensors and Advanced Power Devices. In 1978 the Semiconductor Research and Development Lab continued to develop new products and technologies. The research programs include work on sensors, fiber optic devices and advanced power devices. In the 1980s a large demand is expected from the automotive industry for sensors used with computer engine controls.

- New Corporate R&D Office. The increasing importance of research has led to a change from the decentralized R&D activities located in each division. In order to increase its efforts in new technological areas not normally undertaken by the groups or divisions, a new Corporate Research and Development Department was established in May 1978. Initially the department has been assigned parts of the Communications Group's existing research effort and the research at the Motorola Integrated Circuits Research Laboratory.

In 1979, Motorola focused its research and development efforts on electronics technology, hoping to maintain a competitive edge in an expanding industry. For 1979, Motorola spent $167 million on R&D, exclusive of government funded work, compared to $133 million in 1978.

9.7 GOVERNMENT RELATIONS

Motorola maintains a low profile with respect to the Federal Government. Since the company is not involved with heavy manufacture, it is not overly concerned with pollution and safety regulations. Further, the automotive pollution

and fuel regulations have opened up a substantial new market for the company. The Government Electronics Division has considerable sales to the Federal Government, and the Communications Group has many markets that have expanded due to government law and regulation. Thus, unlike many large corporations that provide basic parts and materials to the auto industry, Motorola has not been publicly critical of Federal actions and regulations.

10. SHELLER-GLOBE

Sheller-Globe is a major supplier of parts and components to U.S. automobile manufacturers, producing more than 800 different parts for new cars and trucks and a wide variety of products for the automobile aftermarket. Its products include some of the largest body stampings in the industry, and the corporation ranks twelfth in sales and thirteenth in profits among domestic auto parts and components suppliers. The company also manufactures coach bodies for school and passenger buses, funeral vehicles and ambulances as well as a diverse line of equipment and paper products for the business office market.

With auto parts and components accounting for a very high percentage of sales and profits, Sheller-Globe has been aggressive in its efforts to adapt to the changing needs of the automobile manufacturers. Particular emphasis has been placed on increased production of lightweight components made of urethanes and elastomers. Innovations and expansions have also been made in metal processing techniques such as thin-wall zinc casting and aluminum forming.

Sheller-Globe plans to expand and improve its sales in a number of non-automotive markets where it already has a strong position. In its 1979 annual report, the company's chairman states that many of Sheller-Globe's expenditures will emphasize growth in areas such as office products, instruments, and electrical and aftermarket equipment.

10.1 CORPORATE SIZE AND STRUCTURE

Sheller Globe Corporation was formed in 1966 through the merger of Sheller Manufacturing Corporation with Globe-Wernicke Industries, Inc. Sheller-Globe merged with VLN Corporation in 1974 and acquired Radiation-Medical Products Corporation in 1978.

10.1.1 Revenue, Profit and Employment Statistics

Sales in 1979 were over $650 million, and auto parts and assemblies accounted for over 75 percent of the revenues. Profits in 1979 were $13.7 million. The company employed approximately 13,000 employees worldwide in 1979, and labor costs are 35 percent of sales. (See Table 10-1.)

TABLE 10-1. SHELLER-GLOBE
REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$ 656.4	$ 13.7
1978	600.3	16.5
Average Number of Employees: 13,000 (1979)		

10.1.2 Corporate Organization

In a move designed to strengthen its market position, the manufacturing operations of the company were restructured into four operating groups in 1979. These groups are: the Automotive and Truck Group, the Electrical Group, the Transportation Group and the Office Products and Instruments Group. Each group is headed by its own president who reports to the Executive Vice President-Operations of the company.

10.2 MAJOR MARKETS AND PRODUCTS

Figure 10-1 presents a summary of the major market information for Sheller-Globe.

MARKET DATA

Major Markets: Passenger cars, trucks, buses, automotive aftermarket, appliances

Percent of Sales to the Auto Industry: 75 percent

Supplies to: Ford, Chrysler, General Motors, Volkswagen

Major Products: Stampings, assemblies, dies, die castings, hoods, fenders, cowls, doors, oil filters, truck cabs and bodies, padded safety products, decorative die-cast and plastic parts, sponge rubber products, flexible urethane foam, starter drives, solenoids, steering wheels, fractional horsepower motors, cork and cork/rubber gaskets.

FIGURE 10-1. SHELLER-GLOBE MARKET DATA

10.2.1 Major Markets

Sheller-Globe's major markets are the passenger car and truck industries. Over the past several years, a large majority of its total sales has been to the automotive industry. For example, Table 10-2 shows that 75 percent of its 1978 sales were to the automotive industry. Over one-half of the company's total sales and more than two-thirds of its automotive sales were to Ford, Chrysler, and General Motors. Ford alone accounted for 23 percent of the company's total sales and over 30 percent of its automotive sales.

The vehicles segment, representing about 13 percent of total sales, has operated at a loss over the period 1977-1979. In a move to stop this trend, the company announced that it had stopped producing motor homes in 1978. Buses account for 75 percent of the vehicle segment sales.

TABLE 10-2. DISTRIBUTION OF SALES*

Market	Percent of Total
Automobile	
Ford	23
Chrysler	14
GM	13
Aftermarket	13
Other Auto	12
Subtotal	75
Vehicles	13
Other Products	12
TOTAL	100

* Based on available 1978 statistics.

Sheller-Globe's sales to the automobile manufacturers are not concentrated in parts for any particular size or model of automobile. Figure 10-2 shows the 1979 model cars that include parts supplied by Sheller-Globe.

AMERICAN MOTORS CORPORATION

Concord, AMX, Jeep

CHRYSLER CORPORATION

Plymouth
Volare, Horizon, Caravelle

Dodge
Magnum, St. Regis, Diplomat, Aspen, Omni

Chrysler
Cordoba, New Yorker, Newport

FORD MOTOR COMPANY

Ford
Thunderbird, LTD, LTD II, Granada, Fairmont, Mustang, Pinto

Mercury
Cougar XR-7, Marquis, Monarch, Zephyr, Capri, Bobcat

Lincoln
Versailles, Continental Mark V, Continental

GENERAL MOTORS CORPORATION

Chevrolet
Monte Carlo, Caprice, Impala, Camaro, Malibu, Citation, Monza, Chevette

Pontiac
Grand Prix, Bonneville, Catalina, Firebird, LeMans, Phoenix, Sunbird

Oldsmobile
Toronado, 98, Delta 88, Cutlass, Omega, Starfire

Buick
Riviera, Electra, LeSabre, Century, Skylark

Cadillac
Eldorado, Seville, Cadillac

VOLKSWAGEN MANUFACTURING CORPORATION

Rabbit

FIGURE 10-2. 1979 CARS USING SHELLER-GLOBE PARTS

10.2.2 Products

The major parts sold to the auto manufacturers by Sheller-Globe are stampings, assemblies, dies, die castings, hoods, fenders, cowls, doors, oil filters, truck cabs and bodies, padded safety products, decorative die-cast and plastic parts, sponge rubber products, flexible urethane foam, starter drives, solenoids, steering wheels, fractional horsepower motors, cork/rubber gaskets, heavy-duty alternators and carburetor floats.

Sales Strategy

Sheller-Globe promotes its products and capabilities by pointing to its broad experience with a wide range of materials and manufacturing processes. A recent advertising campaign in Automotive Industries headlined the company as a "parts supplier you can depend on for full engineering and design support." Specific sales points include:

- A leading and continuing research and development role in the applications of elastomers
- The capability to work with most of the metals and alloys currently in use with particular expertise in thin-wall die casting and severe drawing of new aluminum alloys
- A leader in several areas of plastics applications technology including selective electroplating, mating of metal and injection-molded plastic parts and real wood in-mold decorating
- World's largest independent manufacturer of steering wheels, producing more than five million annually
- A leading supplier of urethane products since 1953
- Largest processor of cork for automotive and industrial use in the world.

New Product Plans

Sheller-Globe has traditionally placed a heavy emphasis on innovations in product design and manufacturing. In recent years, this commitment has been particularly stressed as the company strives to satisfy the rapidly changing requirements of the automobile manufacturers.

For several years, the firm's research and development activities have focused on new applications for plastics, elastomers and urethanes. In the last two years, the company has introduced new decorative injection-molded plastic instrument panels and door appliques with wood-look gloss finishes, injection-molded plastic grilles with chrome plating, and steering wheels made from a self-skinning urethane and a "soft-touch" urethane compound, Absorbite.

In 1978, Sheller-Globe completed a major development project involving the forming and welding of aluminum alloys. The project was aimed at meeting the cab specifications for Ford's Model CL-9000 linehauler trucks. The cabs were stamped and formed from the new aluminum alloy 6009-T4 in a design that made maximum use of extrusions and stampings for both structural and decorative functions. The result was a substantial weight savings in the vehicle. The cabs were welded with a new computer-controlled welding system that greatly increases product uniformity and production efficiency. Sheller-Globe believes that the newly developed techniques will have broad applicability in the manufacturing of other automobiles and trucks.

Much of the firm's new automotive product activity is dependent on the year-to-year demands of the major automakers. For example, the company supplied General Motors with the following parts for its 1980 X-body cars:

- A chrome-plated, injection-molded plastic grille for the Pontiac Phoenix
- Dash pads for the Chevrolet Citation, the Phoenix and the Oldsmobile Omega
- Padded arm rests, weatherstripping and seals for all four models.

To balance the cyclical trends of its automotive supply business, Sheller-Globe plans to expand its product line in non-automotive areas. During the 1980s, it plans to initiate new programs and establish new facilities related to non-automotive products such as office equipment, etc.

10.2.3 Marketing Strategy

Although heavily dependent on the automobile industry, Sheller-Globe has taken some steps to diversify in recent years. The company recently acquired Radiation Medical Products Corporation and merged it into its existing Victoreen subsidiary to expand its line of instrumentation products. The company is also increasing its sales efforts in the marine industry. Marketing plans, however, center on meeting the needs of the Detroit automakers.

Because they have been forced to abandon large car size as a consumer attraction, the automakers are increasingly turning to the luxurious appointments of interiors in the smaller cars they are producing. This increased

attention to interior design and appearance represents an important market opportunity to Sheller-Globe—a leader in molded interior trim, wood-simulated components and other interior parts that are highly rated in appearance.

The company has recently expanded its capacity for producing padded products, door trim, floor consoles and decorative instrument panels for passenger cars at its Keokuk, Niles, Plastics and Kralinator Filters Divisions. Warehouse facilities were enlarged at the Iowa City and Norwalk Assembly Divisions to increase efficiency, and a finishing area for heavy-duty truck cabs was added at Norwalk.

In its medium-term marketing plans, Sheller-Globe has put a strong emphasis on the potential for injection-molded plastics. Since 1972, the company has expanded its injection-molding capacity by more than 40 percent. It foresees wide-ranging applications for this process, particularly in the production of automotive grilles, headlamp bezels, taillight assemblies, and hardware items. The firm also anticipates new applications for its expertise in working and welding aluminum alloys.

Recently, the company established a new marketing sales group to "further develop products and channels of distribution, particularly in the automotive and industrial aftermarkets," according to a letter to the company shareholders by Chairman Chester Devenow.

10.3 PRODUCTION AND OPERATIONS

Sheller-Globe has 22 plants that manufacture primarily for the automotive market. Metal body stampings are manufactured at plants in Toledo, Ohio; Norwalk, Ohio; and Detroit. Dies are made in Toledo. Plastic and rubber components are made in Iowa City, Iowa; Keokuk, Iowa; Montpelier, Indiana; Niles, Michigan; Grabill, Indiana; Portland, Indiana; and Tupelo, Mississippi. The company's Canadian subsidiary manufactures steering wheels in Brampton, Ontario, and filters in Cambridge, Ontario. Motors and alternators are produced in Brownsville, Texas; Cleveland Ohio; and Gainesville, Georgia. Facilities in Kokomo, Indiana, and Denver, Colorado, manufacture solenoids and starter drives, and a plant in Union City, Indiana, produces decorative zine and plastic assemblies.

10.3.1 Major Automotive Facilities

Major Sheller-Globe facilities for supplying parts and components to the passenger car original equipment manufacturers are located at Toledo, Ohio; Cambridge,

Ontario; Niles, Michigan; Keokuk, Iowa; Grabill, Indiana; and Cleveland, Ohio. Smaller facilities are located in Union City, Indiana; Montpelier, Indiana; Portland, Indiana; Iowa City, Iowa; and Detroit. The characteristics of each are described below and summarized in Figures 10-3 through 10-18.

Toledo, Ohio

City Auto Stamping in Toledo, Ohio, is a 395,500-square-foot stamping plant and 100,000-square-foot assembly facility that has been in operation since 1929. It is a leading manufacturer of steel and aluminum stampings and assemblies, producing some of the largest and most complex components in the metal fabricating industry. The plant processes orders from product engineering and design through final assembly, and it includes five major press lines ranging in capacity from 20 tons to 2,000 tons. While producing stampings for both the auto and truck original equipment markets, the facility in recent years has placed greater emphasis on the production of replacement service parts. City Auto maintains a 10-acre storage area adjacent to the plant to accommodate customer-owned dies used in manufacturing replacement parts.

Cambridge, Ontario

The Kralinator Filters Division of Sheller-Globe of Canada employs about 450 people in three plants in Cambridge, Ontario, an industrial community about 70 miles west of Toronto. Kralinator manufactures and markets more than 1,500 different oil, gas and air filters. About 60 percent of the filters are for use on passenger cars, and the remaining 40 percent are made for trucks and heavy-duty equipment. Since 1977, the factories have also been producing instrument panel pads and other padded products. The division supplies pads for a number of lines of cars made by Chrysler and Ford and a foam-backed tailgate carpet assembly for the Ford Bronco.

Niles, Michigan

The Niles Division is a 103,000-square-foot facility in Niles, Michigan, that produces padded automotive products and interior trim. The plant has been expanded three times since it was acquired by Sheller-Globe in 1977. The facility's injection-molding equipment includes four presses ranging from 700 tons to 2,500. The division was most recently expanded in 1978 with the addition of a new

Company Sheller-Globe County Lucas Plant Size 395,500 sq. ft.

Plant City Auto Stamping Congressional District 9

Address Lint & Dura Avenues
Toledo, Ohio 43612
Standard Metropolitan Statistical Area 8400
No. of Employees 425 hourly
96 salary

Telephone 419-476-0771 Primary SIC Code(s) 3465

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Metal Stamping and Assemblies	N.C.A.	N.C.A.	N.C.A.

FIGURE 10-3. TOLEDO STAMPING PLANT DATA

Company Sheller-Globe County Lucas Plant Size 106,000 sq. ft.

Plant City Machine & Tool Congressional District 9

Address 5130 Detroit Ave.
Toledo, Ohio 43612
Standard Metropolitan Statistical Area 8400
No. of Employees 134 hourly
20 salary

Telephone 419-476-9236 Primary SIC Code(s) 3544

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Sheet Metal and Aluminum Dies Compression and Injection Molds Special Machines	N.C.A.	N.C.A.	N.C.A.

FIGURE 10-4. TOLEDO MACHINE PLANT DATA

Company Sheller-Globe County Berrien Plant Size 151,000 sq. ft.

Plant Niles Division Congressional District 4

Address 1501 S. Third Street
Niles, Michigan
49120

Standard Metropolitan Statistical Area

No. of Employees 105 hourly
27 salary

Telephone 616-683-4919 Primary SIC Code(s) 3069

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Padded Products Interior Trim	N.C.A.	N.C.A.	N.C.A.

FIGURE 10-5. NILES PLANT DATA

Company Sheller-Globe County Lee Plant Size 439,100 sq.ft.

Plant Keokuk Division Congressional District 1

Address 3200 Main Street
Keokuk, Iowa 52632
Standard Metropolitan Statistical Area
No. of Employees 1,349 hourly
253 salary

Telephone 319-524-4560 Primary SIC Code(s) 3069

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Dash Pads Interior Trim	N.C.A.	Injection Molding Secondary Finishing	N.C.A.

FIGURE 10-6. KEOKUK PLANT DATA

Company Sheller-Globe | County Allen | Plant Size 171,800 sq.ft.

Plant Plastics Division | Congressional District 4

Address P.O. Box 500
Grabill, Indiana | Standard Metropolitan Statistical Area | No. of Employees 400 hourly
114 salary

Telephone 219-627-3621 | Primary SIC Code(s) 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Steering Wheels Steering Wheel Accessories Interior Trim Custom Plastic Products	N.C.A.	Injection Molding	N.C.A.

FIGURE 10-7. GRABILL PLANT DATA

Company Sheller-Globe County Cuyahoga Plant Size 363,100 total sq.ft.

Plant Leece-Neville Cleveland Congressional District 22, 21

Address 1374 East 51st Street
Cleveland, Ohio
44103

Standard Metropolitan Statistical Area 1680

No. of Employees 458 hourly
206 salary

Telephone 216-431-0740 Primary SIC Code(s) 3694, 3621

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Alternators	N.C.A.	N.C.A.	50% OEM Automotive

FIGURE 10-8. CLEVELAND PLANT DATA

Company Sheller-Globe | County Hall | Plant Size 135,700 sq.ft.

Plant Leece-Neville Gainesville | Congressional District 9

Address 989 Athens St., S.E. Gainesville, Georgia 30501 | Standard Metropolitan Statistical Area | No. of Employees 419 hourly 88 salary

Telephone 404-536-2491 | Primary SIC Code(s) 3621, 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Cranking Motors Voltage Regulators	N.C.A.	N.C.A.	50% OEM Automotive

FIGURE 10-9. GAINESVILLE PLANT DATA

Company Sheller-Globe County Cameron Plant Size 60,000 sq.ft.

Plant Leece-Neville Brownsville Congressional District 15

Address 904 Billy Mitchell Blvd Brownsville, TX 78520 Standard Metropolitan Statistical Area 1240 No. of Employees 55 hourly 22 salary

Telephone 512-542-3511 Primary SIC Code(s) 3694

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Functional Horsepower Motors	N.C.A.	Assembly	50% OEM Automotive

FIGURE 10-10. BROWNSVILLE PLANT DATA

Company Sheller-Globe | County Randolph | Plant Size 373,100 sq.ft.

Plant Hardy Division | Congressional District 10

Address 1225 W. Pearl St.
Union City, Indiana
47390

Standard Metropolitan Statistical Area

No. of Employees 810 hourly
200 salary

Telephone 215-249-9330 | Primary SIC Code(s) 3469

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Parts and Assemblies Related to Automotive Hardware, Mirrors, Trim, and Grilles	N.C.A.	Injection Molding Plating	N.C.A.

FIGURE 10-11. UNION CITY PLANT DATA

Company Sheller-Globe County Blackford Plant Size 168,500 sq.ft.

Plant Montpelier Division Congressional District 10

Address 623 W. Monroe St.
Montpelier, Indiana
47359

Standard Metropolitan Statistical Area

No. of Employees 280 hourly
76 salary

Telephone 317-728-2441 Primary SIC Code(s) 3069

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Sponge Rubber Products	N.C.A.	Extrusion Molding	N.C.A.

FIGURE 10-12. MONTPELIER PLANT DATA

Company Sheller-Globe **County** Jay **Plant Size** 288,200 sq.ft.

Plant Portland Division **Congressional District** 10

Address S. Bridge Street
Portland, Indiana
47371

Standard Metropolitan Statistical Area

No. of Employees 355 hourly
117 salary

Telephone 219-726-8171 **Primary SIC Code(s)** 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Rubber Moldings Exterior Body Parts Steering Wheels	N.C.A.	Injection Molding Compression Molding Welding	80% OEM Automotive

FIGURE 10-13. PORTLAND PLANT DATA

Company Sheller-Globe | County Johnson | Plant Size 183,400 sq.ft.

Plant Iowa City Division | Congressional District 1

Address 2500 Highway #6 East
Iowa City, Iowa
52240

Standard Metropolitan Statistical Area

No. of Employees 635 hourly
115 salary

Telephone 319-338-9281 | Primary SIC Code(s) 3079

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Interior Trim Items Dash Pads Steering Wheels and Components	N.C.A.	N.C.A.	N.C.A.

FIGURE 10-14. IOWA CITY PLANT DATA

Company Sheller-Globe County Wayne Plant Size 102,100 total sq.ft.

Plant Paramount Fabricating Div. & Swift Manuf. Congressional District 13, 16

Address 13595 Helen Ave. Detroit, MI 48212 Standard Metropolitan Statistical Area 2160 No. of Employees 175 hourly 32 salary

Telephone 313-365-6600 Primary SIC Code(s) 3469, 3564

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Fan Blades and Assemblies	N.C.A.	Stamping Assembly	N.C.A.

FIGURE 10-15. DETROIT PLANT DATA

Company Sheller-Globe County Union Plant Size 138,000 sq.ft.

Plant Morganfield Division Congressional District 1

Address Highway 60
Morganfield, Kentucky
42437
Standard Metropolitan Statistical Area No. of Employees 195 total

Telephone 502-389-0200 Primary SIC Code(s) 3079

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Interior Trim Items	N.C.A.	Injection Molding	N.C.A.

FIGURE 10-16. MORGANFIELD PLANT DATA

Company Sheller-Globe County Adams Plant Size 130,000 sq.ft.

Plant Quincy Division Congressional District 20

Address 130 Jersey St.
Quincy, Illinois
62301

Standard Metropolitan Statistical Area

No. of Employees 200 total

Telephone 217-228-0393 Primary SIC Code(s) 3069

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Padded Automotive Safety Products	N.C.A	Vacuum Form Production	N.C.A.

FIGURE 10-17. QUINCY PLANT DATA

Company Sheller-Globe County Fulton Plant Size 81,600 sq.ft.

Plant Sheridan Manuf. Division Congressional District 5

Address 447 Walnut Street
Wauseon, Ohio 43567 Standard Metropolitan Statistical Area No. of Employees 190 hourly
31 salary

Telephone 419-335-6010 Primary SIC Code(s) 3469, 3714

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Floats	N.C.A.	Stamping Assembly	N.C.A.

FIGURE 10-18. WAUSEON PLANT DATA

30,000-square-foot building that enabled the plant to produce interior door panels for the 1980 model passenger cars manufactured by Ford. The division also supplies dash pads for the Ford Thunderbird, LTD II and Mustang, and the Mercury Cougar and Capri.

Keokuk, Iowa

The Keokuk Division occupies a 439,100-square-foot facility in Keokuk, Iowa, that produces padded automobile safety products and extruded, spliced and molded sponge rubber items. The plant was expanded in 1978 to increase production of instrument panel pads. The plant employs 1,349 hourly and 253 salaried people.

Grabill, Indiana

In Grabill, Indiana, the Plastics Division produces steering wheels and accessories, custom-molded plastic products and automotive interior trim. The plant occupies 171,800 square feet and was expanded in 1978 with the addition of new equipment for the production of highly decorative injection-molded plastic instrument panels and door appliques for passenger cars. The plant employs 400 hourly and 114 salaried personnel.

Cleveland, Ohio

The Leece-Neville plant in Cleveland, Ohio, produces alternators in a 363,100-square-foot facility. Approximately 50 percent of the plant's output goes to the automotive original equipment market. The plant employs 458 hourly and 206 salaried people. The Cleveland facility also serves as the center of Leece-Neville operations nationwide which include plants for producing motors and regulators in Gainesville, Georgia, and Brownsville, Texas.

Other Automotive Facilities

Other Sheller-Globe plants that produce for the passenger car original equipment market include the following:

- Union City, Indiana—The Hardy Division occupies a 373,100-square-foot facility and produces decorative zinc die-cast and plastic assemblies for the automotive and other industries.

- Montpelier, Indiana—The Montpelier Division produces extruded dense and sponge rubber products and custom rubber moldings in a 168,500-square-foot plant.

- Portland, Indiana—The Portland Division produces rubber steering wheels, injection- and compression-molded rubber products and fabricated and welded metal parts in two plants with a combined floor space of 288,200 square feet.

- Iowa City, Iowa—Padded automotive safety products, custom molded plastic products, automotive interior trim, urethane steering wheels and electroform molds are produced in this 183,400-square-foot plant.

- Detroit, Michigan—The Paramount Division occupies a 102,100-square-foot plant that produces metal stampings and assemblies.

10.3.2 New Plants

Sheller-Globe acquired two new plants in 1979 to increase its capacity for the production of parts and components for the automobile industry.

In March 1979, Sheller-Globe acquired an existing 138,000-square-foot plant and a ten-acre site in Morganfield, Kentucky to expand its capacity to manufacture automotive interior trim. The plant's initial output was produced for 1980 model passenger cars made by Ford and General Motors. Much of the manufacturing equipment for the facility was moved from the company's Plastics Division in Grabill, Indiana, and the transfer of manufacturing operations allowed the Plastics Division to increase its capacity to produce steering wheels.

The company also acquired an existing 130,000-square-foot plant in Quincy, Illinois. The facility will be used to expand the manufacturing and warehousing capabilities of the padded product lines made at the Keokuk Division, Keokuk, Iowa.

10.4 FINANCIAL STATUS

According to Sheller-Globe's Chairman of the Board, the performance of Sheller-Globe in the early 1980s will depend heavily on the activity of the automotive industry, which is going through a very critical period. Earnings in 1979 were adversely affected by the decline in domestic automobile sales. Fortunately, the strong performance of a number of divisions in other segments of the business helped reduce the impact of the decline in the automotive market.

10.4.1 Operations Analysis

Sheller-Globe sales have grown substantially over the last five years, but earnings have declined over the 1977-1979 period. Several factors contributed to the lower earnings in 1977 and 1978. In both years the company suffered from strikes in its own plants and in related industries. The period also encompassed major expansion projects that carried high start-up costs. The Vehicle Group suffered substantial losses and only reestablished breakeven operations by discontinuing the production of motor homes in 1978. As indicated by the decline in the earnings-to-sales and operating income-to-sales ratios since 1976 (see Figure 10-19), earnings were further hurt by the company's difficulty in raising the prices of its products.

Earnings decreased in 1979 by 17 percent compared to 1978 earnings. The decrease is primarily attributable to the decline in automotive sales during this period, particularly in the fourth quarter. Sheller-Globe experienced substantial cutbacks in its automotive line, while other lines were operating at capacity and overtime levels. According to Sheller-Globe, these disruptive schedule changes caused operating inefficiencies in addition to the losses attributable to the decreased volume. Strong performances in the office products and instrument lines helped to partially offset the decrease in its auto line.

In 1979, the company was involved in a number of major launch programs for 1980 model cars and trucks and also established expanded production facilities. Given the increased capacity of its new and expanded facilities, the company will be in a healthy competitive position when auto sales recover. Prospects for increased sales are brightest in the market for decorative interior trim and safety padding.

Year**	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	656	13.7	10.5	5.7
78	600	16.5	14.1	7.2
77	533	16.5	16.4	7.4
76	480	20.8	25.3	10.1
75	430	14.8	20.5	9.3
74	287	7.6	9.8	8.3

Year**	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	4.4	2.10	2.1
78	5.6	2.07	2.7
77	6.2	2.00	3.1
76	8.4	1.95	4.3
75	6.2	1.82	3.4
74	3.0	1.11	2.7

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

**Ended September 30

FIGURE 10-19. OPERATING ANALYSIS OF SHELLER-GLOBE

10.4.2 Capital Analysis

Sheller-Globe increased its long-term debt signficantly in 1977 to finance new plants and expansions and has recently announced a further increase in long-term obligations. The company has agreed with Prudential Insurance Company to refinance $62 million in notes with an additional commitment of $38 million. The increase will be applied to capital programs in its products and instrument group, electrical group and automotive and truck group. Sheller-Globe has not made any major stock issuances over the last five years except for stock issues connected with a 1974 merger. Its current ratio has remained relatively strong, around 3.0 (see Figure 10-20). Dividends have increased by small amounts in each of the last five years.

The issuance of long-term debt in 1977 brought Sheller-Globe's debt-to-capitalization percentage to 37. However, this has decreased to 35 percent in 1979 and is under the 39 to 40 percent range of 1974 to 1975. Thus, even with increased borrowing this year, Sheller-Globe should remain in financially sound condition.

10.5 RESEARCH AND DEVELOPMENT

Sheller-Globe places a strong emphasis on its research and development activities and maintains three facilities to develop new products and processes—a Research Center in Detroit, Michigan, a Vehicle Center in Lima, Ohio, and a Technical Center in Toledo, Ohio.

Programs in 1979 included new methods for reaction injection molding of urethane, development of new elastomeric compounds, experimentation with processes, machines and methods for producing thermoplastics, and physical and chemical testing of Sheller-Globe products and those of its customers.

The company spent about $5.2 million on research and development activities in fiscal year 1979 and $4.7 million in fiscal year 1978.

			Sources			
Year	Sales	P/E Ratio[1]	Earnings	Depreciation	Changes in Long-Term Debt	Changes in Owners' Equity Other Than Retained Earnings
79	656	6.2-4.1	13.7	10.6	7.8	0.4
78	600	6.2-3.8	16.5	10.0	(1.9)	0.7
77	533	6.5-4.8	16.5	8.5	16.7	0.5
76	480	4.4-3.3	20.8	7.3	(7.4)	0.1
75	430	5.3-1.9	14.8	7.6	3.2	0.1
74	287	5.2-2.3	7.6	6.5	14.1	23.2*

		Uses					
Year	Change in Working Capital	Capital Expenditures	Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	73	21.4	6.5	35.1	5.2	7.0	3.2
78	5	15.1	6.4	34	6.0	5.2	3.1
77	15	24.8	6.3	37	6.2	9.3	3.3
76	6	10.9	5.5	33	8.1	4.4	3.0
75	9	10.1	5.4	39	5.5	4.2	3.0
74	35	8.4	3.7	40	4.5	4.3	2.7

Dollar figures are in millions

* Merger with VLN Corporation

[1] Range for the Year

[2] Capitalization Defined as Total Liabilities – Current Liabilities

[3] Operating Profit/Interest

FIGURE 10-20. CAPITAL ANALYSIS OF SHELLER-GLOBE

11. TENNECO

Tenneco started in 1940 primarily as a natural gas transmission company. Growth has occurred through retained earnings, acquisition on a stock exchange basis and sale of securities. The company now ranks in the top ten in assets among all industrial firms in the U.S.

Tenneco is important to the auto industry because of its two subsidiaries—Monroe Auto Equipment which makes shock absorbers and Walker Manufacturing which makes exhaust systems. The two companies seem to be reacting quite differently to auto downsizing. To Walker, whose business has been built on its ability to supply over 1,000 different exhaust systems, the new smaller cars represent merely more varieties and sizes of emission systems it must build and supply. For Monroe, however, downsizing has created a challenge to develop new ride control technologies and an opportunity to increase its penetration into the original equipment market because of its technical lead and experience in the manufacture of MacPherson struts.

11.1 CORPORATE SIZE AND STRUCTURE

Tenneco is a large energy company with sales over eight billion dollars. While energy is responsible for two-thirds of the corporate income, the income generated by the automotive subsidiaries is by itself significant compared to other companies that supply the auto industry.

11.1.1 Revenue, Profit and Employment Statistics

In 1979 Tenneco earned $571 million on sales of $11,209 million. Sales in 1979 represented a 28 percent increase over 1978, while income was higher by 26 percent. Tenneco Automotive had sales of $820 million and earnings before interest and Federal income taxes of $60 million. These were respectively 7 percent and 4 percent of the Tenneco totals. Automotive sales in 1979 represented an increase of 10 percent over 1978 sales; however, 1979 earnings represented a decline of 23 percent. In 1979, Tenneco Inc. employed about 107,000 people and Tenneco Automotive 15,300 people. (See Tables 11-1 and 11-2.)

TABLE 11-1. TENNECO REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$11,209	$571
1978	8,762	466
Average Number of Employees: 107,000 (1979)		

TABLE 11-2. TENNECO AUTOMOTIVE REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profit Before Interest & Federal Income Taxes
1979	$820	$60 million
1978	747	78 million
Average Number of Employees: 15,300 (1979)		

11.1.2 Corporate Organization

Tenneco is made up of eight major operating companies. (See Figure 11-1.) The largest operating company is Tenneco Integrated Oil. Tenneco Automotive is the fifth largest operating company. (See Table 11-3.)

TABLE 11-3. TENNECO SALES AND OPERATING INCOME BY OPERATING COMPANY* (1979 Percentage Distribution)

Operating Company	Sales	Operating Income
Integrated Oil	24%	50%
Natural Gas Pipeline	24	21
Construction and Farm Equipment	21	10
Chemicals	13	8
Automotive	7	4
Shipbuilding	6	2
Packaging	5	2
Agriculture, Land Management	3	2

* Figures do not include acquisition of Philadelphia Life Insurance.

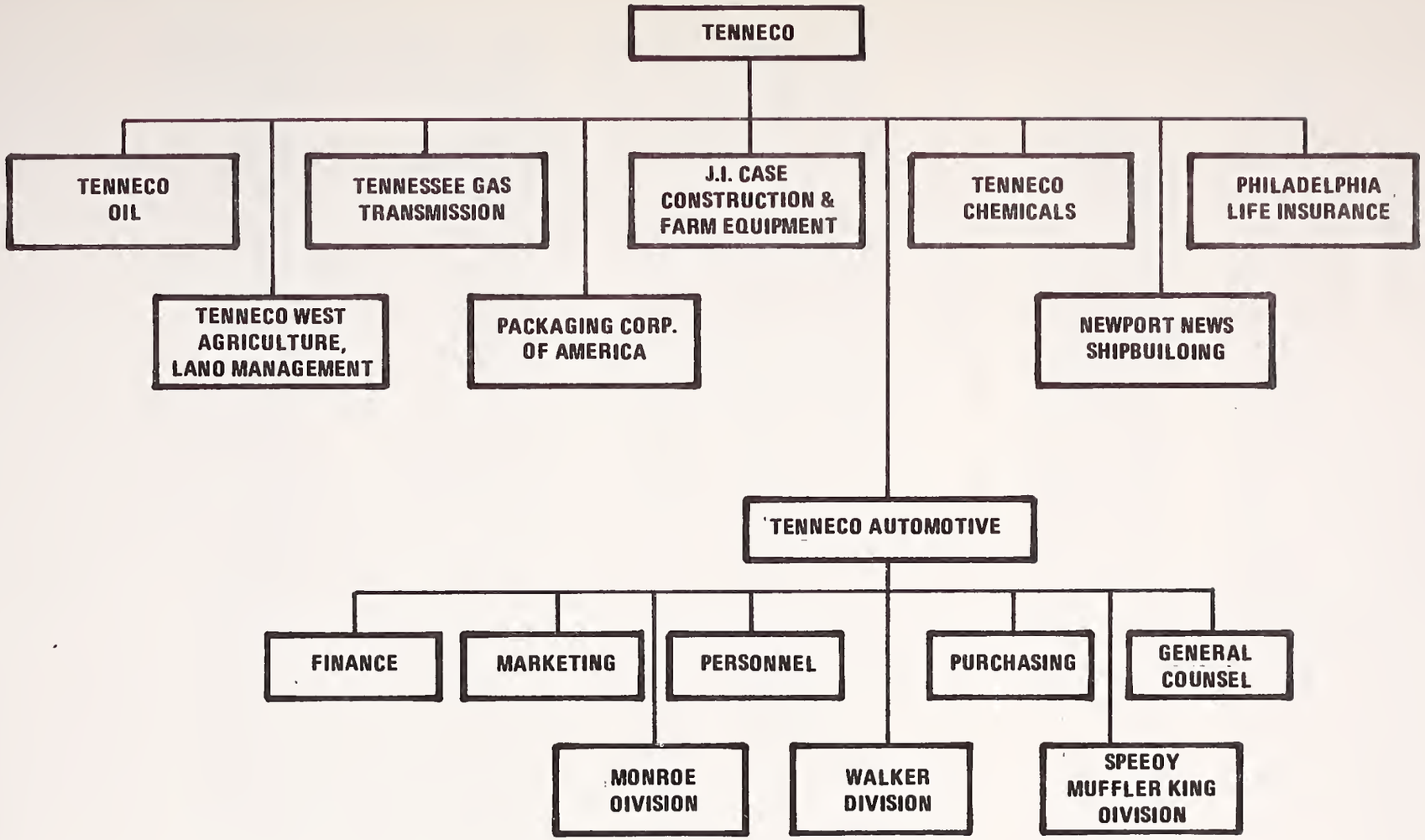

FIGURE 11-1. TENNECO CORPORATE ORGANIZATION

Tenneco operates its subsidiaries, called operating companies, as complete business entities. Each has an autonomous president who runs his company in the usual manner of a chief executive officer.

Tenneco headquarters has three responsibilities: long-range strategic planning, capital allocation and management development. The corporate office includes the chairman and four executive vice presidents.

The automotive operation was recently formed upon the acquisition by Tenneco of Monroe Auto Equipment in 1977. The company is now divided into The Monroe Auto Equipment Division, which makes shock absorbers, Walker Manufacturing, which makes exhaust systems, and Speedy Muffler King, which is a new retail chain selling mufflers.

The establishment of the Tenneco Automotive operation led to several management changes:

- T.G. Cook moved from the presidency of Walker to head Tenneco Automotive. He was replaced at Walker by Edward Seils who had spent over 14 years with Walker between 1957 and 1971 before rejoining the firm in September 1978. Mr. Seils retired in 1980 and was replaced by Larry McCurdy, formerly the Senior Vice President-Finance, Tenneco Automotive.

- James K. Ashford, formerly Tenneco Automotive Executive Vice President-Finance and Administration, was named president of Monroe in 1978, succeeding C.S. McIntyre III.

Tenneco Automotive was formed as an overall management and coordination organization. Walker and Monroe continue to function independently, retaining their own brand identification, sales organizations, and headquarters locations in Racine, Wisconsin and Monroe, Michigan.

11.2 MAJOR MARKETS AND PRODUCTS

Figure 11-2 summarizes the major market information for Tenneco Automotive. As described earlier, the major divisions which supply the automotive industry are Monroe Auto Equipment and Walker Manufacturing.

MARKET DATA

Major Markets: Automotive OEM and aftermarket

Major Automotive Products: Shock absorbers, exhaust systems

Percent of sales to the auto industry: About 70% aftermarket, 30% OEM

Supplies to: Ford, Chrysler, International Harvester, American Motors and many aftermarket suppliers

FIGURE 11-2. MARKET DATA FOR TENNECO AUTOMOTIVE

11.2.1 Major Markets

Monroe is an important manufacturer and supplier of shock absorbers and related ride control products for the original equipment manufacturers such as Ford, Chrysler, International Harvester and American Motors' Jeep Division. Monroe also manufactures and markets replacement shock absorbers for virtually all domestic and many foreign makes of automobiles. The company sells to the aftermarket through hundreds of distributing outlets including warehouse distributors, auto parts stores, independent garages and service stations. Volume retailers include Montgomery Ward and K-Mart.

Walker sells automotive exhaust systems to all U.S. automobile manufacturers for use as original equipment on their passenger automobiles. Buses, trucks, construction equipment and stationary industrial engines also represent a significant original equipment market for Walker products. The original equipment market is described by Walker as very demanding since it is constantly changing. The replacement market is equally demanding. According to Walker, marketing expertise is becoming more and more the key to success in the highly competitive exhaust system aftermarket. "It is a changing market with changing customers who demand more and more in the way of service, quality and choice every year." Walker aftermarket products are handled by thousands of wholesalers and jobbers who distribute them to parts retailers and automotive service centers.

According to the company, both Monroe and Walker increased their replacement revenues in 1979. The replacement market accounted for 73 percent of Walker's and 78 percent of Monroe's total domestic sales in 1979; in comparison the replacement market for each company in 1978 was 71 percent and 76 percent respectively. OEM volumes were significantly reduced due to the depressed nature of the U.S. domestic car market which was adversely affected by:

- A recessionary environment
- The higher cost and lower availability of gasoline
- A reduced consumer discretionary income.

11.2.2 Products

Major products marketed by Tenneco to the automotive industry include:

- Shock absorbers which are manufactured by Monroe
- Mufflers, jacks and filters which are manufactured by Walker.

These products are described in more detail below.

Monroe Products

Monroe's line of shock absorbers includes hydraulic shock absorbers, air-adjustable shock absorbers, spring-assisted shock absorbers and MacPherson struts and replacement cartridges. Monroe's best-selling shock absorbers are the Radial-Matic and Monro-Magnum 60. Each is described briefly below.

- Radial-Matic. This shock absorber, introduced in 1975, was especially designed for use with radial tires. The Radial-Matic's success has paralleled the growth in radial tire sales which now constitute 40 percent of all tires sold. The shock absorber has been downsized so it will fit the suspension of the smaller cars of the '80s while maintaining the responsiveness and performance of a larger shock absorber.
- Monro-Magnum 60. This shock absorber was timed to meet the growing needs of the light truck/recreational vehicle market which increased 60 percent from 1975 to 1978. The Monro-Magnum 60 is nearly twice as big as most original equipment units on pickups and vans and reportedly gives the durability and ride demanded by owners of these vehicles.

Walker Products

Walker manufactures a broad line of mufflers, exhaust pipes and catalytic converters. The company has over 2,500 exhaust systems and related pipe configurations and claims to have contributed significant product innovations over the years. Examples of these innovations include the multi-element exhaust systems and the "lowered tube" exhaust systems which were prevalent in the 1930s.

In addition to its broad line of mufflers, exhaust pipes and catalytic converters, Walker also manufactures jacks, lifting equipment and filters for engine and hydraulic system protection (both original and replacement equipment). The company pioneered air-actuated jack operation and now produces a complete line of jacks, wheeled dollies, cranes and one-end lifts. The company leads the industry in the manufacture of filters for engine and hydraulic systems making filters for oil, air and fuel systems in a thousand or more configurations.

11.2.3 New Products

According to Tenneco, one of its major automotive products on the verge of an expanding market is the MacPherson strut. The MacPherson strut, like a regular shock absorber, performs the suspension damping function, but unlike a regular shock absorber, it is a structural part of a vehicle's suspension system. It is particularly applicable to vehicles with front wheel drive because of space restrictions. With more and more front-wheel-drive vehicles being sold in both domestic and foreign markets, Tenneco sees a potentially large future market for replacement cartridges and struts. By 1985, the company projects that 50 percent of all vehicles sold in that year will have MacPherson struts, up from 8 percent in 1979, and that 90 percent of all vehicles sold worldwide in 1990 will use the strut system. Monroe is preparing for this market expansion with substantial investment in MacPherson strut development work and manufacturing capacity.

In February, Monroe obtained a major purchase order from Chrysler for MacPherson struts. Starting with the 1981-model production year Monroe will furnish struts for at least half of all Chrysler Corporation's domestically-produced front-wheel-drive cars. This includes the Plymouth Horizon and Dodge Omni subcompacts and the new line of compacts that will replace the Plymouth Volare and the Dodge Aspen. This is the biggest original equipment order ever received by Monroe and the company is committed to spend

$30 million to expand its North American manufacturing capability. According to some reports, that is the greatest single capital expenditure in history by a ride control manufacturer.

Monroe won the order from Chrysler after almost four years of selling. Monroe had been supplying struts and strut-replacement cartridges for a number of years in Europe and South America. (The company currently supplies original equipment struts to Fiat S.p.A. and Volkswagenwerk AG and cartridges to AB Volvo.) In the early '70s Monroe anticipated car downsizing and front wheel drive and tried to sell MacPherson struts to Chrysler for the Omni/Horizon introduction. Recently the company lost contracts to Delco Products because the latter had excess capacity for the first year requirements for struts on GM's X-cars. However, Monroe closely watched Chrysler's continual development of front-wheel-drive cars and won the sales starting with 1981 models.

Monroe is expecting two other new products to have significant sales in the '80s. The first is a load-assist shock absorber which will be able to help smaller, lighter vehicles provide the ride and load carrying capability of larger vehicles. Thus, Monroe's "downsized" Max-Air air-adjustable shock, initially introduced in 1977 for compact domestic and import vehicles, is expected to enjoy new popularity. The other is a new smaller Load-Leveler stabilizing unit, which should also be valuable to smaller car owners.

11.2.4 Sales Strategy

Tenneco Automotive markets to two distinct market areas: the original equipment market (OEM) and the aftermarket. Each requires a separate sales strategy.

OEM Market

Tenneco's sales to the OEM market require a strong commitment to research and development, close cooperation with the auto manufacturers and flexible manufacturing.

- Extensive design and testing is required in order for suppliers to meet all the requirements of the auto industry and develop a product that will be more attractive than competitive products. According to Monroe, consumerism, warranties and

product liability bear importantly on developmental work. Structure and performance of a part must go through elaborate analysis and certification before introduction.

- Supplier bidding for a job must remain in constant contact with the auto manufacturer. The contact must be maintained at several levels including engineering design, testing, manufacturing and service.

- In addition to the above, the Walker division also emphasizes the need for adaptability in approaching the OEM market by using flexible manufacturing processes.

Monroe has advertised in industrial magazines in order to encourage auto industry executives and engineers to purchase its parts. The advertisements emphasize Monroe's technical know-how, fifty-year suspension system experience and the company's knowledge of all kinds of MacPherson struts and shock absorbers.

Aftermarket

In contrast to the OEM market, selling to the aftermarket requires a consumer orientation rather than an industrial orientation. Thus, both Monroe and Walker have been very heavily advertising to the public recently, as follows:

- Monroe. In 1979, Monroe funded a very large promotion program that consisted of four parts: a national consumer sweepstakes, a special trade contest, a program to build and promote a dozen racing and show vehicles, and a major shock absorber sales-and promotion-building campaign. Monroe's "Stagecoach" television commercials are among the most recognized and remembered commercials aired by any automotive aftermarket manufacturer. Monroe's "Take Ten" program which offered its customers a $10 cash rebate for every four Radial-Matic or Monro-Magnum 60 shock absorbers they purchased was also a success. According to a survey of consumer awareness conducted by the Gallup Organization in 1978 Monroe outscored its competitors in three important areas: Brand Awareness, Brand Preference and Advertising Awareness among shock absorber consumers.

- Walker. In 1979 Walker launched a multimillion dollar advertising campaign consisting of spots on network television and print ads in leading national consumer and automotive enthusiast magazines. According to Walker, the commercials support the aftermarket and also provide increased visibility to Walker products. They encourage consumers to go to their neighborhood service stations and repair garages and ask for Walker exhaust system products. Television advertising was concentrated on six-week periods in the spring and fall to take advantage of traditional peak periods for exhaust system sales. Walker is also sponsoring 50/50 co-op advertising in local markets. In 1980, Walker offered customer support with new programs designed for maximum consumer impact. For example, it initiated the Muffler Bay program. Under this program, Walker agrees to provide marketing and merchandising support to dealers who devote one service bay exclusively to replacement of exhaust systems. The objective is to make key dealers more competitive with muffler specialty shops.

11.2.5 Marketing Strategy

Tenneco's marketing strategy has two key objectives: (1) to increase its sales to the OEM market and (2) to maintain its present share of the aftermarket. To increase its sales to the OEM market, Tenneco Automotive has undertaken extensive marketing research. The company uses this marketing research to identify key components in the shock absorber or exhaust system area that particular manufacturers will require over the succeeding years. This initial screening identifies which markets the company will pursue with research and development and extensive product and sales work with the auto companies. For example, in the mid-seventies Monroe identified Chrysler as a prime candidate for MacPherson struts. While Chrysler would not reveal specific plans for its suspension systems, the company did indicate that struts would be important to its product line. This subsequently led to Tenneco recently winning from Chrysler a major contract to supply them with MacPherson struts. Thus, in its attempts to penetrate both the shock absorber and exhaust system OEM markets, Tenneco plans to continue this marketing strategy plus emphasize its technical know-how and ability to cooperate with auto companies in parts development.

Tenneco Automotive's aftermarket selling strategy is based on the following three key points:

- Brand awareness. Tenneco advertises its products heavily and places importance on consumer familiarity with the product name.

- Rapid distribution. Tenneco feels that a multi-stage product distribution path requires efficiency and care at all levels to be certain the car owner gets what he wants when he wants it. Walker's advanced computer-assisted distribution system is now being used by Monroe to improve its own distribution system.

- Experience with original equipment parts. As suppliers of original equipment, Tenneco feels it obtains unexcelled insight for supplying the needs of the replacement market. The company is able to offer exact replacements to ensure car performance and efficiency. Thus, there is an important incentive to remain an OEM supplier even if the aftermarket is more lucrative.

11.3 PRODUCTION AND OPERATIONS

In 1979 Walker operated ten manufacturing facilities and nine distribution centers, six of which are located at manufacturing facilities at various locations throughout the United States. Walker also operates 17 manufacturing facilities located in England, Canada, Denmark, France, Northern Ireland and Sweden.

Monroe has three manufacturing facilities in the United States. Its principal foreign manufacturing operations are located in Belgium, Brazil, Canada and Spain.

11.3.1 Principal Automotive Facilities

All three of Monroe's plants are dedicated to automotive production, with the plant in Hartwell, Georgia, being the principal OEM supplier. Eight of Walker's plants are automobile-oriented. (The other two make jacks.)

Monroe Plants

The three Monroe plants are located in Cozad, Nebraska, Hartwell, Georgia and Paragould, Arkansas, and all three manufacture shock absorbers. (See Figures 11-3, 11-4 and 11-5.) The Cozad and Hartwell plants each cover 290,000 square feet, and the Paragould plant is slightly larger at 338,000 square feet. About 15 percent of the output of the Paragould and Cozad plants goes to the original equipment manufacturers and 60 percent of the Hartwell plant output is sold directly to the auto industry.

Company Monroe Auto Equipment | County Dawson | Plant Size 290,000 square feet

Plant Cozad, Nebraska | Congressional District #3

Address 121 Meridian | Standard Metropolitan Statistical Area | No. of Employees

Telephone (308) 784-3600 | Primary SIC Code(s) 37

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Shock Absorbers	Sufficient to meet market requirements	Tube Forming Heat Treating Powdered Metal Chrome Plating Automated Machining Automated Assembly	Various Automotive Parts Marketers 15% OEM

FIGURE 11-3. COZAD PLANT DATA

Company Monroe Auto Equipment

County Hart

Plant Size 290,000 square feet

Plant Hartwell, Georgia

Congressional District 9

Address 200 McIntyre Drive

Standard Metropolitan Statistical Area

No. of Employees

Telephone (404) 376-4743

Primary SIC Code(s) 37

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Shock Absorbers	Sufficient to meet market requirements	Tube Forming Chrome Plating Automated Machining Automated Assembly	Various Automotive Parts Marketers 60% OEM

FIGURE 11-4. HARTWELL PLANT DATA

Company Monroe Auto Equipment | County Greene | Plant Size 338,000 square feet

Plant Paragould, Arkansas | Congressional District 1

Address Highway 1 North RR #2 | Standard Metropolitan Statistical Area | No. of Employees

Telephone (501) 239-8531 | Primary SIC Code(s) 37

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Shock Absorbers	Sufficient to meet market requirements	Tube Forming Heat Treating Powdered Metal Chrome Plating Automated Machining Automated Assembly	Various Automotive Parts Marketers 15% OEM

FIGURE 11-5. PARAGOULD PLANT DATA

Walker Plants

Walker's plants manufacture exhaust systems and filters.

Two exhaust system plants sell around 80 percent of their output to the original equipment manufacturers. The plants, located in Jackson, Michigan, and Hebron, Ohio, are both over 500,000 square feet. (See Figures 11-6 and 11-7.)

Walker plants located in Aberdeen, Mississippi; Arden, North Carolina; Harrisonburg, Virginia; Greenville, Texas; and Seward, Nebraska, primarily supply exhaust systems to the aftermarket. However, about 5 percent of the output from each of these plants is sold to the original equipment automotive market. Finally, a Walker plant in Lake Mills, Iowa, makes fuel, oil and air filters and sells about 20 percent of these directly to the auto manufacturers. (See Figures 11-8 through 11-13.)

11.3.2 New Plants and Expansions

Plant improvements were recently made at the Walker Harrisonburg, Virginia, exhaust plant and at the Monroe Hartwell, Georgia, shock absorber plant. In addition, Tenneco initiated a major program to expand Monroe's North American capacity for production of strut-type automobile suspensions.

- Walker Harrisonburg, Virginia, Exhaust Plant. Walker's Harrisonburg, Virginia, exhaust plant recently added a 28,000 square foot addition to house steel slitting equipment and provide storage for huge steel coils. The slitting equipment will cut the steel coils into smaller coil widths that can be used on tube mills or presses in the muffler area.

- Monroe Hartwell, Georgia, Shock Absorber Plant. At the Hartwell, Georgia, shock absorber plant a new, fully-automated assembly line is being installed. The new line incorporates state-of-the art technology in automated manufacturing, assembly and testing. Every shock absorber will be automatically tested at three performance speeds to assure absolute compliance with performance specifications.

Company Walker Manufacturing Company

County Jackson

Plant Size 595,152 square feet

Plant Jackson

Congressional District 6

Address 633 Hupp Avenue
Jackson, Michigan
49203

Standard Metropolitan Statistical Area Detroit

No. of Employees

Telephone (517) 787-9400

Primary SIC Code(s) 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Mufflers Pipes	N.C.A.	Sheet Metal Forming Welding and Sheet Metal Parts Stamping and Press Operations	Automotive 80% OEM

FIGURE 11-6. JACKSON PLANT DATA

Company Walker Manufacturing Company

County Licking

Plant Size 529,866 square feet

Plant Newark

Congressional District 17

Address Route 2
Hebron, Ohio 43025

Standard Metropolitan Statistical Area Columbus

No. of Employees

Telephone (614) 928-1015

Primary SIC Code(s) 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust Products	N.C.A.	Sheet Metal Forming Welding and Sheet Metal Parts Stamping and Press Operations	Automotive -- 80% OEM

FIGURE 11-7. NEWARK PLANT DATA

Company Walker Manufacturing Company

County Monroe

Plant Size 350,415 square feet

Plant Aberdeen

Congressional District 2

Address South Matubba St.
Aberdeen, Mississippi 39730

Standard Metropolitan Statistical Area

No. of Employees

Telephone (601) 369-8161

Primary SIC Code(s) 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust Systems	N.C.A.	Sheet Metal Forming Welding of Sheet Metal Parts Stamping and Press Operations	Automotive — 5% OEM

FIGURE 11-8. ABERDEEN PLANT DATA

Company Walker Manufacturing Company

County Buncombe

Plant Size 412,462 square feet

Plant Asheville

Congressional District 11

Address P.O. Box 687
Arden, North Carolina 28704

Standard Metropolitan Statistical Area Asheville

No. of Employees

Telephone (704) 684-8511

Primary SIC Code(s) 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Mufflers Pipes	N.C.A.	Sheet Metal Forming Welding of Sheet Metal Parts Stamping and Press Operations	Automotive 5% OEM

FIGURE 11-9. ASHEVILLE PLANT DATA

Company Walker Manufacturing Company

County Rockingham

Plant Size 680,808 square feet

Plant Harrisonburg

Congressional District 7

Address P.O. Box 809
Harrisonburg,
Virginia 22801

Standard Metropolitan Statistical Area Washington, D.C.

No. of Employees

Telephone (703) 434-2561

Primary SIC Code(s) 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Mufflers Pipes	N.C.A.	Sheet Metal Forming Welding of Sheet Metal Parts Stamping and Press Operations	Automotive 5% OEM

FIGURE 11-10. HARRISONBURG PLANT DATA

Company Walker Manufacturing Company **County** Hunt **Plant Size** 508,888 square feet

Plant Greenville **Congressional District** 4

Address P.O. Box 1218
Greenville, Texas
75401

Standard Metropolitan Statistical Area Dallas **No. of Employees**

Telephone (214) 455-8201 **Primary SIC Code(s)** 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust Systems	N.C.A.	Sheet Metal Forming Welding of Sheet Metal Parts Stamping and Press Operations	Automotive 5% OEM

FIGURE 11-11. GREENVILLE PLANT DATA

Company Walker Manufacturing Company

County Seward

Plant Size 490,528 square feet

Plant Seward

Congressional District 1

Address P.O. Box 447
Seward, Nebraska
68434

Standard Metropolitan Statistical Area

No. of Employees

Telephone (402) 643-4511

Primary SIC Code(s) 3714127 Mufflers 3714129 Pipes

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Exhaust Systems	N.C.A.	Sheet Metal Forming Welding and Sheet Metal Parts Stamping and Press Operations	Automotive — 5% OEM

FIGURE 11-12. SEWARD PLANT DATA

Company Walker Manufacturing Company

County Winnebago

Plant Size 343,000 square feet

Plant Lake Mills

Congressional District 6

Address 311 North Park Ave.
Lake Mills, Iowa
50450

Standard Metropolitan Statistical Area

No. of Employees

Telephone (515) 592-1300

Primary SIC Code(s) 37141 Filters

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Fuel, Oil and Air Filters	N.C.A.	Sheet Metal Forming Press Operations and Assembling	Automotive — 20% OEM

FIGURE 11-13. LAKE MILLS PLANT DATA

- Monroe Expansion Program. This $30 million expansion represents the first time in recent history that Monroe will manufacture anything other than conventional shock absorbers domestically. A major investment in new tooling and equipment is being made in several plants to prepare for production later this year. Parts for struts will be made at Owen Sound, Canada, and Paragould, Arkansas, with final assembly at Hartwell, Georgia.

11.4 FINANCIAL STATUS

Tenneco Inc. derives the bulk of its revenues from the petroleum business. It is therefore strong financially with good earnings prospects.

11.4.1 Operations Analysis

Tenneco has experienced increased sales and earnings over the past five years. (See Figure 11-14.) However, operating income and earnings as a percent of sales have steadily fallen while increased sales for a given amount of assets have kept overall returns on assets and equity nearly constant. Slight decreases in return on equity in the years 1977 and 1978 were attributed by management to sales of new common shares and investments in new ventures that had as yet not begun to pay off. Some of the trends reflected in these numbers are undoubtedly due to Tenneco's diversification into non-petroleum businesses where margins are lower but sales tend to be greater for a given set of assets.

Operating revenues for 1979 advanced 28 percent, year to year, and net income gained 23 percent. All segments were stronger than a year earlier except for shipbuilding.

in 1978 Tenneco's automotive revenues and income improved. Walker's sales improved and were especially helped by European operations. Monroe's sales increased due to the success of the Radial-Matic and the Monro-Magnum 60. In 1979, automotive revenues were up 10 percent, but operating profit was down 23 percent. Although replacement revenues were higher, original equipment volumes were significantly reduced due to the depressed U.S. domestic car market.

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	11209	571	16.2	16.0
78	8762	466	14.6	16.7
77	7440	427	15.2	18.5
76	6423	384	16.4	18.3
75	5630	343	17.0	18.7
74	5001	321	14.6	19.3

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	5.1	1.00	5.1
78	5.0	.94	5.3
77	5.3	.93	5.7
76	5.4	.90	6.0
75	5.0	.82	6.1
74	5.3	.83	6.4

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 11-14. TENNECO OPERATIONS ANALYSIS

11.4.2 Capital Analysis

Tenneco has been steadily increasing its long-term debt over the last five years. (See Figure 11-15.) Nevertheless, its debt-to-capitalization ratio has remained relatively constant, between 41 and 46 percent. This is a higher level than generally found in companies with a greater percentage of their business in the parts and components industry. Tenneco has also increased its equity a little each year, but this has almost always been associated with bond conversions or mergers.

Tenneco has been spending aggressively in recent years. Capital expenditures in 1979 of $1.48 billion were financed through internal cash generation and increased debt and equity.

11.5 RESEARCH AND DEVELOPMENT

Walker has an engineering research center in Grass Lake, Michigan, that is used to study noise. The "Center of Silence" provides developmental facilities and coordinates the research efforts for Walker operations. The heart of the center is a "Box of Quiet" totally isolated from external noises, with walls, ceiling and floor of sound absorbent panels. Grass Lake research provides continuous input on more efficient silencing and tuning techniques, control of pollutants in exhaust emissions and evaluation of new materials.

Walker also pursues broad filter research in other facilities. Particle separation and analysis, materials testing, and development of improved case and filter-element construction continue to maintain the company's position in oil, air and fuel filtration.

Monroe is continuing research done in recent years on MacPherson Struts and Load Leveler stabilizing units. The company also has plans to come out with "downsized" struts in the next few years.

11.6 GOVERNMENT AND LABOR RELATIONS

Tenneco recently has had its acquisition of Monroe challenged by the Federal Trade Commission.

Prior to the acquisition of Monroe Auto Equipment Company by Tenneco Inc., the Federal Trade Commission commenced an administrative proceeding to determine if the acquisition violated the Federal antitrust laws. The FTC

			Sources			
Year	Sales	P/E Ratio[1]	Earnings	Depreciation	Changes in Long-Term Debt	Changes in Owners' Equity Other Than Retained Earnings
79	11209	6.7	571	561	106	174.0
78	8762	6.9	466	449	676	21.5
77	7440	7.5	427	398	73	71.8
76	6423	9.3	384	355	378	42.2
75	5630	5.7	343	337	349	76.6
74	5001	5.1	321	312	313	28.9

		Uses					
Year	Change in Working Capital	Capital Expenditures	Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	(448.0)	1477	259	41.3	3.6	13.6	1.1
78	163.4	1008	226	42.3	4.2	10.9	1.3
77	26.7	714	197	40.3	5.2	9.2	1.3
76	51.3	613	175.2	43.4	4.9	8.9	1.3
75	277.3	545	157.3	45.6	4.3	8.4	1.4
74	(119.7)	642	142.5	46.0	4.5	10.9	1.1

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 11-15. TENNECO CASH FLOW ANALYSIS

petitioned the U.S. District Court for the District of Columbia for a preliminary injunction against the acquisition. The district court denied the FTC's petition, and a subsequent motion by the FTC to the U.S. Court of Appeals for a temporary injunction was also denied.

Tenneco has recently participated in two public interest programs. The company has stated it has a commitment to protect the environment and help its employees and their communities.

- More than $1 million was allocated to higher education in 1978 in the form of scholarships, contributions and research grants.

- Tenneco's Schoolhouse Energy Efficiency Demonstration (SEED) Program is designed to help schools cut their fuel bills by demonstrating techniques for prudent energy management and developing cost-effective suggestions for energy conservation.

12. TIMKEN

The Timken Company, founded in 1899, is the world's largest manufacturer of roller bearings, a leading producer of specialty steel and a manufacturer of removable drilling bits. It is a highly integrated company, producing steel for the manufacture of its bearings as well as for sale to outside customers. Timken's largest market is the auto industry which buys slightly less than half of the company's roller bearing output. Timken's other markets include manufacturers of railway cars and locomotives, machine tools, rolling mills and farm equipment.

The smaller cars being produced by U.S. car manufacturers generally have smaller tires which require wheel bearings to turn more revolutions per mile traveled. Timken is therefore engaged in the development of new bearings that will hold up under greater wear conditions. The company has concentrated particular efforts on the development of a tapered roller bearing package suitable for front-wheel-drive vehicles. Research and development expenditures will be doubled in the next five years, and the company is in the midst of a $500 million expansion program to increase bearing and steel production capacity.

12.1 CORPORATE SIZE AND STRUCTURE

Among suppliers of automobile parts, Timken ranks ninth in revenues and sixth in income. The company manufactures about 35 types of roller bearings in more than 11,000 sizes. In 1975, Timken acquired Latrobe Steel, expanding its steel-making capacity.

12.1.1 Revenue, Profit and Employment Statistics

Sales in 1979 were approximately $1,282 million, and profits for the year were $102 million. Bearings and drilling bits accounted for 71 percent of revenues and 51 percent of net income. Specialty steel accounted for 29 percent of revenues and provided 49 percent of the firm's profits. About 26 percent of net income came from operations in six foreign countries. The company employed about 23,500 people in 1979. (See Table 12-1.)

TABLE 12-1. TIMKEN REVENUES, PROFIT AND EMPLOYMENT

Year	Revenues (Millions)	Profits (Millions)
1979	$1,282	$102
1978	1,106	89
Average Number of Employees: 23,500 (1979)		

12.1.2 Corporate Organization

The company is organized into two operating groups as follows (see Figure 12-1):

- Bearings and bits group which manufactures roller bearings and rock drill bits
- Specialty steel group which manufactures alloy steel rods, steel bars and seamless tubing for outside sale and for the operations of the bearings and bits group.

Timken announced in 1979 that Joseph F. Toot had been elected president of the company. He succeeded Herbert E. Markley who had reached mandatory retirement age.

12.2 MAJOR MARKETS AND PRODUCTS

Figure 12-2 presents a summary of the major market information for the Timken Company.

MARKET DATA

Major Markets: Auto, truck, railroad, machinery, mining, farm equipment and steel processing industries

Percent of Sales to Auto Industry: 20 to 30 percent (estimate)

Supplies to: Chrysler, Ford, General Motors

Major Products: Tapered roller bearings, ball bearings, rock drill bits, steel bars, steel rods and seamless tubing

FIGURE 12-2. TIMKEN MARKET DATA

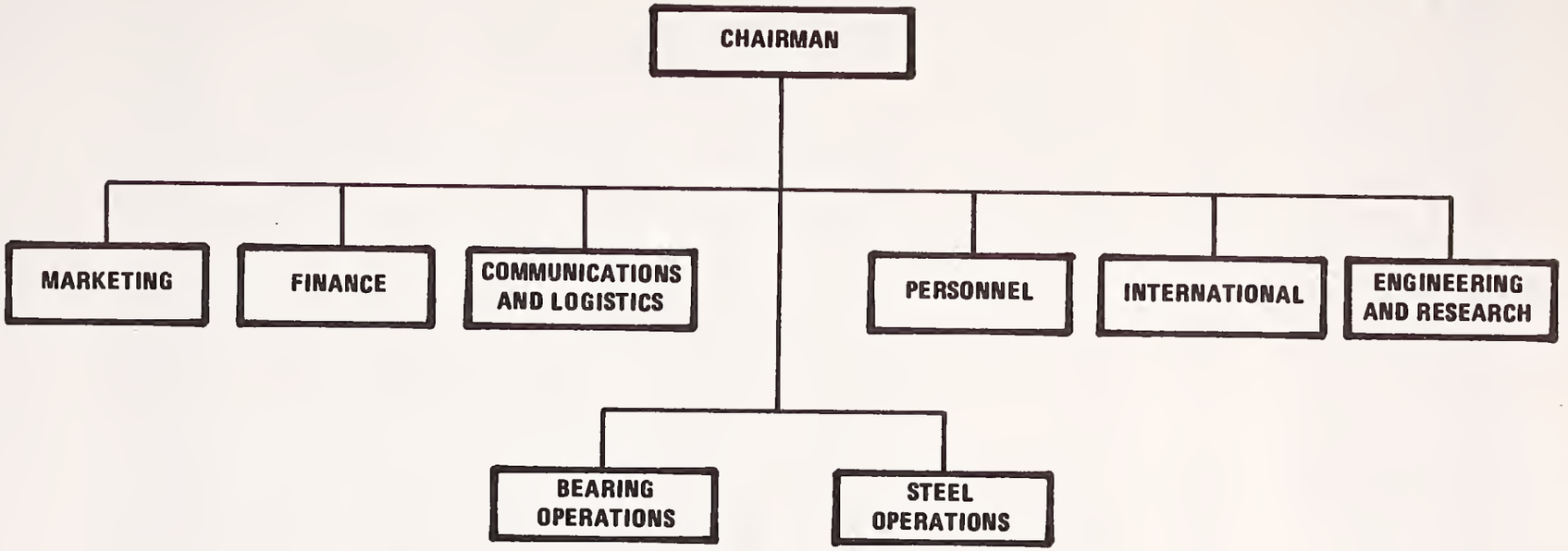

FIGURE 12-1. TIMKEN CORPORATE ORGANIZATION

12.2.1 Major Markets

Timken's major markets are the auto, truck, railroad, machinery, mining, farm equipment and steel processing industries. The auto industry purchases slightly less than half of the company's tapered roller bearing output, and the automakers, therefore, account for 20 to 30 percent of Timken's total revenues. Chrysler, Ford and General Motors are all major customers.

12.2.2 Products

Timken's products fall into three categories as follows:

- Bearings. The company's leading product is tapered roller bearings, used to counteract friction caused by radial and thrust loads on axles and shafts in vehicles and machines. More than 11,000 sizes of about 35 types are manufactured by the firm and marketed around the world through wholly-owned sales subsidiaries and an international network of authorized distributors. The company also manufactures some ball bearings.

- Specialty Steel. Seamless mechanical steel tubing is Timken's major specialty steel product. The tubes are used in the oil country, automotive, machine tool, construction equipment, farm equipment and aircraft industries. Latrobe Steel Co., a wholly-owned subsidiary of Timken Co., is a leader in the tool steel industry, producing more than 200 varieties of steel and vacuum-melted alloys.

- Drilling Bits. The Timken removable rock bit it used in the construction, mining and quarrying industries for blast-hole drilling, anchor bolting, line drilling and various other types of percussion drilling.

Together, bearings, rock bits and minor products account for 71 percent of the company's sales and specialty steels account for the remaining 29 percent.

Sales Strategy

Timken promotes sales of its tapered bearings to the automotive industry by stressing the following points:

- The company's position as the world's largest producer of tapered roller bearings
- Eighty years of experience in bearing manufacturing
- Weight and space savings due to smaller size than most other types of bearings
- Production cost savings through use of company's automated presetting techniques
- Longer life and lower maintenance costs of tapered bearings.

New Products

In 1979 Timken announced a significant new product--the "UNIPAC" tapered roller bearing specifically designed to facilitate the manufacture and performance of front-wheel-drive vehicles. In announcing the new wheel-bearing unit, Timken Senior Vice President James W. Pilz explained, "Our customers predicted the trend toward increased production of small, front-wheel-drive vehicles, and we trust we've responded to their needs by developing a tapered roller-bearing package specifically matched to their new models." Because UNIPAC is completely preset, prelubricated and presealed, the company predicts that it will reduce assembly time, labor and cost to the automakers.

The first application of the new product in a passenger car wheel will be in the Audi 4000. Ford and Chrysler are testing the bearing for use in front-wheel-drive vehicles expected to arrive in the 1981 model year.

12.2.3 Marketing Strategy

Timken has traditionally followed a conservative strategy toward the development of its business, choosing to concentrate in its three areas of expertise and experience rather than diversifying into new product lines. The company's directors explained, "The Company has never found it necessary to radically diversify in order to grow or even to survive,

nor has it been drawn into unfamiliar fields simply because the grass looked greener. Instead, its expansion has been undertaken on a step-by-step basis, with each move marking definite progress in achieving overall corporate goals."

The company has indicated that it will continue on the same course, investing over $500 million in the next five years to expand both bearing and steel production capacity and spending over $6 million to double its research and development operations. It will continue to expand its bearing sales to non-automotive customers and will conduct a strong marketing campaign for its new UNIPAC bearing unit within the auto industry. The company will also continue to enlarge its foreign operations.

12.3 PRODUCTION AND OPERATIONS

Timken manufactures roller and ball bearings in Columbus, Bucyrus, New Philadelphia and Canton, Ohio; and in Gaffney, South Carolina. Steel is produced in Canton and Wooster, Ohio; and Latrobe, Pennsylvania. The company produces rock bits in Colorado Springs, Colorado; and machine tools in Wauseon, Ohio.

12.3.1 Major Automotive Facilities

Data on Timken's plants that produce bearings for the automotive industry are presented in Figures 12-3 through 12-7. The plants are as follows:

- Columbus. The Timken Roller Bearing Co. in Columbus, Ohio, produces roller and ball bearings and employs 1,400 people.

- Bucyrus. The Bucyrus Bearing Plant in Bucyrus, Ohio, produces roller and ball bearings and employs 1,120 people.

- Gaffney. The Gaffney Bearing Plant in Gaffney, South Carolina, produces roller and ball bearings and employs 600 people.

- New Philadelphia. The New Philadelphia Bearing Plant in New Philadelphia, Ohio, produces roller and ball bearings and employs 160 people.

Company Timken **County** Franklin **Plant Size**

Plant Timken Roller Bearing Co. **Congressional District** 12

Address 1025 Cleveland Columbus, Ohio 43201 **Standard Metropolitan Statistical Area** 1840 **No. of Employees** 1,400

Telephone (614) 291-3161 **Primary SIC Code(s)** 3562

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Ball and Roller Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 12-3. COLUMBUS PLANT DATA

Company Timken County Crawford Plant Size

Plant Bucyrus Bearing Plant Congressional District 4

Address 2325 E. Mansfield St.
Bucyrus, Ohio 44820 Standard Metropolitan Statistical Area No. of Employees 1,120

Telephone (419) 562-8045 Primary SIC Code(s) 3562

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Ball and Roller Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 12-4. BUCYRUS PLANT DATA

Company Timken **County** Cherokee **Plant Size**

Plant Gaffney Bearing Plant **Congressional District** 5

Address Hwy 29/P.O. Box 11 Gaffney, South Carolina 29340 **Standard Metropolitan Statistical Area** **No. of Employees** 600

Telephone (803) 489-0211 **Primary SIC Code(s)** 3562

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Ball and Roller Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 12-5. GAFFNEY PLANT DATA

Company Timken | County Tuscarawas | Plant Size

Plant New Philadelphia Bearing Plant | Congressional District 18

Address 1957 E. High St. New Philadelphia, Ohio | Standard Metropolitan Statistical Area | No. of Employees 160

Telephone (216) 339-1151 | Primary SIC Code(s) 3562

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Ball and Roller Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 12-6. NEW PHILADELPHIA PLANT DATA

Company Timken **County** Stark **Plant Size** _____

Plant Canton Steel Plant **Congressional District** 16

Address 1835 Dueber Ave.,S.W.
Canton, OH 44706 **Standard Metropolitan Statistical Area** 1320 **No. of Employees** 9,000

Telephone (216) 453-1619 **Primary SIC Code(s)** 3312/3362

Products (Automotive)	Capacity	Processes Used	Consumed by (Automotive)
Rolled Steel Ball and Roller Bearings	N.C.A.	N.C.A.	N.C.A.

FIGURE 12-7. CANTON PLANT DATA

- Canton. Timken's steel plant in Canton, Ohio, manufactures primarily rolled steel but also produces some roller and ball bearings.

12.3.2 New Plants

In 1977 Timken announced a capital investment program of $500 million for the five years beginning in 1977, and in 1978 the total figure was increased to $515 million. Major projects in the expansion program include:

- A new $135 million bearing plant at Lincolnton, North Carolina
- A new $16 million reducing rolling mill at Canton, Ohio
- A new piercing plant at Gambrinus, Ohio
- A water purification plant for the Canton-Gambrinus complex
- A new distribution center in Haan, Germany.

A year after the program was begun, all projects were on schedule.

12.4 FINANCIAL STATUS

Timken has maintained a strong and very steady performance over the last five years, even during the recession in '74 and '75.

12.4.1 Operations Analysis

Timken's sales have risen regularly during the 1975 to 1979 period. (See Figure 12-8.) The climb in earnings has been interrupted only in 1976 when the company suffered currency translation losses on overseas business. Return on equity has remained strong and the company's ratio of operating income to sales has varied little in the last five years, holding around 19 percent. In addition, sales have been a fairly constant percentage of assets. These indicators signify that Timken has been able to maintain margins and sales, and therefore earnings, at a steady level.

Year	Sales ($Millions)	Earnings ($Millions)	Return on Equity, Percent	Operating Income* / Sales, Percent
79	1282	102	15.2	18.7
78	1106	88.6	14.8	19.8
77	974	74.4	13.4	18.9
76	884	60.9	11.7	18.5
75	804	61.3	12.8	19.6
74	665	52.9	12.7	19.3

Year	Earnings / Total Assets, Percent	Sales / Assets	Earnings / Sales, Percent
79	11.2	1.4	8.0
78	10.9	1.36	8.0
77	10.0	1.32	7.6
76	8.9	1.29	6.9
75	10.0	1.32	7.6
74	10.3	1.29	8.0

*Operating Income = Sales – Cost of Goods Sold – Selling, General and Administrative Expenses, Before Depreciation, Interest, and Income Taxes.

FIGURE 12-8. TIMKEN OPERATIONS ANALYSIS

During 1979, Timken's sales increased 16 percent against 1978, and net income rose 15 percent year-to-year. In 1980, the weakness in the auto industry may moderate the company's growth somewhat but should not present serious problems. In the medium term, Timken expects to accelerate its growth through greater sales of bearings to non-automotive sectors and through increased output of specialty steel.

12.4.2 Capital Analysis

Timken issued bonds totaling $22 million in 1975 and 1976 to finance projects for air pollution abatement and water purification projects. It has not made significant stock issuances in the last five years except in 1979. Dividends have increased regularly over the last five years. (See Figure 12-9.)

The low ratio of debt to capitalization (around 4 percent) and the high coverage ratio suggest a conservative corporate policy on debt. Capital expenditures have mostly been made from internally generated funds over the last five years. According to Timken, all programs are on schedule in the company's $515 million capital expenditures program for the five years through 1981.

12.5 RESEARCH AND DEVELOPMENT

In 1979, Timken announced plans to expand its research facility in Canton, Ohio, and double the size of its centralized research staff over the next five years. The company said that it will spend $6 million to expand the facility, which was built in 1966. As part of the expansion of research and development, Charles H. West, formerly executive assistant for international operations, was promoted to the newly created position of research director.

In the announcement, the company said, "Concentration will be placed on the development of emerging technologies such as powdered metallurgy, the use of microprocessors and the use of computerized systems analysis for product application studies. This increased emphasis also applies to the company's subsidiary, Latrobe Steel Co., and its research."

Costs incurred for research and development amounted to $10.0 million in 1979 and $8.5 million in 1978.

			Sources			
Year	Sales	P/E Ratio[1]	Earnings	Depreciation	Changes in Long-Term Debt	Changes in Owners' Equity Other Than Retained Earnings
79	1282	6.1	102	60.2	(1.3)	12
78	1106	5.9	88.6	49.0	2.1	(6.13)
77	974	7.4	74.4	42.6	(1.4)	(1.9)
76	884	8.8	60.9	38.2	10.6	.9
75	804	6.1	61.3	33.9	9.6	.5
74	665	6.0	52.9	27.7	(1.2)	N.A.

		Uses					
Year	Change in Working Capital	Capital Expenditures	Dividends	Long-Term Debt[2] / Capitalization %	Coverage[3]	Cap. Exp. / Total Assets %	Current Ratio
79	22.3	118	37	3.8	70.3	13.1	2.6
78	(7.7)	108	33	4.4	46.4	13	2.4
77	3.1	87	29	4.5	47.8	12	2.7
76	7.3	80	25	5.1	48.1	12	3.0
75	35.6	57	23	3.5	91.3	10	3.1
74	18.0	41	21	0	203.0	8	3.2

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 12-9. TIMKEN CAPITAL ANALYSIS

12.6 GOVERNMENT AND LABOR RELATIONS

Timken has been an active campaigner for the imposition of duties on Japanese imports of roller bearings to the U.S. It has also been a vocal critic of government regulation and economic policies. In 1977 and 1978, Timken suffered a lengthy dispute with the United Steelworkers of America at its Latrobe Steel plant.

12.6.1 Government Relations

In 1979, Timken petitioned the U.S. Treasury Department to begin imposing duties on the import of underpriced Japanese roller bearings into the country. The imports in question had been found to be in violation of antidumping statutes three years earlier, but Timken discovered that duties had not been imposed.

In pressing its case for action on the imports, Timken claimed that Japanese exports of bearings to the U.S. had risen 21.5 percent between 1975 and 1978 while Japanese worldwide exports of bearings during the same period dropped by 33 percent. In 1978, U.S. imports of Japanese bearings were 34,178,796 pounds, more than double the volume in 1973. The Treasury Department's Customs Service has taken the company's petition under advisement.

The company has also disagreed with the government's role on broader policy issues. In its annual reports, the company has criticized the government most harshly for "deep-seated inflation caused by the imprudent policies and actions of growing government bureaucracies" and "regulatory pressures from the United States Government... which may sometimes border on harassment." The company directors informed the stockholders that, "We may, from time to time, ask you to contact your legislators when the best interests of the Company are involved."

Complying with Federal, state and local environmental regulations cost Timken approximately $4.2 million in 1978 and $2.5 million in 1979.

12.6.2 Labor Relations

In 1977 and 1978, the United Steelworkers of America struck the Latrobe steel plant. In 1978, the union and the company agreed on a 27-month contract with wage and benefit provisions that equaled those of the basic steel contract.

Timken had previously reached a similar agreement with USW workers at its Canton, Gambrinus, Wooster and Columbus, Ohio plants.

At issue in the nine-month Latrobe dispute, according to the company, was "the necessity for improved practices in the operation of the facility to partially offset the substantial increase in wages and improved benefits offered by the Company." After the plant had been back in operation, Timken stated that, "Although the effects of the strike persisted due to changed customer order patterns, business has steadily improved."

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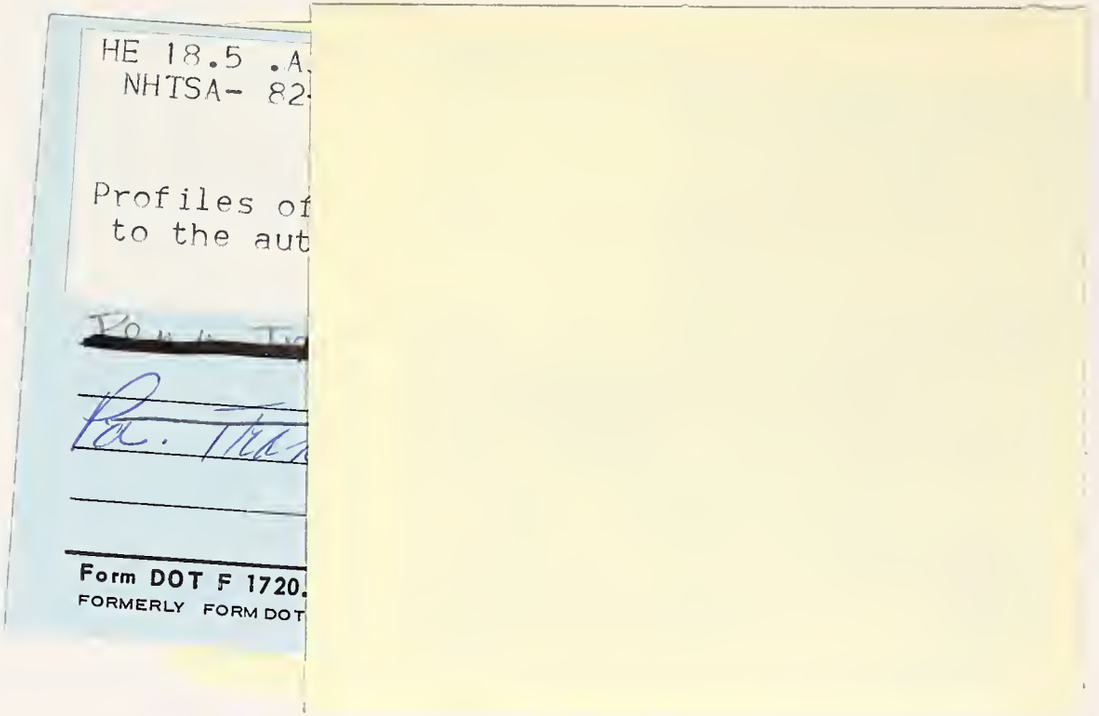

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