# Profiles of Major Suppliers to the Automotive Industry

## Volume 7: Machine Tool Suppliers to the Automotive Industry

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**Bethesda MD 20014**

August 1982
**Final Report**



U.S. Department of Transportation
**National Highway Traffic Safety Administration**

**Office of Research and Development**
**Washington DC 20590**

Technical Report Documentation Page

| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
|---|---|---|
| DOT-HS-806 222 | | |

| 4. Title and Subtitle | 5. Report Date |
|---|---|
| PROFILES OF MAJOR SUPPLIERS TO THE AUTOMOTIVE INDUSTRY: VOL. 7 MACHINE TOOL SUPPLIERS TO THE AUTOMOTIVE INDUSTRY | August 1982 |
| | 6. Performing Organization Code: DTS-322 |
| 7. Author(s): J.A. Mateyka, W.R. Magro, D.M. Wasserman, D.J. Yee | 8. Performing Organization Report No.: DOT-TSC-NHTSA-82-1.VII |
| 9. Performing Organization Name and Address: Booz, Allen and Hamilton, Inc.* Transportation Consulting Division Bethesda, Maryland 20014 | 10. Work Unit No. (TRAIS): HS275/R2412 |
| | 11. Contract or Grant No. |
| 12. Sponsoring Agency Name and Address: U.S. Department of Transportation National Highway Traffic Safety Administration Office of Research and Development Washington DC 20590 | 13. Type of Report and Period Covered: October 1978-October 1980 Final Report |
| | 14. Sponsoring Agency Code: NRD-13 |

15. Supplementary Notes

*Under contract to: U.S. Department of Transportation
Research and Special Programs Administration
Transportation Systems Center
Cambridge, Massachusetts 02142

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.

| 17. Key Words | 18. Distribution Statement |
|---|---|
| Automotive Parts, Components, Materials, Plastics, Glass, Fiberglass, Machine Tools | Document is available to the public Through the National Technical Information Service, Springfield, Virginia 22161 |

| 19. Security Classif. (of this report) | 20. Security Classif. (of this page) | 21. No. of Pages | 22. Price |
|---|---|---|---|
| UNCLASSIFIED | UNCLASSIFIED | 126 | |

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

# 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.

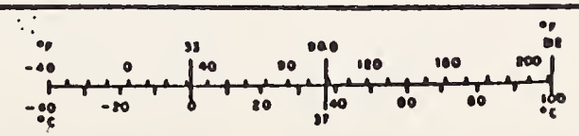
## METRIC CONVERSION FACTORS

### 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 |



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## SUMMARY

This report on North American machine tool suppliers to the automotive industry is the seventh of a series of 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 machine tools purchased from automotive suppliers.

New processes, for instance, are being developed to machine the light-weight materials, particularly aluminum alloys, used in the transmissions and engine components of downsized vehicles. Another example is Detroit's changing need for automated transfer lines. Frequent design changes require machining systems with the flexibility to machine many different parts as market conditions or production schedules vary. In almost every part of the car, new technology and new designs are affecting machine tooling. As machine tool 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 machine tool 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.

Six important machine tool 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 machine tool industry, its relevance to the auto market and the key issues currently confronting the industry. Following the overview, company analyses are given for six major corporations in the industry.

# 1. THE MACHINE TOOL INDUSTRY

The U.S. machine tool industry is a relatively small but critical component of the national economy, and it has historically been basic to the development of the American auto industry. The close relationship between the two industries is particularly important now, when the automakers are in the midst of a major retooling effort to meet Federal fuel efficiency mandates.

Automobile design changes and similar programs in the aerospace industry have been major factors in the ongoing, three-year order boom for machine tool suppliers. Spending for machine tools in the U.S. may reach $6 billion in 1980, up from $4.5 billion in 1979.

The surge in orders is not without its problems, however. Because of the traditional cyclicality of machine tool demand, suppliers have been reluctant to expand their operations to meet order levels that may be only temporary. That reluctance has left the major machine tool manufacturers without the necessary capacity to meet the current high level of demand. Order backlogs for the industry as a whole are running more than $5.6 billion, and delivery times for many machines have stretched out to over two years.

Huge backlogs and long lead times have aggravated the problem of foreign competition. The automakers and other manufacturers are shopping around in foreign markets in efforts to speed up the installation of new equipment. The U.S. machine tool manufacturers are acutely aware of the problem and have recently stepped up their capital expansion programs and accelerated development of more sophisticated machining systems tailored to the new requirements of the auto and aircraft industries. The suppliers are paying particular attention to the design of more flexible manufacturing systems and to the development of more powerful computer controls for their machines. In the short run, at least, the level of orders for these new systems will depend heavily on the auto manufacturers' confidence that the equipment will be ready when they need it.

Because of continuing demand for machine tools in the auto and aircraft industries, the general recession has not seriously affected the machine tool suppliers. This situation is likely to continue through 1980. Some analysts predict a slowing of sales beginning in early 1981. The machine tool industry, however, is confident that its recent growth will continue into the mid-'80s. In making that forecast, the industry points to the country's widespread concern with raising manufacturing productivity and with compensating for the shortage of skilled labor through the use of more sophisticated and automated machinery.

## 1.1 SIZE AND STRUCTURE OF THE U.S. MACHINE TOOL INDUSTRY

The machine tool industry is relatively small compared to other U.S. industries. Many giant industrial corporations report more shipments and more employees than the entire machine tool industry. Figure 1-1 compares the value of shipments of the machine tool industry with three other durable goods manufacturing industries. As shown, machine tool shipments of $3.6 billion in 1976 were relatively small compared to such industries as the motor vehicle industry and the construction machinery industry. The value of machine tool industry shipments, however, was roughly equivalent to that of the special tool and die industry. In 1976 the machine tool industry employed approximately 81,000 workers, about one-tenth of the number of people employed in the motor vehicle industry.

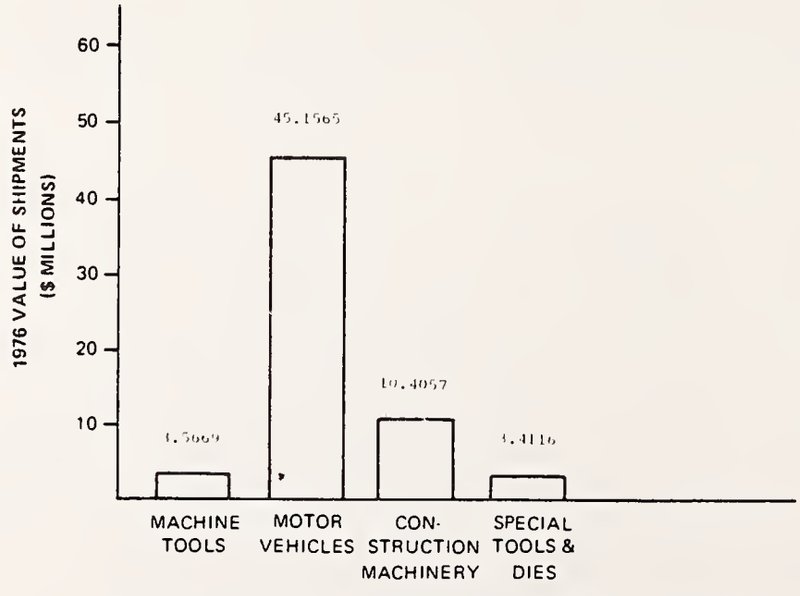



FIGURE 1-1. COMPARISON OF VALUE OF SHIPMENTS OF SELECTED MANUFACTURING INDUSTRIES

The machine tool industry has shown considerable growth over the last ten years. Machine tool purchases of $1.4 billion in 1970 had reached $4.5 billion in 1979. Some industry observers have predicted $6 billion in sales in 1980.

The machine tool industry is often referred to as a small shop industry. As shown in Table 1-1, almost 50 percent of the establishments have less than 10 employees and only 7 percent of the establishments have more than 250 employees. The large shops, 250 employees or greater, however, do produce the majority (approximately 58 percent) of the machine tool shipments.

TABLE 1-1. STRUCTURE OF THE MACHINE TOOL INDUSTRY BROKEN DOWN BY NUMBER OF EMPLOYEES

| Employment Size | Number of Establishments | Value of Shipments (Millions) | Market Share |
|---|---|---|---|
| All Establishments | 1,277 | $2,111.7 | |
| 1 to 4 Employees | 380 (30%) | 25.2 | 1% |
| 5 to 9 Employees | 212 (17%) | 38.0 | 2 |
| 10 to 19 Employees | 246 (19%) | 86.3 | 4 |
| 20 to 49 Employees | 194 (15%) | 166.0 | 8 |
| 50 to 99 Employees | 89 ( 7%) | 183.8 | 9 |
| 100 to 249 Employees | 83 ( 6%) | 376.0 | 18 |
| 250 to 499 Employees | 37 ( 3%) | 383.7 | 18 |
| 500 or More Employees | 47 ( 4%) | 855.5 | 40 |

Source: 1972 Census of Manufacturers.

## 1.2 MAJOR MARKETS FOR MACHINE TOOLS

Machine tool products can be divided into two major market categories:

- Production machine tools, such as lathes, drill presses and so forth sold to a wide variety of industries
- Specialized machine tools, including completely automated manufacturing systems, sold to large manufacturers such as the automobile and the aircraft industries. The automobile has its greatest impact on this market segment.

The recent surge of orders for machine tools by the automotive and aircraft industries has been due to the introduction and planned introduction of new products by both industries. The National Machine Tool Builders Association estimates that the auto industry currently accounts for 20 to 25 percent of all new orders for machine tools in the U.S.

The automakers use machine tools for a wide variety of operations, including stamping bumpers, drilling engine blocks, turning brake drums, cutting gears and forming vehicle bodies. Figure 1-2 illustrates some of the parts and components commonly manufactured with the use of machine tools.

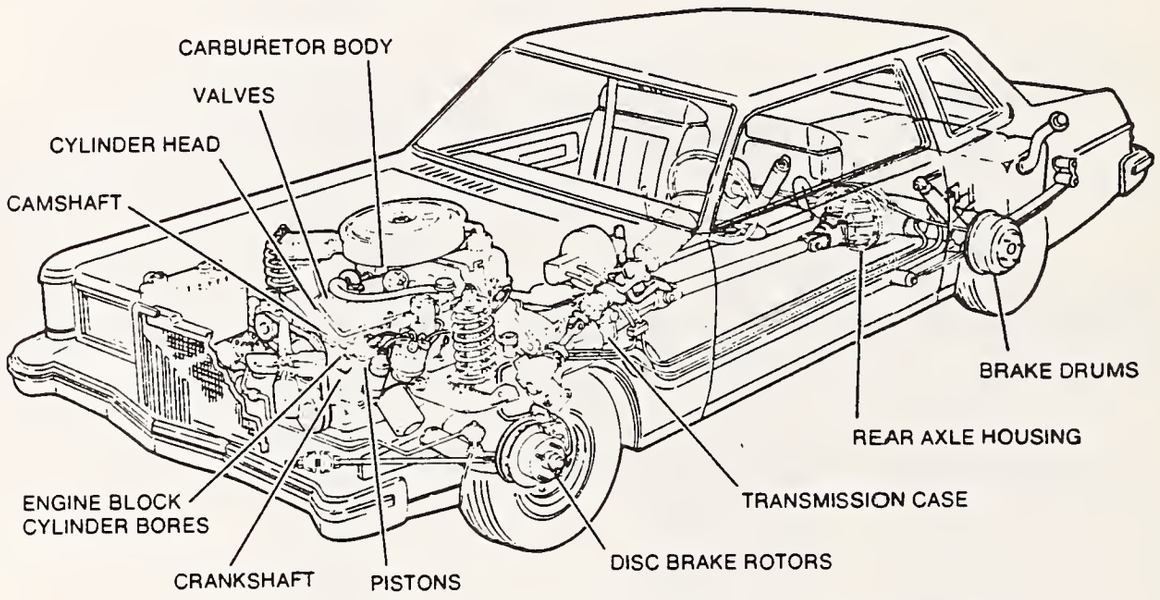



FIGURE 1-2. SCHEMATIC DIAGRAM OF AUTOMOBILE SHOWING PARTS AND COMPONENTS WHICH ARE MACHINED

## 1.3 MACHINE TOOL TECHNOLOGY

Machine tools can be categorized by their machining operations and by their configurations. There are two broad groups of machining operations: metalcutting and metal-forming. This report concentrates on metalcutting machine tools, which account for 75 percent of total U.S. machine tool sales. Configurations of machine tools are varied, and the number of designs is increasing as machine tool users demand machines that are capable of performing multiple operations with increasing levels of efficiency and versatility.

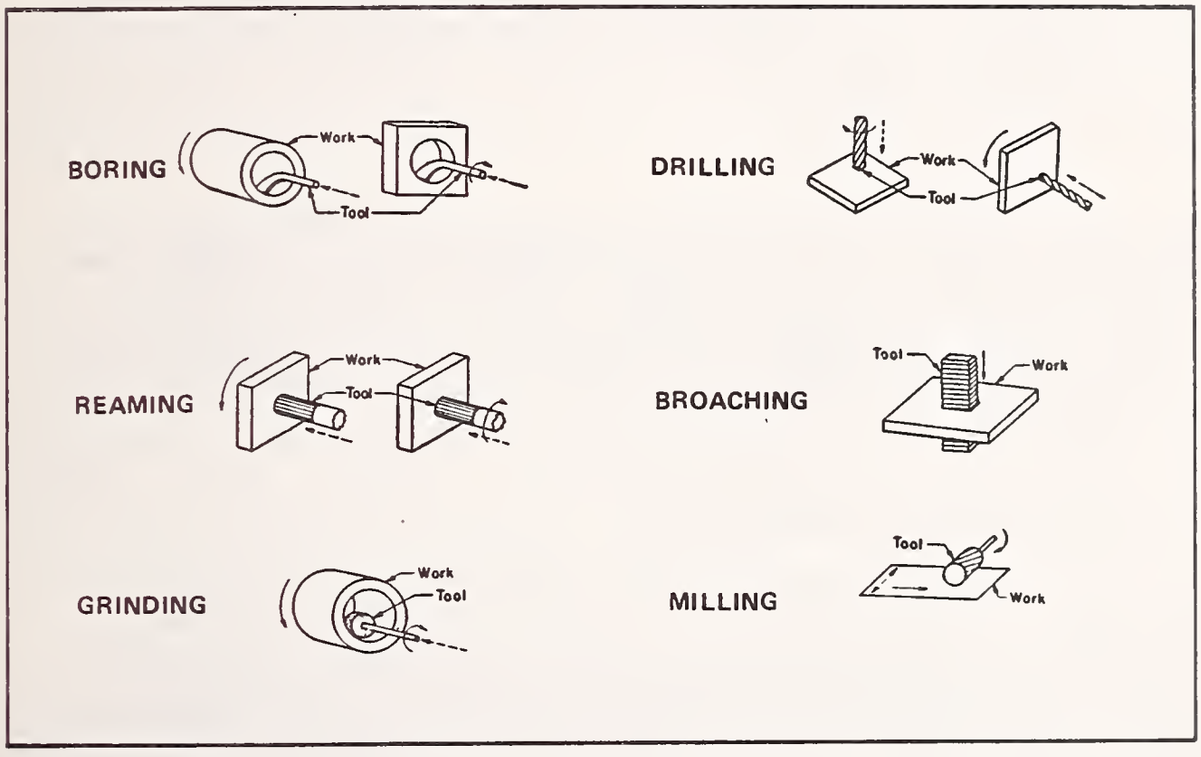
### 1.3.1 Basic Metalcutting Tools

Basic metal-cutting operations are illustrated in Figure 1-3. Five basic types of machine tools which are commonly categorized by their operation are described below.

*Turning Machines*

Turning machines are based on the principle of the lathe--cutting excess metal, in the form of chips, from the external or internal diameter of a rotating workpiece. Internal cylindrical operations that are performed on turning machines include derilling, reaming, threading and boring. Boring involves enlarging and finishing a hole that has been cored or drilled.

FIGURE 1-3. BASIC METALCUTTING TOOLS




Modern turret lathes are equipped with a turret containing multiple tools and are frequently classified as either chucking machines or bar machines. Bar machines, sometimes called screw machines, are designed for machining small threaded-type parts, bushings and other small parts from bar stock fed into the machine spindle. Chucking machines are used for machining larger parts, such as castings, forgings or blanks of stock that must be mounted in workpiece holders (chucks) manually.

*Drilling Machines*

Drilling machines, also called drill presses, cut holes in metal with twist drills. They also use a variety of other

cutting tools to perform basic hole-machining operations, such as reaming, boring, countersinking and tapping internal threads.

*Milling Machines*

Milling machines cut metal as the workpiece is fed against a rotating cutting tool called a milling cutter. Various cutters are used for cutting concave forms, convex grooves, rounding corners and cutting gear teeth.

*Grinding Machines*

Grinding machines remove small chips from metal parts that are brought into contact with a rotating abrasive wheel, called a grinding wheel, or with an abrasive belt. Grinding is the most accurate of all the basic machining processes and is often the last operation performed on automotive parts and components prior to final assembly.

*Broaching Machines*

Broaching machines are special-purpose machines used for cutting keyways in the hubs of gears or pulleys, cutting square or hexagonal holes and cutting gear teeth. The teeth on broaching tools are equally spaced but increase in size from the tip of the tool upward. Each tooth cuts more deeply into the workpiece, and the broaching operation is completed in a single stroke.

### 1.3.2 Machine Tool Configurations

Machine tool products are often combinations of basic tools. Many are systems that consist of several machines connected by conveyor systems. Others are multiple-function systems that are numerically controlled, often by computers. The major categories of machine tool configurations that are important to the auto industry are described below.

*Transfer Lines*

The largest and most expensive machines sold to the auto industry are transfer lines. They are combinations of conventional machine tools arranged in the required sequence, connected by work-transfer devices and integrated with interlocking controls. Maximum production economy on transfer lines is often achieved by assembling parts to the workpieces during their movement. The systems often reach several hundred feet in length, and loading and unloading operations take place at each end of the line. While the largest lines are usually laid out in a straight line, smaller pieces are often machined on lines with circular pathways, called dial machines.

Transfer lines fall into the more general category of special-purpose machines. They are dedicated equipment--designed and built for the production of a specific set of parts or components. This custom construction provides high production rates and maximum machining efficiency, but it renders the equipment largely inflexible. Given the rapid changes taking place in the auto industry and frequency of design and tooling innovations, machine tool suppliers and automakers are experimenting with more flexible alternatives to the traditional Detroit transfer line.

*Machining Centers*

Machining centers are numerically controlled machine tools that can perform a multiplicity of operations in only one setup. They constitute a relatively new class of machine tools, made possible by the advent of numerical controls and expanded in their capabilities by the introduction of computer numerical controls.

The controller on a machining center can adjust three, four or five axes, setting the positions of the column, spindle head table location, table rotation and table tilt. By changing these variables and utilizing a tool magazine, a center is capable of performing a wide variety of operations, including milling, drilling, reaming, contouring, tapping, and boring. Machining centers replace an average of three conventional machine tools. They are used more frequently in job shops that supply the auto companies than in the auto plants because they are not high-volume machines.

*Flexible Machining Systems*

For the most part, flexible machining systems are still drawing board designs rather than production realities. However, discussions of their potential applications, particularly for the auto and aircraft industries, dominate the medium-term marketing deliberations of the major machine tool suppliers. The basic concept of the flexible machining system is the wedding of transfer line automation with the adjustment capabilities of machining centers. Computer numerically controlled machining centers would be linked together by work-transfer devices to provide a continuous machining line capable of machining over 100 different parts. The systems would, therefore, differ from transfer lines in two respects: they would be slower, and they would be much more versatile.

A primary motivation for designing and building flexible machining systems is the increasing frequency of design and tooling changes in automobiles and aircraft. Until recently, major manufacturing industries, such as auto, used a machine

tool to make a product with a life nearly equal to that of the equipment. That is no longer the case. Continuous and radical product changes have placed a four or five year limit on the lifespan of most machined products. At General Motors, for example, not one engine in production for its 1978 car models will still be in production for its 1985 models.

Although transfer lines allow for some limited production changes, any significant design alterations make them obsolete. Flexible machining equipment would allow manufacturers to alter parts and components without requiring the enormous capital costs of entirely new machining lines.

There are over 1,200 companies at present in the U.S. which manufacture machine tools. Approximately 67 percent, however, are small, closely held companies. Major domestic suppliers of machine tools include:

- Acme Cleveland
- Cincinnati Milacron
- Bendix/Warner and Swasey
- Cross and Trecker
- Ex-Cell-O Corporation (Kingsbury)
- Ingersoll-Rand Company
- Motch & Merryweather
- F. Jos. Lamb Company
- Place (Budel)
- Snyder
- Giddings and Lewis
- Colt Industries.

Table 1-2 lists the key financial indicators of the major suppliers listed above.

The companies covered in this report were chosen from among the largest machine tool suppliers in the U.S. The list was narrowed down by concentrating on those companies that are most important to the auto industry. Companies that are subsidiaries of firms that have already been covered in previous reports under this contract, such as Budd and Bendix, were eliminated. The final selection process was made on the basis of the availability of information about the companies. The selected companies were:

- Acme Cleveland
- Cincinnati Milacron
- Cross and Trecker
- Giddings and Lewis
- Lamb
- Motch and Merryweather.

TABLE 1-2. MACHINE TOOL SUPPLIERS' FINANCIAL ANALYSIS

| Company | 1979 Net Sales (Millions) | 1979 Net Earnings (Millions) | Percent Change Over 78 | Percent Return On Sales |
|---|---|---|---|---|
| Acme-Cleveland | $ 344.4 | $ 19.6 | + 49 | 5.7 |
| Cincinnati Milacron | 747.9 | 55.4 | + 67 | 7.4 |
| Bendix | 3,856.4 | 162.6 | + 25 | 4.2 |
| Warner and Swasey | 305.0 | 21.5 | + 84 | 7.0 |
| Cross and Trecker | 298.0 | 26.4 | + 54 | 7.2 |
| Ex-Cell-O Corp. | 961.9 | 54.2 | 38 | 5.6 |
| Snyder | 38.0 | 1.5 | NA | 4.0 |
| Giddings and Lewis | 257.7 | 28.9 | + 59 | 11.2 |
| Colt | 2,140.5 | 114.4 | + 28 | 5.2 |
| Jos. F. Lamb Co | 200 + | (Privately held) | | |
| Motch & Merry-Weather | NA* | NA | NA | NA |
| Place | NA** | NA | NA | NA |

Jos. F. Lamb Co. 200.0 + 85 (privately held--data not available)

N.A. = Not Available
* Aquired 1979 by Oerlikon-Buhrle
** Acquired 1980 by Budd

## 1.4 TRENDS AFFECTING THE MACHINE TOOL INDUSTRY

The U.S. machine tool industry is at an important juncture. Accustomed to an historical boom/bust cycle, the industry is now experiencing a sustained, high level of demand, and it is not capable of meeting the incoming orders. At the same time, it is faced with tough competition from overseas machine tool suppliers and demands from its customers for technologically advanced products. In the coming period, four trends can be isolated that will significantly shape the future of the industry:

- Demand for machine tools that are more technologically advanced

- Attempts to alleviate the severe capacity constraints of domestic machine tool builders
- Encroachment of foreign companies into U.S. markets
- Increasing consolidation of the industry through mergers and acquisitions.

### 1.4.1 Technical Advances

Advances in electronics are leading the way toward a new generation of more highly automated and more dependable machine tools. Although less than 5 percent of machine tools in use are equipped with numerical control, the latest generation of machine tools is making increasing use of this powerful feature. Tape-controlled systems of earlier models are giving way to programmable control systems governed by software. Programmable controllers have opened up the possibility of flexible machining systems (described above) and of integrated manufacturing systems that combine numerically controlled machines, automated handling systems, industrial robots and computer-centered management information systems. Programmable systems will offer manufacturers the following advantages:

- Provide random and flexible manufacturing for a family of workpieces, i.e., the capability to introduce any workpiece into the system at any time without any system downtime
- Provide management control through joint implementation of computers, numerical control machine tools and automated material handling
- Increase utilization of facilities through the inherent flexibility of programmable systems.

Although electronic system controls may have the most far-reaching impact on machine tool applications, other important areas of research are also being explored and applied. They include:

- In-line gauging to make automatic incremental adjustments to compensate for tool wear
- In-process inspection and testing stations to improve quality control
- Reductions in the use of coolants, a consistent source of environmental and maintenance problems

- Development of coated carbide cutting tools that have longer tool lives and that allow higher machining speeds.

### 1.4.2 Capacity Constraints

Since finding itself with excess capacity in the economic slowdown of the late '50s and early '60s, the U.S. machine tool industry has been wary of significantly expanding its production capacity. This long-held attitude has recently begun to change in the face of strong, sustained demand, huge order backlogs and the spectre of foreign incursion into U.S. markets.

New capital expenditures by machine tool builders declined from $104.9 million in 1967 to $91.7 million in 1978. In 1979, the level of investment jumped 57 percent to $144 million, and another sizeable increase in expenditures is predicted for 1980. The suppliers are playing catch-up, however. Backlogs are running over $5.6 billion, lead times are stretching to over 24 months and foreign competitors are winning over U.S. customers with considerably shorter delivery schedules. The transfer line requirements of General Motors alone could absorb the entire capacity of the transfer line segment of the industry for the next four years.

Compounding the suppliers' problems is a serious shortage of skilled machinists. Total employment in the industry dropped by 34 percent between 1967 and 1972, from 116,400 to 76,600, only rising back to 110,000 in 1979. Industry representatives point to the skilled labor shortage as a critical constraint on expansion, and several of the larger companies have initiated special training or apprenticeship programs to help fill the gap.

### 1.4.3 Foreign Competition

The mounting backlogs of U.S. machine tool suppliers has aggravated the industry's problems with foreign competitors. Foreign producers have captured 25 percent of the U.S. market, and observers are predicting that the percentage will continue to rise as domestic delivery times lengthen. Japanese firms, which account for 34 percent of U.S. machine tool imports, increased their U.S. sales 70 percent in 1979 over the previous year, to $386 million. West German exports rose 27 percent during the same period.

In addition to stepping up their exports, the foreign producers are setting up production and assembly facilities in the U.S. Fifteen foreign machine tool manufacturers have built plants in the U.S. since the mid-'70s, and several others have

purchased important domestic tool companies. Recent transactions include the purchase of Motch & Merryweather by Oerlikon-Buhrle Holding of Switzerland and the acquisition of Place Machine Sales by the West German steel company Thyssen.

Steady technological advances by the Japanese competitors have also caused concern in the U.S. industry. The Japanese exported 2,300 numerically controlled lathes to the U.S. in 1979--40 percent more than were produced by U.S. companies. Exports of Japanese-built machining centers have also jumped dramatically in the last five years. Most analysts think that the U.S. will continue to hold its lead in computer technology, particularly software, but the technological gap between the domestic and foreign suppliers is definitely narrowing.

### 1.4.4 Industry Consolidation

The demand for rapid technical progress, capacity limitations and the strength of foreign competition are all having major effects on the structure of the U.S. machine tool industry. Smaller companies are encountering difficulties in financing the necessary expansion and research work required to remain competitive, and larger firms are merging their operations to pool technical talent and capital resources.

Two of the largest mergers ever in the industry occurred in 1979. Most recently, the Bendix Corporation purchased the Warner & Swasey Company of Cleveland. Earlier in the year, the Cross Company of Detroit and the Kearney & Trecker Corporation of Milwaukee combined to form Cross & Trecker. The Justice Department has brought suit against the second merger for anti-trust violations, but other mergers are being announced or negotiated. Giddings & Lewis has announced that it was discussing a merger with Motch & Merryweather before the latter was bought up by Oerlikon of Switzerland.

# 2. ACME-CLEVELAND

Acme-Cleveland is a major producer of machine tools, foundry equipment, total manufacturing systems, electrical controls, and expendable metalcutting and foundry tools. Approximately half of the company's sales are to the auto manufacturers, and several of its six divisions produce almost exclusively for that market. Although the recession is likely to slow sales of the firm's expendable tool products, sales of capital equipment are likely to remain high as automakers continue to make major changes in the designs of their vehicles. The firm's facilities are currently working at full capacity, and its order backlog for capital equipment remains high.

## 2.1 CORPORATE SIZE AND STRUCTURE

The Acme-Cleveland Corporation was formed in 1968 by the merger of National Acme and Cleveland Twist Drill. The LaSalle Machine Tool Company was acquired in 1974, and two smaller firms, Nobur Manufacturing and Hillyer Corporation, have been purchased in the last two years. Acme-Cleveland ranks second in both revenues and income among North American manufacturers of machine tools.

### 2.1.1 Revenue, Profit and Employment Statistics

In 1979, Acme-Cleveland had sales of $344 million, up from $290 million in 1978. Profits rose from $13.2 million in 1978 to $19.6 million in 1979. Operations outside the U.S. accounted for 8 percent of total sales and 14 percent of net income in 1979. The firm employs 6,100 people. (See Table 2-1.)

TABLE 2-1. ACME-CLEVELAND
REVENUE, PROFIT AND EMPLOYMENT STATISTICS

| Revenues (millions) | | Profits (millions) | |
|---|---|---|---|
| 1979 | $344 | 1979 | $19.6 |
| 1978 | 290 | 1978 | 13.2 |
| Total Number of Employees: | 6,100 | | |

### 2.1.2 Corporate Organization

Acme-Cleveland is organized into six operating divisions, organized by type of product. The divisions are grouped in two segments, by market, with three divisions serving the capital equipment market and three divisions producing expendable tools. A separate support services group complements the research and distribution capabilities of all six divisions. (See Figure 2-1.)

The divisions serving the capital equipment market are as follows:

- LaSalle Machine Tool, Inc. LaSalle Machine Tool supplies transfer lines and dial-type machines to the auto manufacturers and other industries for high-volume automated machine-processing of a wide range of complex parts. The start-to-finish production systems are custom-designed to the user's specifications and incorporate equipment manufactured by LaSalle, by other Acme-Cleveland divisions and by outside suppliers.

- National Acme Division. National Acme manufactures multiple spindle bar and chucking machines for machining metal parts from bar stock, tubing, extruded materials, castings and forgings. The equipment is sold to screw machine job shops, auto manufacturers and other industrial products manufacturers.

- Shalco Systems Division. Shalco Systems supplies foundries with machines for making cores and molds for casting. The division's product line includes machinery for making cores and molds with both the "cold box" and "hot box" methods.

Acme-Cleveland divisions that produce expendable tools are the following:

- Namco Controls Division. Namco Controls manufactures and markets electrical and electronic controls for production line manufacturing. Products include limit switches, proximity switches and solenoids.

- Foundry Tooling Division. Foundry Tooling is one of the country's largest pattern and mold making operations serving the metal casting industry. The division's service includes tooling design, pre-production wood and plastic tooling and final production tools.

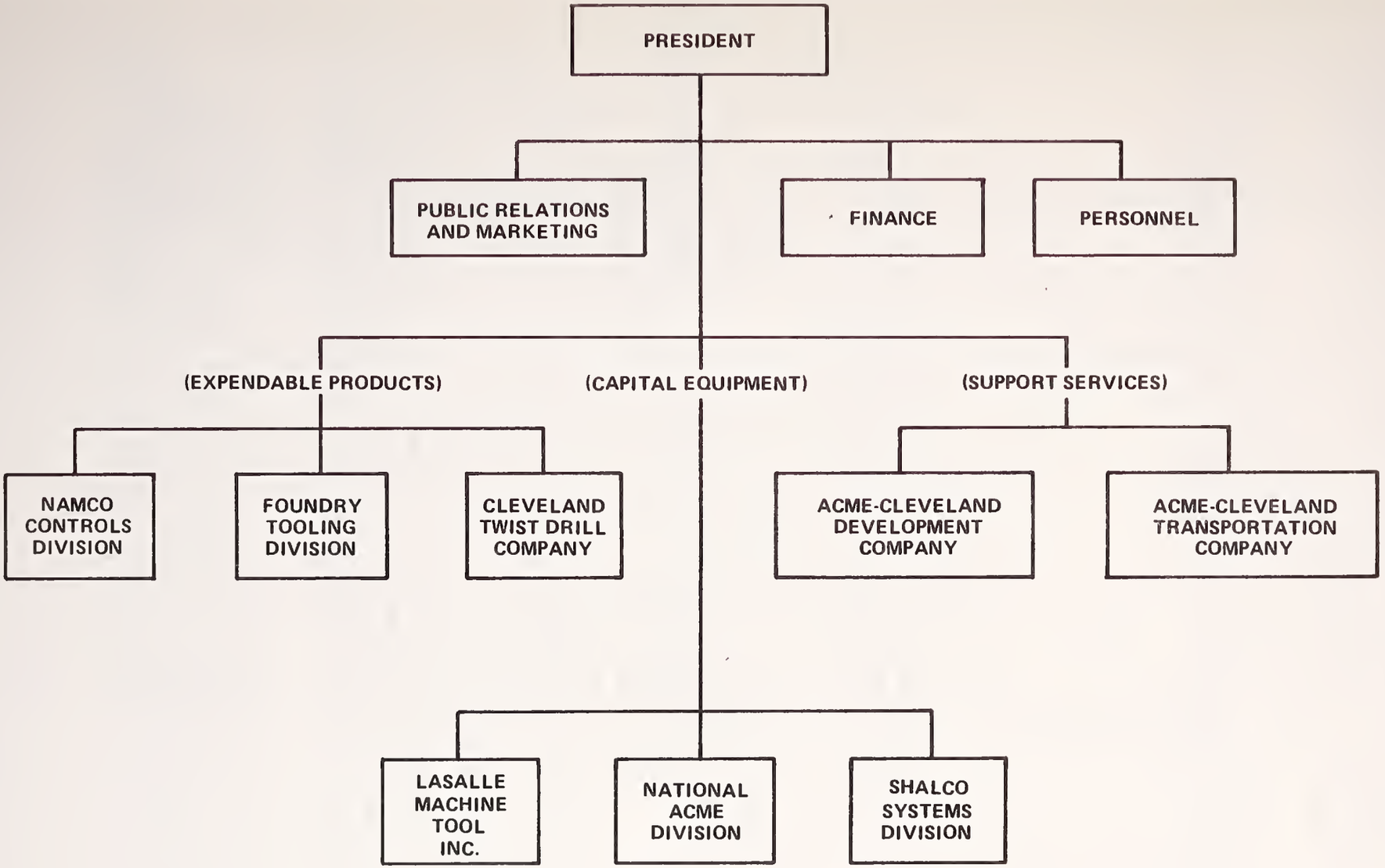



FIGURE 2-1. ACME-CLEVELAND
CORPORATE ORGANIZATION

- Cleveland Twist Drill Company. Cleveland Twist Drill, founded in 1876, is a world leader in the production of cutting and threading tools. The division offers over 40,000 stock tools in its product line as well as offering customized tool manufacturing services.

Acme-Cleveland's two major support service operations are the Acme-Cleveland Transportation Company, which handles a wide range of product distribution functions, and the Acme-Cleveland Development Company which is the firm's centralized research and development facility.

## 2.2 MAJOR MARKETS AND PRODUCTS

Figure 2-2 presents the major market information for Acme-Cleveland.

| Market Data | |
|---|---|
| Major Markets: | Automotive, truck, farm and construction equipment, screw machine products, bearings, valves and fittings industries. |
| Percent of Sales to the Automotive Industry: | 50 |
| Major Automotive Customers: | Ford and General Motors |
| Major Automotive Products: | Machine tools and transfer lines for the production of pistons, connecting rods, rear axle housings, cylinder heads, disc brakes and other vehicle components. |

Figure 2-2. MARKET DATA FOR ACME-CLEVELAND

### 2.2.1 Major Markets

Acme-Cleveland's major markets include the manufacturers of automobiles, trucks, farm and construction equipment, screw machine products, bearings, valves and a variety of fittings. Foundry equipment is sold to foundries producing iron, steel and aluminum castings for a number of different industries.

The automotive industry is the company's most important market, accounting for approximately 50 percent of total annual sales. Within the industry, Ford and General Motors are Acme-Cleveland's largest customers. In 1979, sales to Ford and GM were approximately $96.6 million, representing 28 percent of all revenues for the year. Table 2-2 shows the approximate

percentage of sales to the auto industry for each of Acme-Cleveland's divisions.

TABLE 2-2. PERCENTAGE OF SALES TO AUTO INDUSTRY BY DIVISION

| Division | Percent Auto Sales |
|---|---|
| LaSalle Machine Tool | 75% |
| National Acme | 20 |
| Shalco Systems | 30 |
| Namco Controls | 10 |
| Foundry Tooling | 100 |
| Cleveland Twist Drill | 20 |

In the more heavily industrialized sections of the U.S. and Europe, capital equipment is sold directly to customers through 39 full-time field representatives. In other areas, 16 domestic and 44 foreign distributors and agents are used. Agents and distributors are also used for the company's expendable tool products.

### 2.2.2 Products

The following are descriptions of Acme-Cleveland's primary capital equipment and expendable tool products and of recently contracted sales to the automotive industry.

*Capital Equipment Products*

The capital equipment segment of Acme-Cleveland's business produces machine tools and systems and foundry equipment. The machine tools are primarily transfer machines and multiple spindle bar and chucking machines. Replacement parts for multiple spindle machines provide an important part of the segment's revenues. The machine tools are major components of production systems, used primarily in the production of automotive parts such as pistons, connecting rods, rear axle housings, cylinder heads and disc brakes. Major foundry equipment consists of machines for making sand cores and molds by the shell molding process.

*Expendable Products*

Acme-Cleveland's major expendable products are cutting and threading tools, such as high-speed drills, reamers and mills, taps and thread rolling heads. Other products in this group include foundry tooling and electrical and electronic controls. Foundry tooling consists primarily of patterns for

iron, steel and aluminum castings. Controls manufactured are limit switches, solenoids and proximity switches for use in various applications.

*Recent Automotive Sales*

The major redesign and retooling efforts of the U.S. auto manufacturers have resulted in a significant increase in orders for Acme-Cleveland's subsidiary, the LaSalle Machine Tool Inc., during the latter half of 1979 and the first half of 1980. The following are some of the larger contracts that the firm has been awarded:

- GM's Cadillac Motor division ordered 12 LaSalle transfer machines to be used in the production of a new 4.1-liter aluminum-block V-8 engine due to be introduced in 1982. The machines include metalcutting units for use in the production of the bearing caps, intake manifolds, connecting rods and pistons.

- Ford placed an order with LaSalle for transfer machines to be used in the production of a new line of V-6 engines with aluminum heads and cast iron blocks. The equipment, to be installed in Ford's Windsor, Ontario, plant, will include metalcutting machinery for pistons, intake manifolds and other parts. LaSalle will also supply Ford with transfer machines for qualifying the cylinder head castings. During 1979, LaSalle began work on an earlier Ford order for the case machining line for Ford's forthcoming three-speed automatic transaxles.

- The Chevrolet division of GM recently awarded LaSalle a $15 to 20 million contract for special machine tools to be used in the production of front-end brake disc rotors and calipers and steering knuckles at Chevy's Saginaw, Michigan, manufacturing plant.

- LaSalle's latest large automotive order came from GM's Hydra-Matic division and is worth between $21 and 23 million. The order calls for four machining lines to produce valve bodies for GM's next generation of front-wheel-drive transmissions, known as the THM 440s. Each of the four lines will include two in-line transfer machines capable of performing various boring, drilling and milling operations.

## 2.3 CORPORATE STRATEGY

In 1975, the directors of Acme-Cleveland outlined six corporate objectives for the company's future. They were:

- Improve the return on net assets employed in each of the company's operations, making an orderly disinvestment of any plant or product that does not hold the prospect for satisfactory earnings

- Improve the financial strength of the corporation through increased earnings, prudent management of working capital and reduction of debt

- Develop and efficiently employ all of the firm's human resources

- Establish and maintain efficient, highly productive facilities for all operations

- Market world-wide at an appropriate profit those products and services that best fulfill the needs of the company's customers

- Exploit all advantages inherent in the complementary nature of the corporation's various products and technological abilities.

In the following year, the directors set specific performance goals for earnings of at least 5 percent on sales and at least 15 percent on shareholder equity.

In evaluating the progress toward their goals in 1979, the directors pointed to a number of accomplishments. They reported after-tax earnings of 5.7 percent of sales and 20.9 percent on shareholder equity for 1979. They also highlighted the following projects that were aimed at furthering the six corporate objectives established in 1975:

- Widespread introduction of computer systems to facilitate inventory management, production planning and control, cost estimating, telecommunications, parts and products classification, engineering and materials analysis and the company's design capabilities

- Establishment of more formal and comprehensive long-range planning procedures

- Expansion of market research and market trend projection for products and services and for new products being developed or due to be acquired

- Opening a new manufacturing facility that will employ the best existing technology for variable manufacturing of families of parts with the objectives

of achieving shorter lead times, reducing in-process inventories and lowering unit costs.

Many of the above projects have as a central aim increasing production capacity and maintaining the company's order backlog at reasonable levels. While the directors feel the firm is making progress toward these goals, a shortage of skilled personnel remains a persistent problem for the firm.

In assessing the company's prospects during the 1980's the directors remain highly optimistic about continued orders from the U.S. automakers. W. Paul Cooper, company president, told a trade publication in early 1980, "Whatever Detroit does to gain mileage, be it aluminum cylinder heads, front-wheel-drive transmissions or four-cylinder engines, Acme-Cleveland will benefit."

## 2.4 PRODUCTION AND OPERATIONS

Acme-Cleveland operates 20 domestic and 8 foreign manufacturing facilities. The plants with significant shipment to the automotive industry and three plants that were recently opened or acquired are described below.

### 2.4.1 Automotive Plants

The following 12 plants, grouped by division, ship a significant portion of their output to the automobile manufacturers:

- LaSalle Machine Tool
  - Warren, Michigan
  - Fenton, Michigan
  - Cadillac, Michigan
  - Ontario, Canada

- Foundry Tooling
  - Detroit, Michigan
  - Homberg/Ohm, Germany

- Cleveland Twist Drill
  - Mansfield, Massachusetts
  - Cleveland, Ohio

- Shalco Systems
  - Cleveland, Ohio
  - Homberg/Ohm, Germany

- National Acme
  - Kewanee, Illinois

- Hillyer Corporation
  - Mountainside, New Jersey

Details on these plants are given in Figures 2-3 through 2-14.

2.4.2 New Plants

Acme-Cleveland has recently opened or acquired the following facilities:

- LaSalle Machine Tool opened a fourth plant in Cadillac, Michigan in December, 1979. The new facility, occupying 32,500 square feet, was built primarily to increase LaSalle's capacity to meet the machine tool requirements of the auto manufacturers' retooling programs. The plant has already received orders from GM for transfer lines to produce aluminum-block V-8 engines and from Ford for transfer machines to be used in the production of V-6 engines with aluminum heads and cast iron blocks. The plant was built at a cost of $2.5 million and will employ 60 people during its first year of operation.

- An Acme-Cleveland Manufacturing Center is due to begin operation in 1980 in Shelby, North Carolina. The 38,400 square-foot plant was constructed to produce parts and product components for several Acme-Cleveland divisions. The Shelby facility will be organized around two manufacturing cells, incorporating 17 production machine tools, including seven CNC machines and one computer-assisted measuring machine. The modern manufacturing cells will be complemented by computer-aided design and a computerized classification system that the company predicts will reduce production costs by 40 percent compared with conventional manufacturing methods.

- In May, 1980, Acme-Cleveland acquired the Hillyer Corporation of Mountainside, New Jersey, a manufacturer of computer numerically controlled bridge-type vertical machining centers. Hillyer presently employs 75 people with current sales of approximately $6 million. Hillyer's products utilize

Company Acme-Cleveland (LaSalle Machine Tool Inc.) County _____ Plant Size 154,000 ft.$^2$

Plant Warren Congressional District _____

Address 21535 Hoover Rd. Warren, MI 48089 Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone (313) 536-1000 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Machining centers | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-3. WARREN PLANT DATA

**Company** Acme-Cleveland (LaSalle Machine Tool Inc.) **County** _____ **Plant Size** 62,500 ft.$^2$

**Plant** Fenton **Congressional District** _____

**Address** 200 Alloy Drive Fenton, MI 48430 **Standard Metropolitan Statistical Area** _____ **No. of Employees** N/A

**Telephone** (313)629-2206 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Transfer machines and production equipment | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-4. FENTON PLANT DATA

Company Acme-Cleveland (LaSalle Machine Tool Inc.) County _____ Plant Size 32,500 ft.$^2$

Plant Cadillac Congressional District _____

Address 905 Frisbie Cadillac, MI 49601 Standard Metropolitan Statistical Area _____ No. of Employees 60

Telephone (616) 775-3436 Primary SIC Code(s) _____



| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Machine tools | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-5. CADILLAC PLANT DATA

**Company** Acme-Cleveland (LaSalle Machine Tool Inc.) **County** _____ **Plant Size** N/A

**Plant** Tecumseh **Congressional District** _____

**Address** 5350 E.C. Row Avenue
R.R. No. 2
Tecumseh, Ont.
Canada

**Standard Metropolitan Statistical Area** _____ **No. of Employees** N/A

**Telephone** (519) 945-1171 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Transfer machines and production equipment | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-6. ONTARIO PLANT DATA

Company Acme-Cleveland (Foundry Tooling Div.) County _____ Plant Size 61,000 ft.$^2$

Plant Detroit Congressional District _____

Address 18840 John R. Street Detroit, MI 48203 Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 313/366-0800 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Patterns for automotive castings | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-7. DETROIT PLANT DATA

Company Acme-Cleveland (Foundry Tooling Div.) County _____ Plant Size N/A

Plant Homberg/Ohm Congressional District _____

Address 6313 Homberg/Ohm 1
Berliner Strasse 50
(Postfach 41)
Federal Republic of
Germany

Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 6633-834 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Patterns for castings | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-8. HOMBERG/OHM (FOUNDRY) PLANT DATA

Company Acme-Cleveland (Cleveland Twist Drill Co.) County _____ Plant Size 65,400 ft.$^2$

Plant Bay State Congressional District _____

Address Chauncey Street Mansfield, MA 02048 Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 617/339-4521 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Cutting and threading tools | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-9. MANSFIELD PLANT DATA

Company Acme-Cleveland (Cleveland Twist Drill Co.) County _____ Plant Size 84,200 ft.$^2$

Plant Cleveland Congressional District _____

Address 1242 East 49th St. Cleveland, OH 44114 Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 216/431-3120 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Cutting and threading tools | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-10. CLEVELAND PLANT DATA

Company Acme-Cleveland (Shalco Sysems Div.) County _____ Plant Size 180,000 ft.$^2$

Plant Cleveland Congressional District _____

Address 12819 Coit Rd.
Cleveland, OH 44108 Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 216/268-4200 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Foundry machining equipment | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-11. CLEVELAND (SHALCO) PLANT DATA

Company Acme-Cleveland (Shalco Systems Div.) County _____ Plant Size N/A

Plant Homberg/Ohm Congressional District _____

Address 6313 Homberg/Ohm 1
Berliner Strasse 50
(Postfach 68)
Federal Republic of Germany
Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 6633-868 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Foundry machining equipment | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-12. HOMBERG/OHM PLANT DATA

Company Acme-Cleveland (National Acme Div.) County _____ Plant Size 65,200 ft.$^2$

Plant Kewanee Congressional District _____

Address 1221 Page St.
PO Box 405
Kewanee, IL 61443 Standard Metropolitan Statistical Area _____ No. of Employees N/A

Telephone 309/852-5611 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Bar and chucking machine tools | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-13. KEWANEE PLANT DATA

Company Acme-Cleveland (Hillyer Corp)

County

Plant Size 50,000 $ft^2$

Plant Mountainside

Congressional District

Address 244 Sheffield St. Mountainside, NJ 07092

Standard Metropolitan Statistical Area

No. of Employees N/A

Telephone 201/232-3535

Primary SIC Code(s)

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Machining centers (computerized, numerically controlled) | N.C.A. | N.C.A. | N.C.A. |

FIGURE 2-14. MOUNTAINSIDE PLANT DATA

computer-directed controls and a high-speed tool changer and are capable of performing a variety of machining functions, such as drilling, milling, tapping, boring and reaming. The company's major customers are patternmakers, production machine companies and other job shops.

## 2.5 FINANCIAL STATUS

Acme-Cleveland has steadily improved its sales and earnings performance since 1976. It has undertaken expansion programs that should help it to capitalize on the machine tool requirements of the automakers' redesign efforts. See Figures 2-15 and 2-16.

### 2.5.1 Operating Analysis

In 1976 Acme-Cleveland felt the effects of a serious recession in the capital equipment market. Earnings and sales fell, and the company sold off several European subsidiaries. Since 1976, return on equity has risen steadily, reaching 19.3 percent in 1979. The earnings-to-sales percentage has also increased although Acme-Cleveland's directors are hoping to improve on the 5.7 percent achieved in 1979. They point to wage-price guidelines and a high level of capital investment as two factors that depressed margins in the last year. The firm's operating ratio has followed the sales and earnings figures in a steady climb upward.

Acme-Cleveland's sales in 1979 increased 19 percent over 1978 to $344 million, and earnings rose 48 percent to $19.6 million. The company's order backlog jumped 80 percent, year to year, and the firm is expected to improve on its 1979 performance in 1980. For the first six months of fiscal 1980, income rose 7 percent on a 21 percent rise in sales. In March 1980, the order backlog stood at $290 million, down slightly from the $300 million level at the end of 1979 but well above the $208 million figure at the close of 1978.

Despite the recession, prospects for the firm in 1980 look promising, according to industry and investment analysts. Some softening of demand for expendable tool products is expected, but the capital equipment markets, particularly auto, are likely to remain strong. The consensus of the analysts is that the auto industry is firmly committed to its redesign program and that this effort will require continuing high levels of machine tool orders. In other industries, equipment capable of raising productivity is also expected to be in demand.

| Year** | Sales ($Millions) | Earnings ($Millions) | Return on Equity, Percent | Operating Income* / Sales, Percent |
|---|---|---|---|---|
| 79 | 344 | 19.6 | 19.3 | 12.6 |
| 78 | 290 | 13.2 | 14.8 | 11.5 |
| 77 | 218 | 4.8 | 5.8 | 9.2 |
| 76 | 194 | 2.9 | 3.5 | 6.3 |
| 75 | 231 | 7.0 | 8.8 | 9.6 |

**Ended Sept. 30

| Year** | Earnings / Total Assets, Percent | Sales / Assets | Earnings / Sales, Percent |
|---|---|---|---|
| 79 | 9.6 | 1.68 | 5.7 |
| 78 | 7.4 | 1.64 | 4.5 |
| 77 | 3.0 | 1.36 | 2.2 |
| 76 | 1.8 | 1.20 | 1.5 |
| 75 | 3.9 | 1.30 | 3.0 |

**Ended Sept. 30

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

FIGURE 2-15. OPERATING ANALYSIS OF ACME-CLEVELAND

| 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 | 344 | 5.2 | 19.6 | 5.3 | 2.7 | (0.1) |
| 78 | 290 | 6.0 | 13.2 | 5.0 | 4.8 | 0.1 |
| 77 | 218 | 11.0 | 4.8 | 4.8 | 3.4 | 0.1 |
| 76 | 194 | 14.2 | 2.9 | 4.9 | (6.4) | 0 |
| 75 | 231 | 5.6 | 7.0 | 4.8 | (5.8) | 0 |

** Ended Sept. 30

| 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 | 6.1 | 14.7 | 5.2 | 30.6 | 9.0 | 7.3 | 2.7 |
| 78 | 11.0 | 9.0 | 3.6 | 32.6 | 6.7 | 5.1 | 3.4 |
| 77 | 8.3 | 4.6 | 2.4 | 32.8 | 4.5 | 2.9 | 3.0 |
| 76 | (8.0) | 8.5 | 2.3 | 31.7 | 2.4 | 5.2 | 3.8 |
| 75 | (3.5) | 8.2 | 2.8 | 35.1 | 3.2 | 4.6 | 2.8 |

** Ended Sept. 30

Dollar figures are in millions

[1] Average for the Year

[2] Capitalization Defined as Total Liabilities -- Current Liabilities

[3] Operating Profit/Interest

FIGURE 2-16. CAPITAL ANALYSIS OF ACME-CLEVELAND

### 2.5.2 Capital Analysis

Acme-Cleveland's capital expenditures of $14.7 million in 1979 were 64 percent higher than the capital expenditures of 1978. Expenditure plans for 1980 call for a further increase to $18 million. Recent capital investments have been financed largely through internally generated funds with some outside borrowing. Owners' equity, other than retained earnings, has changed little over the last five years and debt has been assumed largely in the form of long-term notes held by insurance companies and industrial revenue bonds. The increased long-term debt has not been high, however, and the percentage of long-term debt to capitalization has remained in the 30 to 32 percent range for the last four years. The company is currently in a strong cash flow position, as reflected in its purchase in late 1979 of a sizable portion of its own common stock.

## 2.6 RESEARCH AND DEVELOPMENT

Acme-Cleveland's research and development activities are centered in the Acme-Cleveland Development Company (ACDC), established in 1973. The facility serves all of the divisions of the company and conducts research in six areas: computer applications, design, electronics, materials, new products and manufacturing development. In 1979, Acme-Cleveland spent $2.9 million on research and development activities, up from $2.4 million in 1978.

One of ACDC's major areas of concentration is materials research. Specifically, the materials group is concentrating on methods for machining non-ferrous materials that are being introduced to reduce the size and weight of automobiles. One large effort has involved collaboration with Ford Motor Company Engine Division and the Reynolds Metal Company to determine the best techniques for machining new types of aluminum casting alloys. The alloys, containing varying amounts of silicon, provide many of the properties needed for satisfactory engine and transmission components.

ACDC is also involved in developing computer applications useful in automating machining centers and in improving the productivity of Acme-Cleveland divisions. The research facility played an important role in the design and implementation of the company's new Manufacturing Center in Shelby, North Carolina.

# 3. CINCINNATI MILACRON

Cincinnati Milacron is the largest manufacturer of machine tools in the U.S. and an industry leader in the production of computer-numerically controlled machines. The corporation is also a major producer of plastics processing equipment, as well as chemical products, cutting fluids, precision grinding wheels and semiconductor materials. The aerospace and automotive industries are the largest markets for the firm's machine tool and plastics processing equipment, and the company expects the recent strong demand from these industries to continue into the 1980s.

The company has experienced rapid growth over the last several years, in sales, earnings and the diversity of its product line. Forty percent of its 1979 sales were of products that the firm did not manufacture five years earlier. A building program is under way to help meet the large backlog of machine tool orders and to expand the company's capacity to serve the growing industrial robot market.

## 3.1 CORPORATE SIZE AND STRUCTURE

Cincinnati Milacron is a 96-year-old company with 17 plants in the U.S. and 11 in Europe. Among domestic machine tool manufacturers, it ranks first in both revenues and net income. Foreign operations account for approximately 20 percent of sales and 10 percent of profits. The corporation is structured according to product, and the operating groups often serve overlapping markets.

### 3.1.1 Revenue, Profit and Employment Statistics

In 1979, Cincinnati Milacron achieved record sales and profits. Its revenues increased 18 percent, from $634 million in 1978 to $748 million in 1979. Profits jumped 67 percent to $55.4 million, up from $33.2 million a year earlier. The firm currently employs approximately 13,700 people, 3,700 of them at facilities overseas. Table 3-1 summarizes revenue profit and employment information for the company.

TABLE 3-1. CINCINNATI MILACRON
REVENUES, PROFIT AND EMPLOYMENT

| Revenues (millions) | | Profits (millions) | |
|---|---|---|---|
| 1979 | $748 | 1979 | $55.4 |
| 1978 | 634 | 1978 | 33.2 |
| Total Employees: 13,700 | | | |

3.1.2 Corporate Organization

The company is divided into three operating groups, by product line as shown in Figure 3-1. Figure 3-2 shows the company's 1979 sales and pre-tax profits by group. The groups are described below.

- The Machine Tools and Electronic Systems Group designs, manufactures and sells a broad line of standard and special purpose machine tools. Over two-thirds of the products are equipped with computer numerical control or advanced electronic controls. In 1979, the group accounted for 60 percent of total sales and 54 percent of total operating earnings.

- The Plastics Processing Machinery Group designs, manufactures and sells plastic injection molding machines, reaction injection molding machines, extrusion molding machines and several other types of plastics processing equipment. In 1979, the group accounted for 23 percent of total sales and 34 percent of total operating earnings.

- The Industrial Products Group produces and sells a variety of products, including chemical additives for plastics processing, grinding wheels, cutting fluids for metalworking, semiconductor epitaxial substrates and material for printed circuit boards. In 1979, the group accounted for 17 percent of total sales and 12 percent of operating earnings.

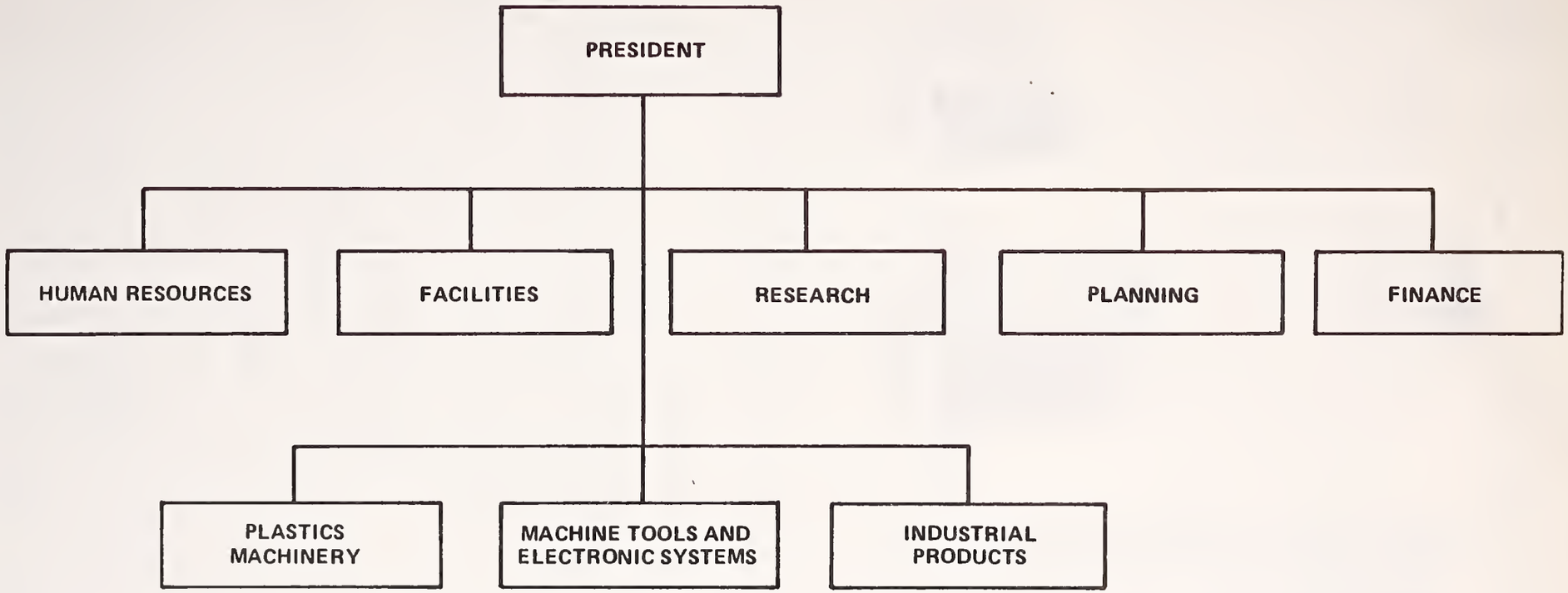
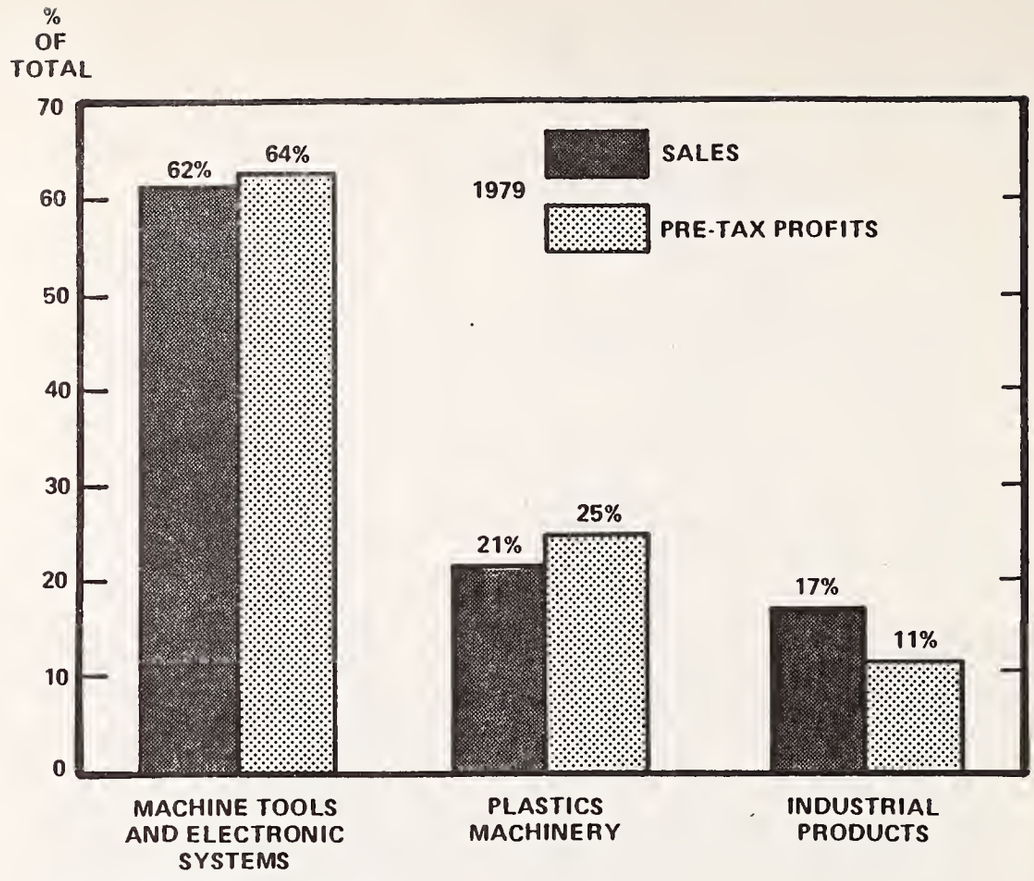



FIGURE 3-1. CINCINNATI MILACRON
CORPORATE ORGANIZATION




Source: Cincinnati Milacron

FIGURE 3-2. 1979 SALES AND PRE-TAX PROFITS BY OPERATING GROUP

## 3.2 MAJOR MARKETS AND PRODUCTS

Cincinnati Milacron estimates that its machine tools and machining systems cover about 70 percent of the metalcutting market. It serves all of the "Fortune 500" companies that use machine tools as well as many smaller companies. It believes that it has built more machine tools than any other company in the world. Figure 3-3 summarizes the major market information for the corporation.

| Market Data | |
|---|---|
| Major Markets: | Automotive, aerospace, bearing, construction, packaging, mining and diesel engine industries |
| Percent of Sales to Automotive Industry: | 13 percent |
| Automotive Customers: | General Motors, Ford, Chrysler, Volvo |
| Major Automotive Products: | Standard and special purpose machine tools, machining centers, industrial robots and plastics processing equipment. |

FIGURE 3-3. CINCINNATI MILACRON MARKET DATA

### 3.2.1 Major Markets

Cincinnati Milacron's major markets are the aerospace, automotive, packaging, bearings and construction industries. Figures 3-4 and 3-5 show a breakdown by market of the company's 1979 orders for machine tools and plastics machinery. The automotive industry accounted for 14 percent of 1979 machine tool orders and about the same percentage of plastics machinery sales. An unspecified percentage of industrial products, including chemical additives, grinding wheels and cutting fluids, were sold to auto manufacturers.

| | % |
|---|---|
| Aircraft | 27% |
| Automotive | 14 |
| Anti-Friction Bearings | 12 |
| Construction and Farm Machinery | 10 |
| Contract Machine Shops | 7 |
| Mining & Oil Field Equipment | 4 |
| Diesel Engines & Turbines | 4 |
| Machine Tools | 3 |
| Valves, Fittings & Pumps | 3 |
| Primary Metals | 2 |
| Other | 14 |
| TOTAL | 100% |

Source: Cincinnati Milacron

FIGURE 3-4. SOURCE OF CINCINNATI MILACRON'S 1979 U.S. MACHINE TOOL ORDERS

| | % |
|---|---|
| Packaging | 27% |
| Transportation | 17 |
| Construction | 16 |
| Household | 7 |
| Recreation | 7 |
| Medical | 6 |
| Personal Care | 6 |
| Communications | 5 |
| Appliances | 4 |
| Other | 5 |
| Total | 100% |

Source: Cincinnati Milacron

FIGURE 3-5. SOURCE OF CINCINNATI MILACRON'S 1979 U.S. PLASTICS MACHINERY ORDERS

### 3.2.2 Products

The major products that Cincinnati Milacron sells to the auto industry are machine tools and plastics processing equipment. Machine tool sales to the auto companies include growing numbers of industrial robots--a product line that is expected to increase in importance for the firm in the next several years.

*Machine Tools*

Cincinnati Milacron machine tools sold to the automakers fall into the following categories:

- Numerically controlled machining centers, which replace three or four conventional manually controlled machines and range in price from $50,000 to $700,000. Cincinnati Milacron is the world leader in machining center sales.

- Numerically controlled turning centers, used for machining round parts such as gears, shafts and axles, and ranging in price from $140,000 to $600,000. A turning center replaces four or five conventional engine lathes. Cincinnati Milacron is the world's number two producer of these machines.

- Precision grinding machines, used for grinding the inside and outside diameters of parts in rotation, and ranging in price from $35,000 to over $800,000. Sales of this equipment are expected to increase as smaller automobiles require more precise tolerances in downsized and redesigned transmissions, engines, drive trains and suspension systems.

- Industrial robots, used for spot welding, part transfer, drilling, assembly, glass handling and machine tool loading, and costing an average of $65,000. Cincinnati Milacron is currently the second largest U.S. supplier of industrial robots.

- Manufacturing systems, typically including machine tools, part handling and other special equipment and electronic controls incorporating Cincinnati Milacron computers. Two types of systems are produced: dedicated systems for very specific requirements, usually handling larger parts at low to medium production rates, and "variable mission" systems that usually handle smaller parts at faster rates and provide greater production flexibility. The systems range in price from one-half to several million dollars.

*Plastics Machinery*

The following are the categories of plastics processing equipment that Cincinnati Milacron sells to the auto industry:

- Injection molding equipment, costing between $40,000 and $1 million. Sales of these machines to the automakers are increasing with continued efforts to reduce vehicle weight and with the advent of reinforced plastics.

- Reaction injection molding equipment, used by the auto companies for the manufacture of grills, fascia and bumpers. Research work is underway on mixing liquid monomers with reinforcing fillers to produce automobile outer body panels.

- Extrusion machines, with prices ranging from $57,500 to $5 million. Cincinnati Milacron is the world leader in sales of twin screw extruders.

*New Orders*

Cincinnati Milacron recently received two new orders that are indicative of the company's relationship with the rapidly changing automobile industry:

- Volvo recently ordered 100 industrial robots, costing $8 million, the largest sale to date of industrial robots, according to Cincinnati Milacron. Volvo will use the robots for spot welding operations in its automobile production lines. The units ordered are the "T-3" model, a six-axis, computer-controlled robot currently in use in auto assembly plants in the U.S. and Europe. European and Japanese orders for robots have significantly outpaced orders from U.S. firms, but Cincinnati Milacron and other industry analysts predict that Detroit's demand for robots will increase sharply in the next several years.

- General Motors, at the end of 1979, ordered three engine block broaching machines for use in its forthcoming V-6 gasoline and V-8 diesel engine manufacturing programs. The order represents an important victory for Cincinnati Milacron because the automakers in recent years have been changing from broaching to milling operations on many of their engines. The switch was brought about by the increased use of thin wall castings and aluminum

components to reduce vehicle weight. The heavy pressures exerted by traditional broaching methods often damage lighter components. Cincinnati Milacron undertook a large research effort several years ago in response to this potential loss of business and has come up with several new approaches to the process that will allow broaching equipment to remain competitive with milling machines.

## 3.3 CORPORATE STRATEGY

In 1977, Cincinnati Milacron's president, Jim Geier, outlined the company's major goals as increasing the potential for sales growth and profitability and reducing the firm's cyclicality. The approach to achieving these goals is an emphasis on maintaining a leading position in the U.S. machine tool and plastics equipment markets and divesting the company of unprofitable facilities and products.

To improve margins, in the past four years the company has closed six marginally profitable product lines in the U.S. In early 1980, the company sold its subsidiary, Cincinnati Milacron Chemicals, to Thiokol Corporation for $52 million.

The firm's broad marketing strategy for machine tools has focused on boosting the manufacturing productivity of its customers. By company estimates, the average metal part in a machine shop is only being worked on 5 percent of the time it is in the shop. The company's sales approach, therefore, stresses the reduction of the "95 percent non-productive time." It is aimed toward the sale of manufacturing systems even if the customer is only purchasing a stand-alone machine tool. The stand-alone units are designed to be building blocks in larger systems.

A major factor in the firm's machine tool preeminence is its electronics capabilities. Almost every machine produced by the company includes Cincinnati Milacron electronic controls. Over the last several years, as numerical controls have become more sophisticated, minicomputer software has been replacing hardware features on the company's products. The company is directing efforts toward extending the flexibility that can be achieved with programmable production systems.

Closely tied to the company's work in electronic controls has been its strong entry into the industrial robot market. Cincinnati Milacron currently ranks second only to Unimation in U.S. robot sales, and industry observers are predicting that it may surpass all its competitors by 1981. The company has already reported $14 million in robot sales to two auto

companies in the first months of 1980 and expects total robot sales for the year to triple those of 1979. In response to widespread expectations of an industrial robot boom in the U.S. over the next several years, the company is taking steps to broaden its market share. Business Week recently reported that the firm is transferring robot production and sales out of the machine tools group and into the industrial products group, where robots will be overseen by a vice-president with a background in the computer industry and in aggressive marketing campaigns.

## 3.4 PRODUCTION AND OPERATIONS

Cincinnati Milacron manufactures equipment for the auto industry at seven locations. Machine tools are produced at:

- Cincinnati, Ohio
- Worcester, Massachusetts
- South Lebanon, Ohio
- Wilmington, Ohio.

Plastics processing equipment is produced at:

- Batavia, Ohio
- Mt. Orab, Ohio.

A plant in Greenwood, South Carolina builds industrial robots. Details on the facilities are shown in Figures 3-6 through 3-12.

The company announced in early 1980 that it is constructing a second South Carolina plant to expand its capacity for manufacturing machine tools. The initial investment will be $11.2 million for a 66,000-square-foot plant scheduled to be completed in the spring of 1981. The facility, located in Fountain Inn, will employ 130 people in its initial phase. The workforce will grow to 350 within three years as continued construction doubles the size of the plant. Total capital investment will be $15.9 million upon completion.

## 3.5 FINANCIAL STATUS

Cincinnati Milacron has had record earnings and order backlogs for several years, and it appears that the 1980 performance will continue the trend. The company should have no difficulty in financing its planned capital expenditures for the year with internal funds. See Figures 3-13 and 3-14.

Company Cincinnati-Milacron  County _____  Plant Size 8 individual facilities under separate roof, but within one overall compound

Plant Cincinnati  Congressional District _____

Address 4701 Marturg Ave.
Cincinnati, OH 45209  Standard Metropolitan Statistical Area _____  No. of Employees 6,000

Telephone 513/841-8100  Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Milling machines,<br>External grinding machines,<br>Machining centers,<br>Broaching machines,<br>Special machines,<br>Integrated manufacturing systems,<br>Rebuilt and retrofitted machine tools<br>Industrial robots<br>Cutting fluids,<br>Grinding wheels | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-6. CINCINNATI PLANT DATA

**Company** Cincinnati-Milacron **County** _____ **Plant Size** 350,000 ft.$^2$

**Plant** Worcester **Congressional District** _____

**Address** 10-20 New Bond St.
Worcester, MA
01606 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 1,200

**Telephone** 617/853-2121 **Primary SIC Code(s)** _____



| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Internal grinding machines, Machining centers, Special machines | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-7. WORCESTER PLANT DATA

Company Cincinnati-Milacron County _____ Plant Size 50,000 ft.$^2$

Plant Lebanon Congressional District _____

Address Mason-Morrow Rd.
South Lebanon, OH
45036 Standard Metropolitan Statistical Area _____ No. of Employees 250

Telephone 513/494-5216 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Computer NC systems, Programmable controllers, Power electronics for machine drives | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-8. LEBANON PLANT DATA

**Company** Cincinnati-Milacron **County** _____ **Plant Size** 95,000 ft.$^2$

**Plant** Wilmington **Congressional District** _____

**Address** Prairie Avenue<br>Wilmington, OH<br>45177 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 350

**Telephone** 513/382-0971 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Computer controlled machining centers | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-9. WILMINGTON PLANT DATA

Company Cincinnati-Milacron County _____ Plant Size 290,000 ft.$^2$

Plant Batavia Congressional District _____

Address 458 W. Main St.
Batavia, OH
45103 Standard Metropolitan Statistical Area Cincinnati No. of Employees 1,300

Telephone 513/732-2464 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Plastics injection molding machines, Plastics extruding machines, Plastics blow molding machines, Plastics reaction injection molding machines | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-10. BATAVIA PLANT DATA

**Company** Cincinnati-Milacron **County** _____ **Plant Size** 50,000 ft.$^2$

**Plant** Mt. Orab **Congressional District** _____

**Address** State Route #32<br>Mt. Orab, OH<br>45154 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 200

**Telephone** 513/444-2531 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Plastics forming machinery | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-11. MT. ORAB PLANT DATA

Company Cincinnati-Milacron County _____ Plant Size 40,000 ft.$^2$

Plant Greenwood Congressional District _____

Address PO Box 1327
Greenwood, SC
29646 Standard Metropolitan Statistical Area _____ No. of Employees 200

Telephone 803/229-6944 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Industrial robot components, Assembled robots | N.C.A. | N.C.A. | N.C.A. |

FIGURE 3-12. GREENWOOD PLANT DATA

| Year | Sales ($Millions) | Earnings ($Millions) | Return on Equity, Percent | Operating Income* / Sales, Percent |
|---|---|---|---|---|
| 79 | 748 | 55.4 | 24.5 | 15.5 |
| 78 | 634 | 33.2 | 17.5 | 12.5 |
| 77 | 532 | 20.9 | 12.5 | 10.7 |
| 76 | 448 | 10.0 | 6.3 | 8.3 |
| 75 | 450 | 9.9 | 6.5 | 8.0 |

| Year | Earnings / Total Assets, Percent | Sales / Assets | Earnings / Sales, Percent |
|---|---|---|---|
| 79 | 10.5 | 1.42 | 7.4 |
| 78 | 7.3 | 1.40 | 5.2 |
| 77 | 5.1 | 1.31 | 3.9 |
| 76 | 2.6 | 1.18 | 2.2 |
| 75 | 2.5 | 1.14 | 2.2 |

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

FIGURE 3-13. CINCINNATI MILACRON 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 | 748 | 5.9 | 55.4 | 12.9 | 1 | 1.3 |
| 78 | 634 | 6.3 | 33.2 | 11.0 | 1 | 2.8 |
| 77 | 532 | 6.4 | 20.9 | 10.2 | 1 | 1.4 |
| 76 | 448 | 10.0 | 10.0 | 8.9 | (10) | 0.1 |
| 75 | 450 | 7.8 | 9.9 | 8.4 | (4) | 0 |

| 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 | 23 | 36.3 | 10.1 | 28.8 | 7.9 | 6.9 | 2.1 |
| 78 | 18 | 24.9 | 7.2 | 33.0 | 5.9 | 5.5 | 2.2 |
| 77 | 4 | 22.7 | 6.0 | 36.3 | 4.6 | 5.6 | 2.3 |
| 76 | (7) | 13.4 | 5.3 | 38.3 | 2.8 | 3.5 | 2.5 |
| 75 | (1) | 11.8 | 5.3 | 41.5 | 2.1 | 3.0 | 2.8 |

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 3-14. CINCINNATI MILACRON CAPITAL ANALYSIS

### 3.5.1 Operating Analysis

Sales in 1979 rose 18 percent to $748 million, and earnings jumped 67 percent to $55.4 million. In the first quarter of 1980, sales were up 14.4 percent and earnings rose 21.1 percent. Since 1976, sales have risen steadily, and profits have climbed sharply, increasing by more than 50 percent each year from 1977 to 1979.

Return on equity has also increased significantly, almost doubling between 1977 and 1979 when it reached 24.5 percent. The company's strong growth is similarly reflected in rises in the operating ratio, the ratio of earnings to sales and the ratio of earnings to assets. The ratio of sales to assets has also risen but less dramatically, reflecting a substantial increase in the firm's profit margins.

Industry and investment forecasts for the remainder of 1980 are optimistic and point to another year of record earnings. Some analysts, however, are cautioning that the machine tool boom that the company has enjoyed for several years may wane in 1981. In the first quarter of 1980, the order backlog increased 9 percent, reaching $735.7 million, up 34 percent from a year earlier. Orders for plastics machinery and industrial products may decline somewhat in the second half of 1980, but demand from the aerospace and auto industries is expected to remain strong through the end of the year.

### 3.5.2 Capital Analysis

The company's long-term debt has risen slightly in the last three years after large declines in 1975 and 1976. Owners' equity other than retained earnings has also increased somewhat. These sources of funds, however, have not contributed significantly to the firm's large capital expenditures which reached $36 million in 1979 and are projected at $46 million for 1980. Most of the funds have been cash generated from operations.

The ability of the company to finance its projects internally is reflected in the steady decline in the ratio of long-term debt to capitalization from over 40 percent in 1975 to under 30 percent in 1979. This drop occurred even with a steady increase in the ratio of capital expenditures to total assets over the same period. The coverage ratio has risen steadily, and the current ratio has declined steadily since 1975. Dividends have increased since 1976, with payments to shareholders increasing 40 percent in 1979 over the previous year. The company should not have any difficulty financing its announced 1980 capital expenditures internally.

## 3.6 RESEARCH AND DEVELOPMENT

Cincinnati Milacron spent $18.2 million in 1979 and $16.4 million in 1978 for research and development activities. Over the five-year period ending in 1979, the firm spent approximately $75 million on R&D. That figure equals 2.7 percent of total sales, and the company believes that this percentage is considerably greater than the average for the machinery industry as a whole.

Company president Jim Geier gives the R&D staff credit for the fact that 40 percent of the company's current products were not being manufactured by the firm five years earlier, and he expects that pace of new product introduction to continue over the next five-year period. The full-time R&D staff consists of 511 employees.

# 4. CROSS & TRECKER

Cross & Trecker is a major manufacturer of automated metalcutting transfer lines; assembly and testing machines; stand-alone machine tools; automated systems for foundries; and automated coal-handling systems. The company was formed through the 1979 merger of the Cross Company and the Kearney & Trecker Corporation, a merger currently being challenged by the Justice Department for alleged antitrust violations. The auto and truck industry is the firm's largest single customer, and the company's directors are optimistic about a continued strong demand from this and other key industrial markets. The firm has recently announced the largest expansion program of any domestic machine tool producer in order to increase its capacity to deal with a large backlog and a high rate of new orders.

## 4.1 CORPORATE SIZE AND STRUCTURE

The Cross & Trecker Corporation is a holding company with three operating units: The Cross Company, Kearney & Trecker Corporation and the Roberts Corporation. Among North American machine tool manufacturers, it ranks tenth in revenues and eighth in net income. In fiscal 1979, foreign operations accounted for 15 percent of total revenues and 13 percent of net income.

### 4.1.1 Revenue, Profit and Employment Statistics

In 1979, the first year of the merger, Cross & Trecker had revenues of $298 million and profits of $26.4 million. These were significant increases from the previous year when the combined sales of the two firms were $236 million, with combined profits of $17.1 million. The firm employs approximately 4,100 people. (See Table 4-1.)

### 4.1.2 Corporate Organization

Cross & Trecker is divided into three operating units, each of which serves a different market and manufactures different product lines. The three units--The Cross Company, Kearney & Trecker Corporation and the Roberts Corporation--are described below. (See Figure 4-1.)

TABLE 4-1. CROSS & TRECKER REVENUE, PROFIT AND EMPLOYMENT STATISTICS

| Revenues (Millions) | | Profits (Millions) | |
|---|---|---|---|
| 1979 | $298 | 1979 | $26.4 |
| 1978* | 236 | 1978* | 17.1 |
| Total Number of Employees: 4,100 | | | |

* Pro forma combined data of Cross Company and Kearney & Trecker Corporation.

- The Cross Company

  The Cross Company is the largest of the three operating units in revenues and employment. Its primary products are multi-station transfer lines that perform high-volume metalworking, assembly and testing operations, and it derives 60 to 70 percent of its business from the auto industry. It is divided into three divisions, each one a self-sufficient manufacturing facility serving a different country. The largest of the three is the Cross-Fraser Division, located in Fraser, Michigan. The other two divisions operate in England and West Germany.

- Kearney & Trecker

  Kearney & Trecker manufactures and sells numerically controlled machine tools and standard drilling machines. The machine tools are used primarily in medium and low-volume manufacturing. The unit's Renewment Division remanufactures milling machines and machining centers, principally of the company's own make.

- Roberts Corporation

  Roberts Corporation has two divisions. The Industrial Products Division in Michigan designs and builds special automated systems that perform sand handling, iron pouring, mold and core making and other related foundry operations. The Southern Division, in Birmingham, Alabama, designs and builds automated coal-handling systems for the power generating industry.

## 4.2 MAJOR MARKETS AND PRODUCTS

Figure 4-2 presents the major market information for Cross & Trecker.

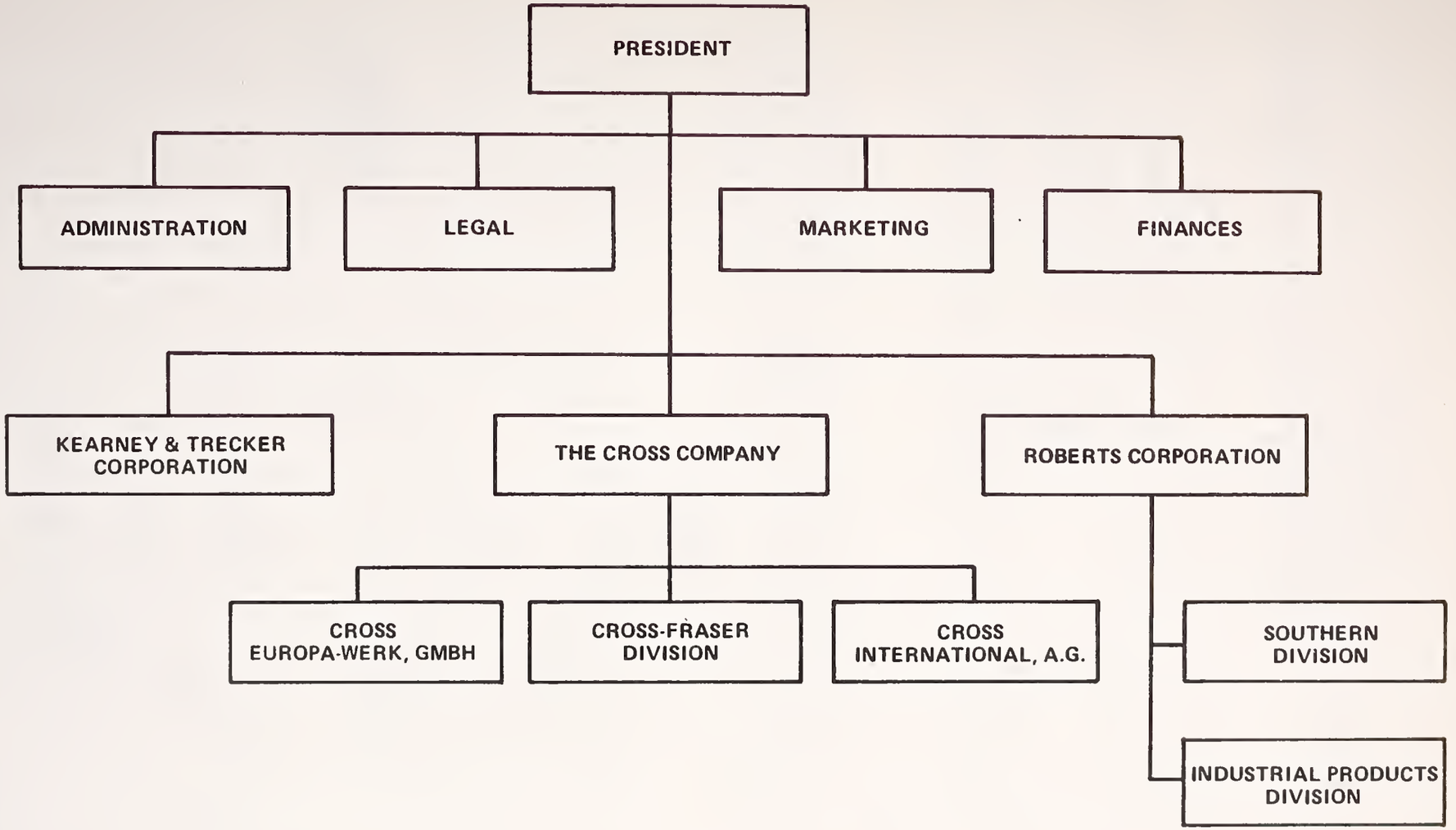



FIGURE 4-1. CROSS & TRECKER CORPORATE ORGANIZATION

| MARKET DATA | |
|---|---|
| Major Markets: | Automotive, aerospace, construction, appliance, farm machinery and foundry industries |
| Percent of Sales to Automotive Industry: | 50% |
| Major Automotive Customers: | Ford, General Motors, Chrysler |
| Major Automotive Products: | Metalcutting, assembly and test machines for manufacturing component parts and assemblies. |

FIGURE 4-2. MARKET DATA FOR CROSS & TRECKER

## Major Markets

Cross & Trecker's major markets include the automotive, aerospace, construction, appliance, farm machinery and foundry industries. Figure 4-3 shows average sales by market over the last five years.

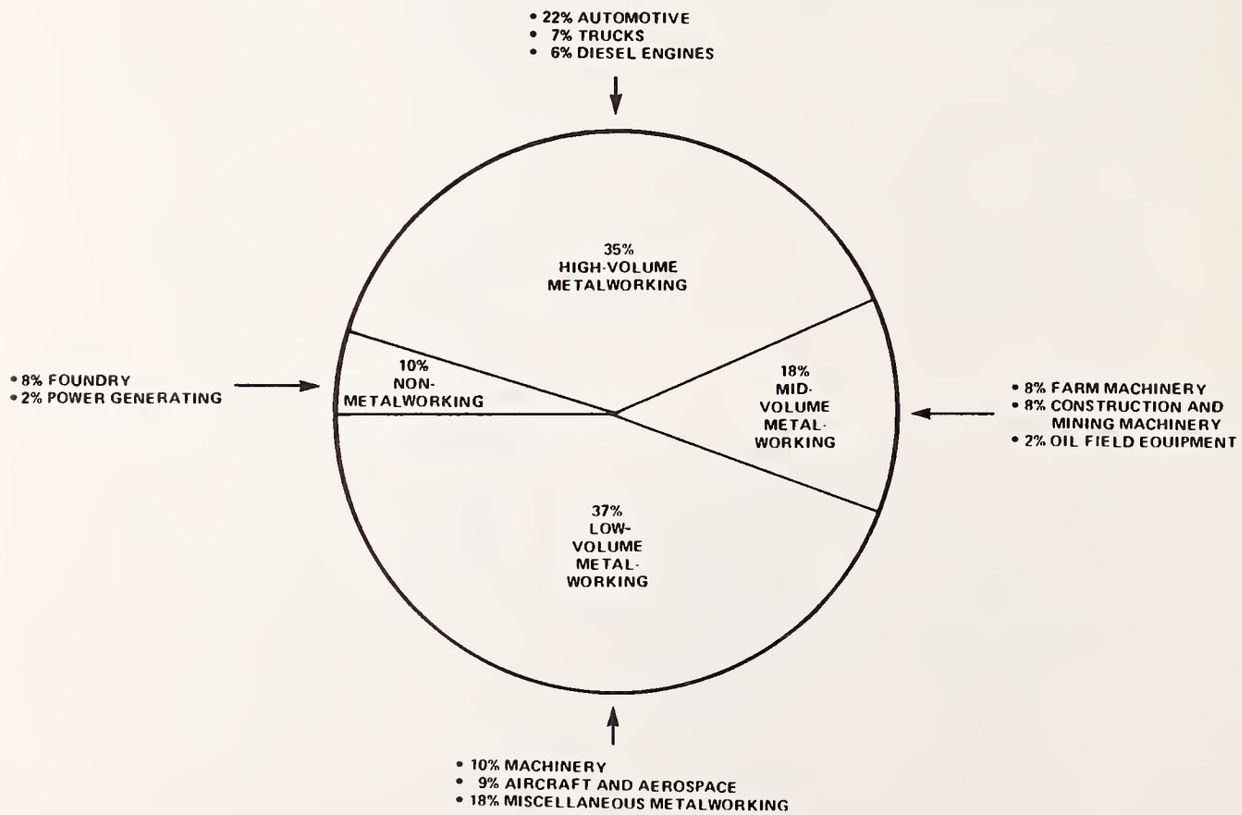



FIGURE 4-3. SALES BY MARKET, FIVE YEAR AVERAGE

The Cross Company serves the markets involved in high-volume metalworking--automotive trucks and diesel engines. The firm sells to 20 auto companies worldwide, and Ford, General Motors and Caterpillar each accounted for more than 10 percent of Cross & Trecker revenues in fiscal 1979.

Both Cross and Kearney & Trecker sell to the medium-volume metalworking market--construction, farm and mining machinery and oil field equipment. The low-volume metalworking industries--aerospace, machinery and miscellaneous firms are served by Kearney & Trecker. In larger industries such as automotive and aerospace, Kearney & Trecker usually sells to second and third-tier suppliers and job shops that make tooling and parts for the major manufacturers. Job shops account for 50 percent of Kearney & Trecker's sales. Roberts Corporation serves the foundry and power-generating industries with specialized foundry equipment and automated coal-handling systems.

### 4.2.1 Products

Cross & Trecker's machine tool products are manufactured by the Cross Company and Kearney & Trecker. The Roberts Corporation produces equipment for the power-generating and foundry industries.

*Cross Products*

Cross-Fraser and the two Cross plants overseas design and build transfer lines. The lines often reach several hundred feet in length and are used by the transportation equipment industry to manufacture components for automobiles, trucks and tractors. Cross-Fraser also builds integrated manufacturing systems that combine metalcutting, assembly and testing operations. The systems are used to produce diesel engines, construction machinery, farm equipment and oil well drilling tools. Cross products are sold primarily by a direct sales force.

*Kearney & Trecker Products*

Kearney & Trecker's primary product line is standalone machine tools. The company markets computer numerically controlled machining centers and milling machines, and multiple-machine flexible manufacturing systems. Most of Kearney & Trecker's sales of numerically controlled machine tools consist of "Milwaukee-Matic" machining centers, which perform a variety of machining jobs in addition to milling. The flexible manufacturing systems are composed of standard CNC machining centers and an automatic work transport system that advances parts on a demand basis. The systems operate under

direct numerical control, permitting them to produce a wide variety of parts that vary in size, shape and machining requirements.

*New Products and Sales*

The Cross Company has recently announced a number of new products and sales to the automotive industry.

- Ford Motor Company has contracted with Cross-Fraser to supply its Transmission and Chassis division with a transfer machining system to produce front-wheel-drive differential cases for the company's 1981 subcompact cars. The system is being described as a "first of its kind" because it introduces automatic tool compensation to spherical boring equipment. The compensation feature adjusts the size of the bore to allow for tool wear.

- Ford also selected Cross-Fraser to supply a metal-cutting system for the production of front covers for the 3.8-liter V-6 engines due to be introduced in the fall of 1981. Although there is nothing unique about the system being supplied, industry analysts considered the order significant because Cross won the contract over the Japanese supplier, Toshiba, who reportedly underbid Cross and other U.S. companies.

- Cummins Engine Company recently chose Cross-Fraser to build the cylinder block machining line for a new family of medium-duty truck diesel engines. The new 10-liter engines are designed to be lightweight and fuel-efficient, and Cummins hopes that they will capture an increasing share of the midrange truck market. The machining line will be installed in Jamestown, New York, and will perform milling, drilling and boring operations on the blocks.

- In 1979, Cross announced the release of a new machine tool system, a 34-station nonsynchronous transfer machine for the assembly and testing of automobile master brake cylinders. Brake cylinder assembly is a difficult process to automate, and Cross sees the 600-pieces-per-hour production rate as a major accomplishment. The line's testing cycle takes only half the time that manual testing requires.

## 4.3 CORPORATE STRATEGY

Cross & Trecker's directors during the past year have been highly optimistic about the company's future. With a 17-month backlog and orders in the first half of 1980 outpacing deliveries, they foresee a prolonged high level of orders. A central reason for their confidence is the major upheaval taking place in the auto industry. Russell Hedden, the company president and chief executive officer, told a meeting of security analysts in May, 1980:

> Automotive is our single biggest customer, but even though the auto industry is having well-publicized troubles now, the outlook for machine tools has never been stronger. Both government mandates and the need to offer more fuel-efficient cars ensure that the auto industry will be a substantial customer into the future... General Motors has told us that its needs along over the next four years could absorb the entire transfer line capacity of our industry.

The company believes that it will outperform the machine tool industry as a whole because of the combination of capabilities brought together in the 1979 merger. By joining Cross' high-volume metalworking products with Kearney & Trecker's low and medium-volume products, the merger has enabled the firm to provide services to the entire spectrum of metalworking facilities.

In addition to increased coverage of the machine tool market, the merger holds out the possibility of technology cross-overs between the two firms. Kearney & Trecker is strong in the production of flexible machines, and Cross' strength is in the manufacture of high-volume equipment. The company is looking toward a combination of these two capabilities to open up a relatively new market for flexible manufacturing systems capable of medium to high volume production rates. The systems would be transfer lines that incorporate flexible machining centers and thereby avoid the enormous costs to the auto and other industries of complete retooling for each new product. Cross estimates that there are 1,000 manufacturers in the U.S. who are potential customers for flexible systems. There are currently, by company estimates, only 22 systems in operation, and most of these are in medium-volume facilities.

There have recently been reports in trade journals that the plans for the integration of the two firms and an exchange of technology between them has not been proceeding as rapidly as was hoped early in 1979. Two reasons are cited for the

apparent delay: the pending anti-trust suit filed against the 1979 merger by the Justice Department and the very high backlog level which is straining the company's resources to the exclusion of new projects. The directors are, however, committed to a $65 million, three-year expansion program that is aimed at increasing capacity and accelerating new product development.

## 4.4 PRODUCTION AND OPERATIONS

The Cross Company operates plants in Fraser, Michigan; Wendlingen/Neckar, Germany; and Merseyside, England. Kearney & Trecker has facilities in Milwaukee, Wisconsin, and the two Roberts Corporation plants are in Lansing, Michigan, and Birmingham, Alabama. Corporate headquarters are located in Bloomfield Hills, Michigan.

### 4.4.1 Automotive Facilities

The Cross & Trecker plants that make significant shipments to the automotive industry are the four Cross Company factories. Together they employ approximately 1900 people and occupy 360,000 square feet. The U.S. and English plants supply U.S. automakers domestically and overseas while the German facility sells primarily to foreign auto manufacturers. Details on the plants are given in Figures 4-4 through 4-7.

### 4.4.2 New Plants and Expansions

In late 1979, Cross & Trecker announced a three-year, $65 million expansion program that involved all three of the firm's operating units. The program is aimed at enlarging its domestic manufacturing operations and increasing the company's combined worldwide annual sales capability to the $500 million level.

The expansion includes the construction of a 130,000-square-foot manufacturing facility for the Cross Company in Port Huron, Michigan, that will be used for the design and manufacture of parts and components for the Fraser plant. (See Figure 4-8.) The plant is scheduled to begin operations in March, 1981, and will eventually employ 500 people. Together with a 20,000-square-foot addition to the company's headquarters office building, the Cross expansion project will cost an estimated $21 million.

The three-year building program also calls for an 83,500-square-foot plant to be built for Kearney & Trecker in Georgetown, Kentucky, for machine tool component manufacturing and the acquisition and renovation of a 60,000-square-foot

**Company** Cross & Trecker (Cross-Fraser Div.) **County** _____ **Plant Size** 244,000 ft.$^2$

**Plant** Fraser **Congressional District** _____

**Address** 17801 Fourteen Mile Rd. Fraser MI 48026 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 900

**Telephone** 313/293-3000 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Transfer lines, related specialized high-production equipment | N.C.A. | N.C.A. | 60% of plant's output is automotive oriented |

FIGURE 4-4. FRASER PLANT DATA

Company: Cross & Trecker (Cross Div.)

County:

Plant Size: 90,000 ft.$^2$

Plant: Covington

Congressional District:

Address: 25 E. 3rd St. Covington, KY 41012

Standard Metropolitan Statistical Area:

No. of Employees: 150

Telephone: 606/431-2986

Primary SIC Code(s):

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Components for Fraser plant | N.C.A. | N.C.A. | N.C.A. |

FIGURE 4-5. COVINGTON PLANT DATA

**Company** Cross & Trecker (Cross International Div.) **County** _____ **Plant Size** 38,000 ft.$^2$

**Plant** Knowsley **Congressional District** _____

**Address** Knowsley, Prescott
Merseyside L349E2
England **Standard Metropolitan Statistical Area** _____ **No. of Employees** 320

**Telephone** _____ **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Transfer lines, other special machinery | N.C.A. | N.C.A. | Principally overseas operations of U.S. companies (automakers) |

FIGURE 4-6. KNOWSLEY PLANT DATA

Company Cross & Trecker (Cross International Div.) County _____ Plant Size 90,000 ft.$^2$

Plant Wendlingen Congressional District _____

Address Cross-Europa Werke
D-7317
Wendingen AM Neckar
Fed. Republic of
Germany

Standard Metropolitan Statistical Area _____ No. of Employees 500

Telephone _____ Primary SIC Code(s) _____



| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Machine tools, transfer lines | N.C.A. | N.C.A. | Primarily to Western European divisions of U.S. automakers |

FIGURE 4-7. WENDLINGEN PLANT DATA

**Company** Cross & Trecker (Cross Div.) **County** _____ **Plant Size** 130,000 ft.$^2$

**Plant** Port Huron **Congressional District** _____

**Address** 100 McMorran Blvd. Port Huron, MI 48060 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 500

**Telephone** 313/987-9000 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Parts and components for machine tools manufactured at Fraser plant | N.C.A. | N.C.A. | (Plant currently under construction; due to begin operations in March 1981.) |

FIGURE 4-8. PORT HURON PLANT DATA

building in Butler, Wisconsin, for the production of flexible machining systems. The Roberts Corporation will construct a 7,200 square-foot addition to one of its Birmingham plants to fabricate and assemble coal-handling systems.

## 4.5 FINANCIAL STATUS

Cross and Kearney & Trecker merged in early 1979 when both companies were in a strong financial position with high levels of unfilled orders. The first-year performance of the merged company has been strong, and the directors of the firm are hopeful of continued high levels of demands. A sizable expansion program is aimed at increasing capacity to cut down the backlog and permit the development of expanded product lines. (See Figures 4-9 and 4-10.)

### 4.5.1 Operating Analysis

Cross & Trecker had sales of $298 million in 1979, a 28 percent increase over 1978. Profits surged 54 percent, from $17.1 million in 1978 to $26.4 million in 1979. The upward earnings and sales trend continued in the first six months of 1980 with revenues advancing 37 percent and net income rising 62 percent. At March 31, 1980, the company's backlog of unfilled orders was a record $530 million, up from $453 million a year earlier.

Return on equity has improved substantially in the last two years and reached 22.4 percent in 1979. Combining the data of the two firms in the years prior to the merger, the operating ratio has risen steadily since 1976. The ratio of sales to assets has remained fairly constant since 1977, but margins have improved as reflected in the rising percentages for earnings to total assets and earnings to sales.

Company spokesmen and industry analysts agree that the next year looks bright for Cross & Trecker with demand from the auto industry for new transfer lines a major cause for optimism. Cross & Trecker president, Russell Hedden, predicted early in 1980 that the company's profits would increase 20 to 25 percent in fiscal 1981 over 1980, and several months later, he suggested that his prediction may have been too conservative. Investment analysts predict an earnings rise of 30 percent and continued strong performances in the following years as the expansion program increases corporate capacity to sales of $500 million annually.

### 4.5.2 Capital Analysis

At the time of the merger, both companies had large amounts of working capital at their disposal. This is reflected in the

| Year* | Sales ($Millions) | Earnings ($Millions) | Return on Equity, Percent | Operating Income* / Sales, Percent |
|---|---|---|---|---|
| 79 | 298 | 26.4 | 22.4 | 16.1 |
| 78 | 236 | 17.1 | 17.1 | 15.1 |
| 77 | 171 | 9.8 | 11.0 | 12.3 |
| 76 | 141 | 7.9 | 9.6 | 11.3 |
| 75 | 179 | 8.9 | 12.1 | 13.6 |

| Year | Earnings / Total Assets, Percent | Sales / Assets | Earnings / Sales, Percent |
|---|---|---|---|
| 79 | 12.4 | 1.40 | 8.9 |
| 78 | 10.2 | 1.40 | 7.2 |
| 77 | 7.2 | 1.26 | 5.7 |
| 76 | 6.2 | 1.11 | 5.6 |
| 75 | NA | NA | 5.0 |

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

Prior to 1979, pro forma combined data of Cross Co. and Kearney & Trecker Corp

FIGURE 4-9. CROSS & TRECKER
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 | 298 | 7.5 | 26.4 | 4.76 | (3.4) | 0.3 |
| 78 | 236 | - | 17.1 | 3.60 | (0.6) | 0.3 |
| 77 | 171 | - | 9.8 | 2.99 | 0.5 | 0.3 |
| 76 | 141 | - | 7.9 | 2.90 | (1.5) | (2.0) |
| 75 | 179 | - | 8.9 | 3.06 | NA | NA |

* Prior to 1979, pro forma combined data of Cross Co. and Kearney & Trecker Corp.

| 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 | 13.8 | 9.12 | 4.9 | 3.1 | 39.3 | 4.3 | 2.0 |
| 78 | 12.6 | 7.16 | 3.4 | 6.5 | 25.1 | 4.3 | 2.3 |
| 77 | 9.6 | NA | 2.5 | 6.1 | 19.4 | NA | NA |
| 76 | 1.6 | NA | 1.4 | 6.1 | 13.5 | NA | NA |
| 75 | NA | NA | 1.5 | NA | 9.0 | NA | NA |

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 4-10. CROSS & TRECKER CAPITAL ANALYSIS

recent declines in long-term debt and the minimal changes in owners' equity other than retained earnings. The firm's coverage ratio has risen steadily over the last five years, reaching 39.3 in 1979. The percentage of long-term debt to capitalization declined to 3.1 and the current ratio stood at 2.0 at the end of the last fiscal year.

The company has announced a three-year, $65-million expansion program to increase the firm's worldwide production capacity. Financing will come from both internal and external sources, according to company announcements. Given the firm's current strong cash position, its 17-month order backlog and the expectation of continued demand for its products, there should not be any difficulty in funding the building program.

## 4.6 GOVERNMENT RELATIONS

The only serious cloud on Cross & Trecker's horizon is a pending antitrust suit filed against the company by the U.S. Justice Department in September, 1979. The suit challenges the 1979 merger on the grounds that it violates antitrust laws and requests that the company divest itself of either Cross or Kearney & Trecker. The company does not believe that it is in violation of antitrust statutes and has announced that it will "vigorously resist the government's attempt to undo" the merger. Industry trade journals, however, have reported that the spectre of the suit has interfered to some extent with a full integration of the two companies and slowed down plans for developing new, joint products.

# 5. GIDDINGS & LEWIS

Giddings & Lewis is a leading manufacturer of conventional and numerically controlled machine tools, as well as a variety of industrial products. Its machine tool line includes machining centers, turning centers, milling machines, assembly machines and electronic controls. The firm's primary industrial products are industrial brushes, grinding wheels, pressure cylinders and printed circuit boards. In the last five years, the company has made a series of acquisitions to expand the size of its industrial products in an effort to counteract the cyclicality of the machine tool market. While allowing for a possible dip in orders toward yearend, the company expects 1980 to be another year of record sales and earnings and sees strong growth potential through 1985.

## 5.1 CORPORATE SIZE AND STRUCTURE

Giddings & Lewis was founded in 1859 and currently ranks fourth in revenues and third in profits among U.S. machine tool manufacturers. Following an aggressive policy of diversification in the last five years, the company has acquired five firms that serve markets other than machine tools. The latest acquisition, in early 1980, was Margo, Inc., a manufacturer of gas and chemical containers.

### 5.1.1 Revenue, Profit and Employment Statistics

In 1979, Giddings & Lewis had sales of $258 million, a 30 percent rise from 1978 sales of $199 million. Profits rose 59 percent from $18.2 million in 1978 to $28.9 million in 1979. Foreign business accounted for 11 percent of total sales in 1979. The company employs 4,100 people, 2,550 of whom are production employees. (See Table 5-1.)

TABLE 5-1. GIDDINGS & LEWIS REVENUES, PROFIT AND EMPLOYMENT

| Revenues (millions) | | Profits (millions) | |
|---|---|---|---|
| 1979 | $258 | 1979 | $28.9 |
| 1978 | 199 | 1978 | 18.2 |
| Total Number of Employees: | 4,100 | | |

### 5.1.2 Corporate Organization

Giddings & Lewis is organized in two operating groups--Machine Tools and Industrial Products. The Machine Tools Group has five divisions and one subsidiary, and the Industrial Products Group is made up of one division and four subsidiaries. The Machine Tool Group includes the following units:

- Giddings & Lewis Machine Tool Company manufactures computer numerically controlled machining and turning centers.
- Davis Tool Company makes tooling for machines, and other machining accessories.
- Giddings & Lewis-Bickford Machine Company builds machining centers, drilling machines, finishers and grinders.
- Giddings & Lewis-Fraser Ltd. is located in Scotland and manufactures boring, drilling and milling machines.
- Giddings & Lewis Foundries makes iron castings, a variety of iron products and provides pattern making services.
- Gilman Engineering & Manufacturing Company makes automatic assembly and manufacturing systems, balancing machines and vertical lathes.

The Industrial Products Group consists of the following divisions and subsidiaries:

- Giddings & Lewis Electronics Company builds computer numerical control systems and other electronic equipment.
- The Osborn Manufacturing Company makes industrial brushes, foundry molding machinery and grinding wheels.
- Jackson Buff Corporation manufactures buffing and polishing wheels, buffing compounds and abrasive belts.

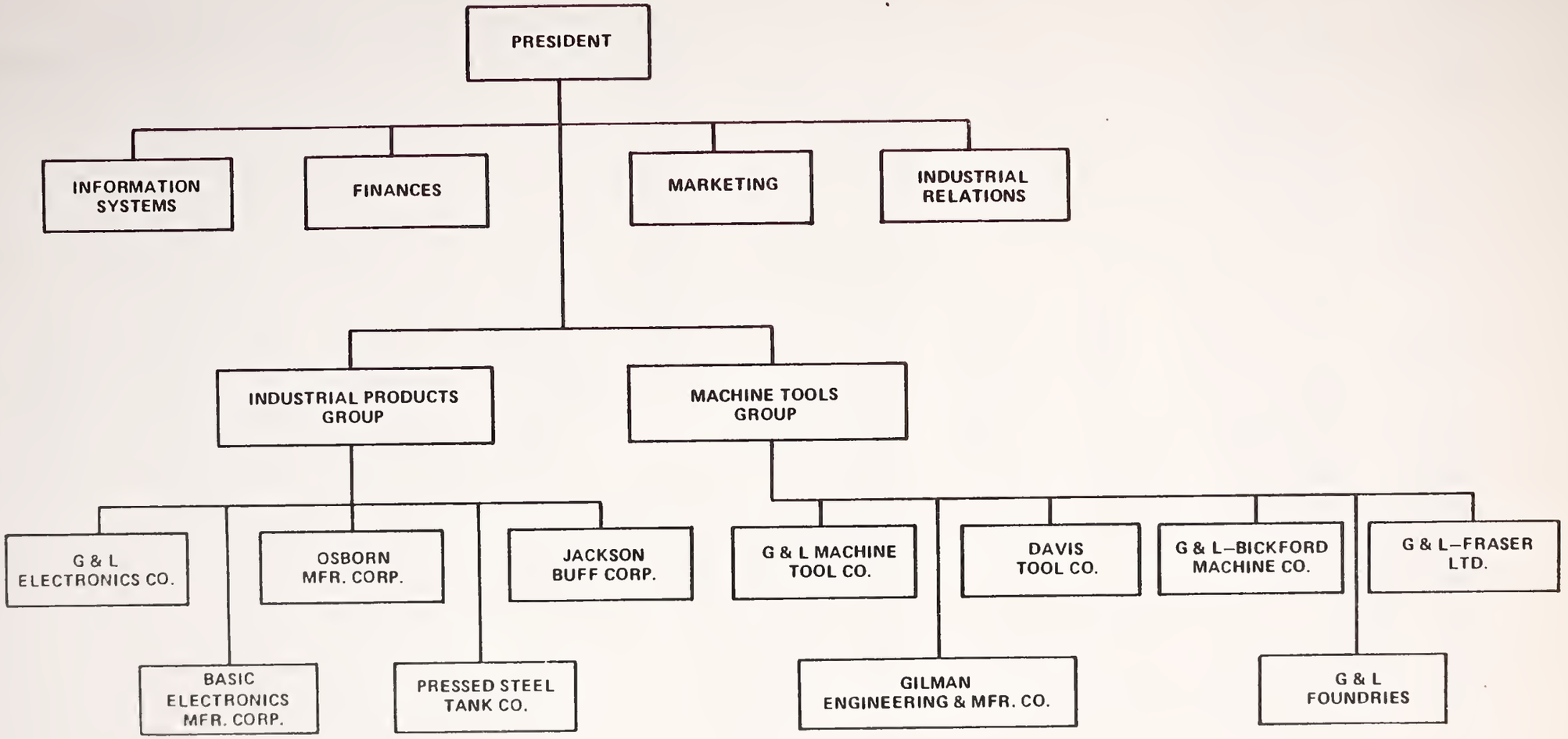



FIGURE 5-1. GIDDINGS & LEWIS CORPORATE ORGANIZATION

- Pressed Steel Tank Co. makes containers for gases, liquids and solids.

- Basic Electronics Mfg. Corp. manufactures printed circuit boards.

The two Machine Tools and Industrial products groups were formed in 1979 to strengthen company management. Frank J. Austin, Executive Vice President was made Chief Operating Officer and two executives were named Group Vice Presidents, Frank W. Jones for Machine Tools and Robert G. Chamberlain for Industrial Products.

## 5.2 MAJOR MARKETS AND PRODUCTS

Figure 5-2 presents the major market information for Giddings & Lewis.

| MARKET DATA | |
|---|---|
| Major Markets: | Automotive, aerospace, construction, machine tools and bearings industries. |
| Percent of Sales to Auto Industry: | 25 to 30 Percent |
| Supplies to: | |
| Major Automotive Products: | Transfer lines, machining centers, turning centers, automatic assembly systems |

FIGURE 5-2. GIDDINGS & LEWIS
MARKET DATA

Table 5-2 shows a breakdown of the company's 1979 net new orders for domestic machine tools, by industry. The auto manufacturers are listed as accounting for 17 percent, but sizable portions of the orders grouped under internal combustion engines, machine tools, and ball and roller bearings are also sales to the auto industry. Taking the different segments together, the automakers account for 25 to 30 percent of the firm's total sales.

TABLE 5-2. 1979 NET NEW ORDERS BY INDUSTRY
DOMESTIC MACHINE TOOLS ONLY

| | |
|---|---|
| Fabricated Metal Products | 7% |
| Internal Combustion Engines | 4 |
| Farm Machinery | 4 |
| Construction Machinery | 10 |
| Machine Tools | 6 |
| Ball & Roller Bearings | 7 |
| Other Non-Electrical Machinery | 23 |
| Automotive | 17 |
| Aircraft, Engines & Parts | 13 |
| Other Transportation | 3 |
| All Other | 6 |
| | 100 |

5.2.1 Products

Giddings & Lewis' major product lines are machine tools, industrial brushes and steel cylinders, and each of these product classes accounted for more than 10 percent of annual sales during the years 1975 to 1979. (See Table 5-3.) The rest of the firm's revenues come from sales of foundry equipment, grinding wheels, electronic controls, printed circuit boards and a variety of other industrial products.

TABLE 5-3. FIVE-YEAR
BREAKDOWN OF SALES OF
MAJOR PRODUCT LINES

| | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|
| Machine Tools | 85% | 52% | 62% | 68% | 68% |
| Industrial Brushes | NA | 16 | 14 | 12 | 10 |
| Steel Cylinders | NA | 17 | 13 | 10 | 10 |

*Machine Tools*

The major types of machine tools produced by the company are vertical machining centers, horizontal machining centers, computer controlled horizontal and vertical turning centers and automatic assembly machine systems used extensively by the automobile industry. The company is putting increasing

emphasis on building manufacturing systems that combine computer controlled machining centers, special process machines, inspection, assembly and testing, material handling and computer assistance into the integrated manufacturing of palletized discrete parts. These systems, sold under the brand name Numerimation, are designed for use in plants where volume is below that of mass production industries. They provide the flexibility to either produce quantities too small for fully automated transfer lines or produce random workpieces in a family of parts.

*Automotive Orders*

Giddings & Lewis is also developing new transfer lines to meet the specific requirements of their large customers, particularly the auto manufacturers. One of the company's latest projects has been the production of a 50-machine integrated manufacturing and assembly system for the Moskvich auto plant in the U.S.S.R. The system, built by the firm's Gilman Engineering and Manufacturing Company, automatically converts raw castings and hot-rolled bar stock into finished, ready-to-install flywheel/ring gear assemblies at a rate of 214 an hour. Gilman combined the machinery of eleven different suppliers to build the sophisticated system.

In the third quarter of 1979, the company received two large orders for assembly equipment from auto manufacturers. The Gilman Engineering and Manufacturing Company received a contract from a Swedish auto company for more than $7 million to manufacture equipment to build automotive bodies. General Motors placed an order for $5 million for automatic assembly machines to assemble spindles and bearings for front and rear automobile wheels.

## 5.3 CORPORATE STRATEGY

Giddings & Lewis is placing a heavy emphasis on diversifying its product lines through the expansion of its Industrial Products Group. Since the recession of 1975, the company has pursued an aggressive acquisition program, purchasing five companies in five years. The firm hopes that the diversification will help to counteract the cyclicality of the machine tool industry and is working toward a product mix in which sales of industrial products will contribute 50 percent of total revenues. In 1979, the industrial product lines accounted for about a quarter of total sales.

The firm is optimistic about the future performance of its broad line of machine tool products.

The company approaches its major machine tool customers as a firm that can provide a complete range of services for production machinery. Vice president, marketing, Michael Lindgren explained: "We think that one of our main selling points is that we can offer single source responsibility. We can offer controls, loading devices--a complete package. You could call it sort of a turnkey operation."

Company forecasts for 1980, based on current order backlogs, project sales for the year at $310 million, with machine tools accounting for $200 million. Confidence about future years is based on the expectations of continued strong demand from the automotive and aerospace markets and on the general concern with improving manufacturing productivity in domestic industries.

In the short term, there are several factors that may hold the company back to a moderate degree. Company president George Becker told a meeting of stock analysts in mid-1980 that the rate of profit growth may be slowed somewhat by:

- the effect of wage and price guidelines on the firm's ability to raise prices,
- competition from Japanese horizontal boring machines,
- the expenses of attending a major trade show and the cost of establishing a new company apprenticeship program.

The company is quick to point out, however, that these obstacles are largely temporary and do not alter the company's projections of strong growth in the next five years.

The company is in the process of reorganizing its machine tool sales effort in several parts of the country after dropping Motch & Merryweather as its primary machine tool distributor. The decision to begin distributing its products directly was made after Motch was purchased by the Swiss firm, Oerlikon-Buhrle Holding, which manufactures several products that compete with Giddings & Lewis machine tools. As part of its reorganization plan, it recently purchased its Indianapolis distributor, Marshall & Huschart Machinery Co. of Indiana. The subsidiary will continue to function as the distributor of several companies' products.

## 5.4 PRODUCTION AND OPERATIONS

Giddings & Lewis operates 14 plants in 11 locations, including two overseas. Five of the facilities make significant shipments to the auto industry. (See Figures 5-3, 5-4 and 5-5.) Those five plants are:

- Two plants of the Giddings & Lewis Machine Tool Company in Fond du Lac, Wisconsin

- One plant of the Giddings & Lewis-Bickford Machine Company, Kaukauna, Wisconsin

- Two plants of the Gilman Engineering and Manufacturing Company, Janesville, Wisconsin.

In 1979, the company spent $10 million on improvements to its plant and equipment. Major projects now under way are the construction of a new computer center, a new and expanded engineering facility for Giddings & Lewis Electronics Division and the installation of modernized production equipment, particularly at Giddings & Lewis-Fraser in Scotland.

Projected capital expenditures in 1980 to carry out these programs are $15 million. The company has recently approved expansion of facilities at Gilman Engineering in Janesville, Wisconsin and at Giddings & Lewis-Bickford in Kaukauna, Wisconsin. Plans have also been made to construct a new sales office in Manchester, England.

## 5.5 FINANCIAL STATUS

Giddings & Lewis will have another record year of sales and earnings in 1980 despite some lowering of profit margins. Projected capital expenditures for the year should not require outside financing. (See Figures 5-6 and 5-7.)

### 5.5.1 Operating Analysis

Giddings & Lewis' sales and earnings have risen steadily from 1975 to 1979 with the exception of 1976 when the company felt the effects of the general recession and a long strike at several of its facilities. In 1979, the company had sales of $258 million, a 30 percent rise from 1978 sales of $199 million. Profits increased 59 percent, from $18.2 million in 1978 to $28.9 million in 1979. Return on equity has shown a sharp upward trend, tripling between 1975 and 1979 when it reached 32.4 percent.

Excluding 1976 again, the operating ratio, the ratio of earnings to assets and the ratio of earnings to sales have all risen each of the last five years. Given that the ratio of sales to assets has risen only moderately while the ratio of earnings to sales has doubled between 1977 and 1979, it would appear that margins have been steadily improving. Pressure on margins is likely to increase in 1980, however, as the cost of labor, material and energy go up while the company holds its quotations within government price guidelines.

Profits are expected to grow despite lower margins because shipments are still increasing rapidly. The March, 1980, backlog stood at a record $240 million, at least nine months work ahead. In the first quarter of 1980, income improved 40 percent, year to year, on a 47.5 percent rise in sales. Revenues for the full year are expected to increase 20 percent with the newly acquired Margo Inc. contributing an added $20 million to annual sales.

### 5.5.2 Capital Analysis

The company's long-term debt rose by $15 million in 1975 and has decreased by $2.5 million since then. Owners' equity, other than retained earnings, has increased slightly during the same five-year period. Dividend payments have climbed since 1976 and rose sharply from $.56 million in 1978 to $.93 million in 1979. The firm's long-term debt as a percentage of capitalization has declined from over 31 percent in 1976 to 19.4 percent in 1979. The coverage ratio has increased steadily since 1976, reaching 24 in 1979, and the current ratio has declined annually over the same period.

Capital expenditures have shown an upward trend, reaching more than $10 million in 1978 and 1979. As a percentage of total assets, capital expenditures reached 8.6 percent in 1978 and declined to 6.8 percent in 1979 at roughly the same level of investment, reflecting the company's increased assets. The firm's estimated $15 million in capital expenditures for 1980 should not require outside financing.

## 5.6 RESEARCH AND DEVELOPMENT

The company has 354 employees in its engineering departments engaged wholly or partly in company-sponsored research and product development. In 1979, Giddings & Lewis spent $9.1 million on research, product development and engineering, up from $7.7 million for the same activities in 1978.

During 1980 labor contracts will be negotiated at Gilman Engineering and Manufacturing Corporation. The Osborn Manufacturing Corporation, the Menominee Foundry, Giddings & Lewis Bickford Machine Co. and Giddings & Lewis Fraser Ltd. In 1979, the only labor contract negotiated was a three-year agreement with hourly rated employees at the Madison Foundry.

Company Giddings & Lewis  County _____  Plant Size 2 Plants: 374,000 sq. ft (18.9 acres) 40,000 sq. ft (11.9 acres)

Plant Fond du Lac  Congressional District _____

Address 142 Doty St. Fond du Lac, WI 54943  Standard Metropolitan Statistical Area _____  No. of Employees 741 (515 prod.)

Telephone 414/921-9400  Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Machine tools & accessories (also General Offices for firm) | N.C.A. | N.C.A. | N.C.A. |

FIGURE 5-3. FOND du LAC PLANT DATA

**Company** Giddings & Lewis (Bickford Div.) **County** _____ **Plant Size** 230,000 ft.$^2$ (3.4 acres)

**Plant** Kaukauna **Congressional District** _____

**Address** 820 Highland Ave. Kaukauna, WI 54130 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 502 (446 prod.)

**Telephone** 414/766-4631 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Drilling machines and machining centers | N.C.A. | N.C.A. | N.C.A. |

FIGURE 5-4. KAUKAUNA PLANT DATA

Company Giddings & Lewis (Gilman Engineering Div.) County _____ Plant Size 2 plants 147,000 ft.$^2$ (11.1 acres) 52,000 ft.$^2$ (8.2 acres)

Plant Janesville Congressional District _____

Address 305 W. Delevan Dr. Janesville, WI 53545 Standard Metropolitan Statistical Area _____ No. of Employees 549

Telephone 608/756-1211 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Assembly machines | N.C.A. | N.C.A. | N.C.A. |

FIGURE 5-5. JANESVILLE PLANT DATA

| Year | Sales ($Millions) | Earnings ($Millions) | Return on Equity, Percent | Operating Income* / Sales, Percent |
|---|---|---|---|---|
| 79 | 258 | 28.9 | 32.4 | 22.4 |
| 78 | 199 | 18.2 | 26.7 | 19.4 |
| 77 | 150 | 8.2 | 13.7 | 13.9 |
| 76 | 97 | 2.8 | 5.5 | 8.9 |
| 75 | 122 | 5.1 | 10.5 | 10.7 |

| Year | Earnings / Total Assets, Percent | Sales / Assets | Earnings / Sales, Percent |
|---|---|---|---|
| 79 | 19.0 | 1.70 | 11.2 |
| 78 | 14.7 | 1.62 | 9.1 |
| 77 | 8.1 | 1.47 | 5.5 |
| 76 | 3.1 | 1.07 | 2.9 |
| 75 | 5.8 | 1.38 | 4.2 |

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

FIGURE 5-6. GIDDINGS & LEWIS OPERATIONAL 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 | 258 | 3.6 | 28.9 | 5.50 | (0.4) | 1.2 |
| 78 | 199 | 3.4 | 18.2 | 4.08 | (1.3) | 0.9 |
| 77 | 150 | 5.0 | 8.2 | 3.67 | (1.5) | 0.4 |
| 76 | 97 | 10.2 | 2.8 | 2.88 | 0.7 | 0.4 |
| 75 | 122 | 3.6 | 5.1 | 2.55 | 15.7 | 0.6 |

| 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 | 18.4 | 10.6 | 4.57 | 19.4 | 24.0 | 6.8 | 2.9 |
| 78 | 8.1 | 10.7 | 2.70 | 24.5 | 15.8 | 8.6 | 3.2 |
| 77 | 4.4 | 5.6 | NA* | 30.2 | 7.9 | 5.5 | 3.8 |
| 76 | 6.5 | 1.9 | NA* | 31.1 | 4.6 | 2.1 | 5.1 |
| 75 | 11.8 | 7.4 | NA* | 30.9 | 7.9 | 8.4 | 4.1 |

Dollar figures are in millions

[1]Average for the Year

[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

*Not Available

FIGURE 5-7. GIDDINGS & LEWIS CAPITAL ANALYSIS

# 6. F. JOS. LAMB

The F. Jos. Lamb Company is a major manufacturer of transfer lines and other dedicated machining systems, including metalcutting machines, in-process storage units, parts handling automation, inspection gaging, assembly and testing equipment. The auto industry is by far the company's largest market. Since the 65-year-old firm is privately held, it does not issue annual reports and releases only general information on its financial performance and operations.

## 6.1 CORPORATE SIZE AND STRUCTURE

Lamb ranks among the top ten U.S. machine tool builders and is one of the machine tool companies that is most dependent on the auto industry for sales. The company is divided into two operating units: the Machine Tools Group and the Systems Products Division.

### 6.1.1 Revenues, Profit and Employment Statistics

According to a Lamb Company representative, the firm's sales in 1979 were in excess of $200 million. Sales in 1978 were slightly below that level. The company does not release earnings statistics. Total employment at the firm is approximately 1,400 people.

### 6.1.2 Corporate Organization

The company's Machine Tools Group manufactures transfer lines, machining centers and standard machine tools. It is not organizationally subdivided. The Systems Products Division is primarily engaged in producing automated systems to complement the products manufactured by the Machine Tools Group. (See Figure 6-1.) The Systems Products Division is divided into the following units:

- Fab-Tek Group manufactures automation equipment for the machining of small parts (up to 25 pounds).
- Machine Tool Automation Group produces automation equipment for larger machine tools.
- Palastor Group provides specialized automation equipment for transfer lines and integrated machining systems.

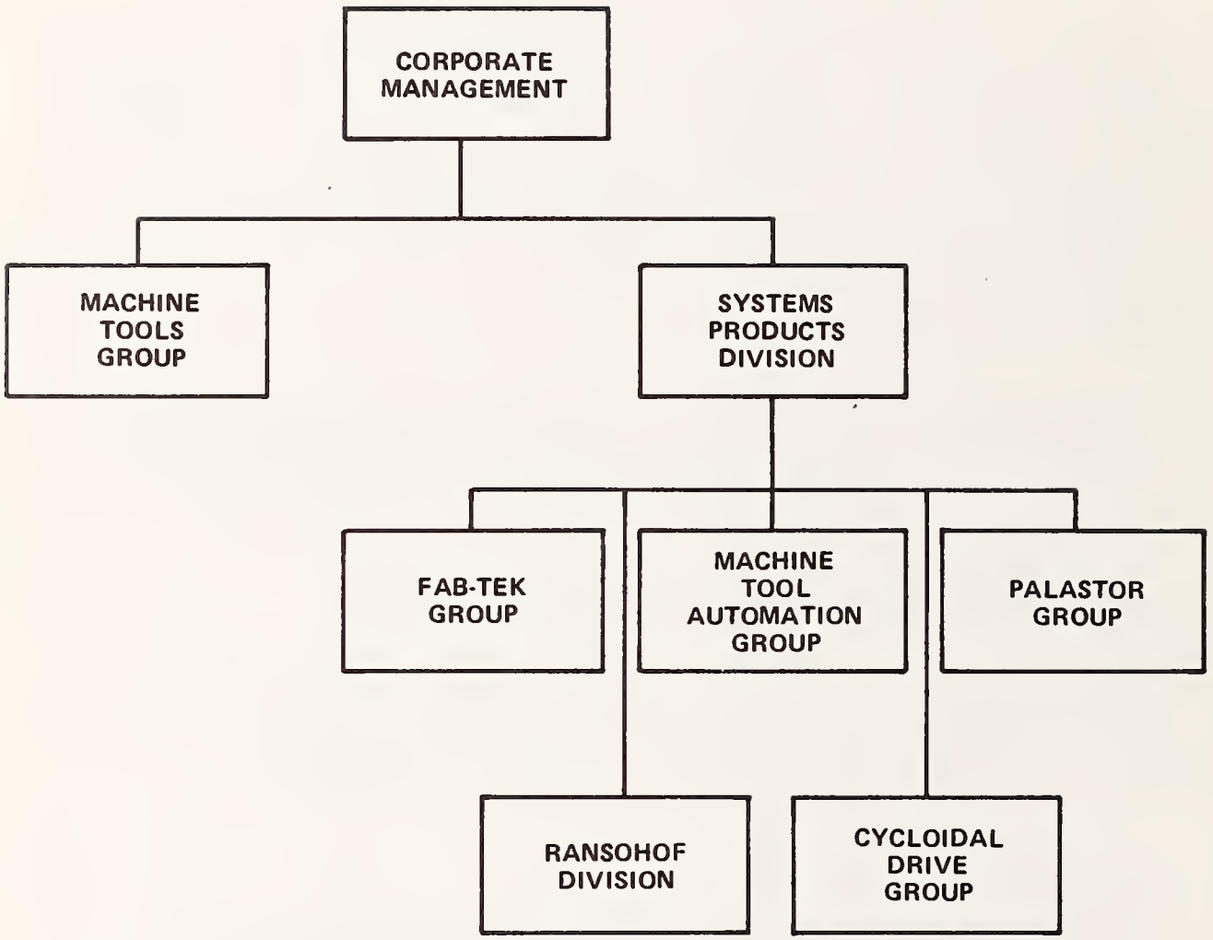



FIGURE 6-1. F. JOS. LAMB CORPORATE ORGANIZATION

- Ransohof Division produces industrial and automotive manufacturing washing and cleaning equipment.
- Cycloidal Drive Group manufactures a patented drive system for transfer lines.

## 6.2 MAJOR MARKETS AND PRODUCTS

Figure 6-2 presents the major market information for Lamb.

| MARKET DATA | |
|---|---|
| Major Markets: | Automotive and heavy machinery industries |
| Percent of Sales to Auto Industry: | 85 percent |
| Supplies to: | General Motors, Chrysler |
| Major Products: | Transfer lines and other dedicated machining systems, machining centers, standard machine tools and automation equipment |

FIGURE 6-2. F. JOS. LAMB MARKET DATA

### 6.2.1 Major Markets

The auto companies account for approximately 85 percent of Lamb's sales, and major customers include General Motors, Chrysler and other U.S. vehicle manufacturers. Lamb's remaining sales are primarily to heavy equipment manufacturers. The company also sells its products in Europe, Japan, Australia and New Zealand.

In marketing to the automakers, Lamb relies heavily on its long-standing close relationship with the auto industry and on a reputation for engineering excellence. It has acted to keep pace with the new tooling demands of Detroit's redesign efforts and has placed a special emphasis on custom work to build transfer lines and dedicated machining systems for particular customer production requirements. One of the firm's advertising slogans is "Total Responsibility", referring to Lamb's ability to deliver turnkey manufacturing systems. The company handles the tooling projects from the design and production phases through to installation and the training of operation and maintenance personnel.

### 6.2.2 Products

Lamb's primary products are transfer lines and other dedicated machining systems, machining centers, standard machine tools and automation equipment for transfer lines and other machining equipment. A large percentage of the company's products are custom designed for individual manufacturers.

The company's "state-of-the-art" product is a high-volume, turnkey machining line that is able to take a raw casting of a component, such as a cylinder head or cylinder block, and turn out a completely machined component at the end of the line. The system typically includes a transfer line; automation components; cleaning, washing and filtration equipment; gaging mechanisms; and computers and industrial robots as required.

### 6.2.3 Recent Orders

The Lamb Company has recently been awarded six contracts by automobile manufacturers for transfer and machining lines. Five of the orders have come from divisions of General Motors and one from Chrysler.

- The Detroit Diesel Allison division of General Motors ordered 11 transfer machines for its new Romulus, Michigan, plant to machine cylinder heads for a new line of 8.2 liter diesel engines.

- The Chevrolet Motor division of General Motors has contracted an automatic transfer-type machining system for cylinder blocks and heads to be used in the production of 1.8-liter, four-cylinder gasoline engines. The division expects to take delivery of the line in the summer or early fall of 1981.

- General Motors awarded Lamb a contract for a machining line to produce V-6 engines at a plant being built near Saltillo, Mexico. The Lamb line will produce the heads for the engines, which will be virtually identical to the 2.8-liter gasoline engines introduced for GM's new front-drive X-body cars.

- General Motors of Canada recently ordered a metal-cutting transfer line from Lamb's Windsor, Ontario, factory to produce the aluminum cases for front-wheel-drive transmissions. The transmissions are expected to enter production in 1982 at GM's expanded Windsor plant.

- The Chevrolet Motor Division of GM awarded a contract to Lamb early in 1980 for equipment to be used in a machining system for steering knuckles. The order, according to trade publications, is part of a $40-to-$50-million, major retooling effort at GM that will completely transform the design of its biggest models.

- Lamb provided Chrysler with the machining equipment for one-piece, die-cast aluminum transaxle cases that are scheduled to be used on the company's new line of compact-size Plymouth Reliant and Dodge Aries cars.

## 6.3 PRODUCTION AND OPERATIONS

Lamb has five facilities that manufacture transfer lines and other products used by the auto industry. They are located in Warren, Michigan; Windsor, Ontario; Indianapolis, Indiana; and Hamilton, Ohio. Details on the plants are given in Figures 6-3 to 6-7.

Lamb reports it has been expanding and updating its major operations for some time and will continue to do so as long as the market remains strong. However, no new plants are planned in the near future.

Company F. Jos. Lamb Co. County _____ Plant Size N/A

Plant Warren Congressional District _____

Address 5663 E. Nine Mile Rd.
Warren, MI 48091 Standard Metropolitan Statistical Area _____ No. of Employees 450

Telephone 313/536-3535 Primary SIC Code(s) _____



| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Transfer lines | N.C.A. | N.C.A. | N.C.A. |

FIGURE 6-3. WARREN PLANT DATA

**Company** F. Jos. Lamb Co. **County** _____ **Plant Size** N/A

**Plant** Windsor **Congressional District** _____

**Address** 225 Eugenie St. East
Windsor, Ont
Canada N9A641 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 150

**Telephone** 313/961-2607 **Primary SIC Code(s)** _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Transfer lines | N.C.A. | N.C.A. | General Motors |

FIGURE 6-4. WINDSOR PLANT DATA

Company F. Jos. Lamb Co. County _____ Plant Size N/A

Plant Indianapolis Congressional District _____

Address 1150 N. Shadeland Ave. Indianapolis, IN 48219 Standard Metropolitan Statistical Area _____ No. of Employees 85

Telephone 317/352-9231 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Components for transfer lines, and parts handling equipment | N.C.A. | N.C.A. | N.C.A. |

FIGURE 6-5. INDIANAPOLIS PLANT DATA

**Company** F. Jos. Lamb Co. (Fab-Tec/Ransohoff Div.) **County** _____ **Plant Size** Not Available

**Plant** Warren **Congressional District** _____

**Address** 8129 E. 9 Mile Rd. Warren, MI 48091 **Standard Metropolitan Statistical Area** _____ **No. of Employees** 95

**Telephone** 313/536-1070 **Primary SIC Code(s)** _____



| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Materials<br>Hauling equipment<br>Complete machining services | N.C.A. | N.C.A. | N.C.A. |

FIGURE 6-6. WARREN (FAB-TEK) PLANT DATA

Company F. Jos. Lamb Co. (Fab-Tec/Ransohoff Div.)

County

Plant Size N/A

Plant Hamilton

Congressional District

Address North Fifth St. Hamilton, OH 45011

Standard Metropolitan Statistical Area

No. of Employees 120

Telephone 513/863-5813

Primary SIC Code(s)

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Parts handling equipment | N.C.A. | N.C.A. | N.C.A. |

FIGURE 6-7. HAMILTON PLANT DATA

# 7. MOTCH & MERRYWEATHER

Motch & Merryweather is a machine tool builder and the largest distributor of machine tools in the U.S. In early 1979, after operating for 75 years under the control of the Motch family, the company was purchased by Oerlikon-Buhrle Holding AG of Switzerland. The firm manufactures chucking and griding machines, transfer lines and abrasives for grinding. It also distributes a broad range of machine tools produced by other manufacturers. The auto industry is one of the company's largest markets.

## 7.1 CORPORATE SIZE AND STRUCTURE

Among U.S. machine tool manufacturers, Motch & Merryweather ranks seventh in revenues and ninth in income. Approximately half of the firm's sales are derived from distribution of other companies' products. Foreign customers accounted for 13 percent of total sales in 1978.

### 7.1.1 Revenue, Profit and Employment Statistics

In 1978, the company had sales of $116 million, a 26 percent increase over the $92 million in sales in 1977. Profits rose 33 percent, from $3.2 million in 1977 to $4.2 million in 1978. The firm employs 1500 people, 200 of them overseas. (See Table 7-1.)

TABLE 7-1. MOTCH & MERRYWEATHER
REVENUE, PROFIT AND EMPLOYMENT STATISTICS

| Revenues (millions) | | Profits (millions) |
|---|---|---|
| 1978 | $116 | $4.2 |
| 1977 | 92 | 3.2 |
| Total Number of Employees: 1,500 | | |

### 7.1.2 Corporate Organization

Motch & Merryweather is made up of four manufacturing divisions, one manufacturing subsidiary and a distribution division. (See Figure 7-1.) They are described below.

- Motch Manufacturing Division, based in Euclid, Ohio, makes conventional and numerically controlled vertical chucking machines, milling machines, transfer lines and special purpose machines.

- Cone-Blanchard Machine Company, a wholly-owned subsidiary, produces chucking and grinding machines at a plant in Windsor, Vermont. The company has a second plant in Aldridge, England.

- Blanchard Abrasives Division, Cambridge, Massachusetts, manufactures cylindrical wheels and abrasive segments used on Blanchard grinders.

- Motch Cutting Products Division, Euclid, Ohio, produces high-speed steel and carbide-tipped circular saw blades.

- Jetstream Systems Company, Hayward, California, builds systems for transporting and processing materials using jets of air or fluid.

- Distributor Division, sells and services machine tools manufactured by Motch and by other companies. It maintains seven district sales offices, staffed by over 100 sales personnel.

## 7.2 MAJOR MARKETS AND PRODUCTS

Figure 7-2 presents the major market information for Motch & Merryweather.

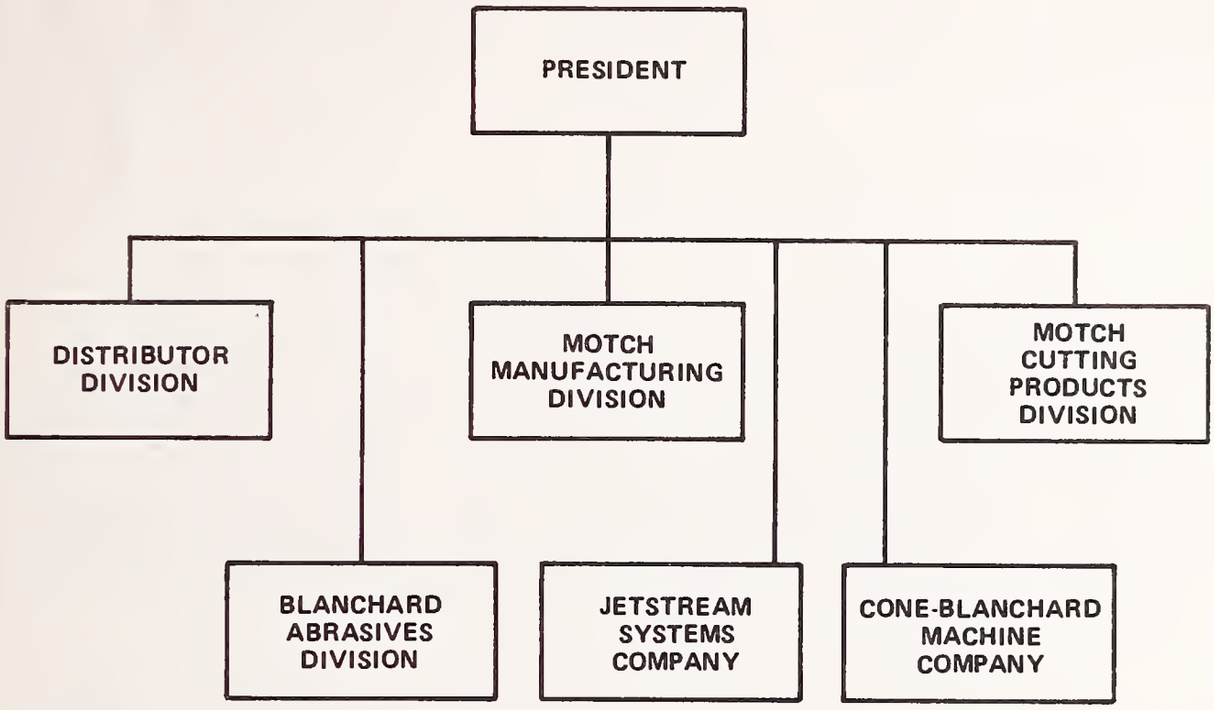



FIGURE 7-1. MOTCH & MERRYWEATHER
CORPORATE ORGANIZATION

MARKET DATA

Major Markets: Automotive, aerospace, agricultural machinery, metalworking and power industries.

Percent of Sales to the Automotive Industry: 30

Automotive Customers: General Motors and others

Major Automotive Products: Chucking, grinding and milling machines; transfer lines.

FIGURE 7-2. MARKET DATA FOR
MOTCH & MERRYWEATHER

### 7.2.1 Major Markets

Motch & Merryweather's major markets are the automotive, aerospace, agricultural machinery, metalworking and power industries. The automobile manufacturers account for approximately 30 percent of the company's total sales. Sales to General Motors are about half of all sales to the auto industry.

### 7.2.2 Products

Each manufacturing division of the company produces and markets a separate product line. The Motch Manufacturing Division makes two families of chucking machines: vertical automatic chuckers, operated by either conventional or programmable controls, and vertical numerically controlled chuckers. The machines are frequently combined in multiple unit automatic transfer lines to produce complete parts for the automotive, farm machinery and other medium or high-volume industries. The division also builds special manufacturing systems that are custom designed and incorporate Motch machine tools along with those of other companies. The systems are used by the auto industry and other manufacturers to machine and assemble components and subassemblies.

The Cone-Blanchard Machine Company has three main product lines: Blanchard Vertical Rotary Surface Grinders, Conomatic Multiple Spindle Bar and Chucking Automatics, and Springfield Vertical Precision Grinders. Blanchard grinders are used for high-volume components such as connecting rods and cups, pump bodies, small transmission housings and intake valves. The Cone-Blanchard plant in England manufactures the smaller models of the Blanchard and Conomatic lines. Abrasive products and grinding accessories for use on Blanchard machines are manufactured by the Blanchard Abrasives Division.

The Motch Cutting Products Division makes circular high-speed steel and carbide sawblades used in cutting metals, plastics and other materials. Jetstream Systems Company custom designs conveying and processing equipment that uses high-velocity, low-pressure air or fluid to lift and propel products or scrap material.

### 7.2.3 New Products

Motch & Merryweather is planning to begin distribution of machine tools manufactured by its new parent company, Derlikon-Buhrle Holding. Motch chairman, Dan Mortensen, has recently announced that the firm would soon be quoting prices on:

- Bevel gear cutting equipment made by Oerlikon Zurich

- Deep-hole boring equipment made by Oerlikon's Boehringer unit in Germany

- Crankshaft milling machines.

The company will attempt to interest the auto industry in particular in Oerlikon's line of deep-boring equipment, It also hopes that the Swiss bevel gear cutting machines will allow it to challenge Gleason Works of Rochester, New York, for a share of that market.

## 7.3 CORPORATE STRATEGY

Motch & Merryweather is still in the process of adjusting to its acquisition by Oerlikon in early 1979 as the two companies discuss several new manufacturing and marketing opportunities created by purchase. Among the possibilities are joint machine tool development and production. Oerlikon already manufactures several lines of machine tools, including production mills, jig borers, gear cutters and turning machines. Motch plans to distribute those Oerlikon products that will fill gaps in current Motch product lines.

Motch chairman Dan Mortensen has also raised the possibility of building some Oerlikon machines in the U.S. and of combining the technologies developed by two manufacturers. "We like to think of ourselves as the best when it comes to the latest in numerical control," he explained, "but some of the things Oerlikon has done in other areas are excellent and could be advantageously combined with our technology."

The exchange of products between Motch and Oerlikon has raised some problems with firms for whom Motch acts as a distributor. Giddings & Lewis, the single largest customer of the Motch Distributor Division, has announced that it will drop Motch as its representative and begin distributing its machine tools directly. Giddings & Lewis cited potential conflicts with Oerlikon products that Motch may import to the U.S.

In 1979, prior to the acquisition, Motch announced a restructuring of its upper management. Company chairman Mortensen relinquished the additional title of president, which was given to Glenn D. Babbitt, formerly vice-president and general manager of the company's Cone-Blanchard Machine Co. subsidiary. It was also announced that vice-chairman Clare R. Kubik would be stepping down and would be succeeded by Edwin R. Motch, vice-president and general manager of the machine tool distributing arm of the company.

## 7.4 PRODUCTION AND OPERATIONS

Each of Motch & Merryweather's three U.S. plants sells some of its products to the auto industry. The facilities are located in Euclid, Ohio; Windsor, Vermont; and Cambridge, Massachusetts. Details on the plants are provided in Figures 7-3, 7-4, and 7-5.

The company has not announced any current plans for new plant construction but has recently expanded the facilities of the Motch Division in Euclid, Ohio, to increase machine tool production capacity. A high bay assembly area of 23,000 square feet was added to the existing 150,000-square-foot facility. The additional space will allow the division to substantially increase its output of numerically and conventionally controlled chucking machines and other special machine systems.

## 7.5 FINANCIAL STATUS

In early 1979, Oerlikon-Buhrle Holding acquired Motch & Merryweather when it paid $40 in cash for each outstanding share of Motch common stock for a total purchase price of $54.6 million. Since the acquisition, Motch & Merryweather has not been reporting its financial statistics separately. The firm's officers predicted that 1979 would be a year of continued record sales and earnings, and the results of the first quarter suggest that their prediction was probably accurate. The company's performance through March, 1979, is discussed below. (See Figures 7-6 and 7-7.)

### 7.5.1 Operating Analysis

The company's 1978 revenues reached $116 million, up 26 percent from 1977 sales of $92 million. Profits rose 33 percent, from $3.2 million in 1977 to $4.2 million in 1978. During the first three months of 1979, sales climbed 50 percent, year to year, and profits jumped to $1.5 million, compared to $.35 million in the first quarter of 1977. In March, 1979, the company's order backlog stood at $112 million, up $12 million from 1978 year end.

In the four years before 1978, revenues were fairly stagnant, actually declining in 1976. Margins improved steadily, however, and earnings rose consistently. Return on equity climbed as well, more than doubling between 1974 and 1978 when it reached 18.7 percent. The ratio of sales to assets has not changed significantly over the last five years, and the operating ratio remained between 8 and 9 percent from '76 to '78. The ratio of earnings to total assets, reflecting the improved margins, increased in each of the five years between 1974 and 1978 when it reached 7.6 percent.

Company: Motch & Merryweather | County: | Plant Size: 95,000 ft.$^2$

Plant: Euclid | Congressional District:

Address: 1250 E. 222nd St. Euclid, OH 44117 | Standard Metropolitan Statistical Area: | No. of Employees: 450

Telephone: 216/486-3600 | Primary SIC Code(s):

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Numerically controlled vertical chuckers | N.C.A. | N.C.A. | N.C.A. |

FIGURE 7-3. EUCLID PLANT DATA

Company Motch & Merryweather (Cone-Blanchard Co. Div.) County _____ Plant Size 180,000 ft.$^2$

Plant Windsor Congressional District _____

Address Windsor, VT 05089 Standard Metropolitan Statistical Area _____ No. of Employees 850

Telephone 802/674-2161 Primary SIC Code(s) _____

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Rotary surface grinders | N.C.A. | N.C.A. | N.C.A. |

FIGURE 7-4. WINDSOR PLANT DATA

Company: Motch & Merryweather (Blanchard Abrasives Div.)

County:

Plant Size: 25,000 ft.$^2$

Plant: Cambridge

Congressional District:

Address: 77 Fawcett St. Cambridge, MA 02138

Standard Metropolitan Statistical Area:

No. of Employees: 40

Telephone: 617/868-8210

Primary SIC Code(s):

| Products (Automotive) | Capacity | Processes Used | Consumed by (Automotive) |
|---|---|---|---|
| Abrasives for grinding | N.C.A. | N.C.A. | N.C.A. |

FIGURE 7-5. CAMBRIDGE PLANT DATA

| Year | Sales ($Millions) | Earnings ($Millions) | Return on Equity, Percent | Operating Income* / Sales, Percent |
|---|---|---|---|---|
| 78 | 116 | 4.2 | 18.7 | 8.8 |
| 77 | 92 | 3.2 | 16.5 | 9.0 |
| 76 | 77 | 2.2 | 12.9 | 8.2 |
| 75 | 92 | 1.6 | 10.7 | 5.4 |
| 74 | 91 | 1.0 | 7.6 | 5.5 |

| Year | Earnings / Total Assets, Percent | Sales / Assets | Earnings / Sales, Percent |
|---|---|---|---|
| 78 | 7.6 | 2.1 | 3.6 |
| 77 | 6.9 | 2.0 | 3.5 |
| 76 | 5.1 | 1.8 | 2.9 |
| 75 | 3.4 | 2.0 | 1.7 |
| 74 | 2.2 | 2.0 | 1.1 |

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

FIGURE 7-6. MOTCH & MERRYWEATHER 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 |
|---|---|---|---|---|---|---|
| 78 | 116 | 3.8 | 4.2 | 1.8 | 5.8 | 0.1 |
| 77 | 92 | 3.4 | 3.2 | 1.6 | (0.3) | 0 |
| 76 | 77 | 2.7 | 2.2 | 1.6 | (1.7) | 0 |
| 75 | 92 | 2.0 | 1.6 | 1.5 | (3.0) | 0.3 |
| 74 | 91 | 4.7 | 1.0 | 1.6 | 1.1 | 0.3 |

| Year | Change in Working Capital | Uses: Capital Expenditures | Uses: Dividends | Long-Term Debt[2] / Capitalization % | Coverage[3] | Cap. Exp. / Total Assets % | Current Ratio |
|---|---|---|---|---|---|---|---|
| 78 | 7.5 | 4.4 | .58 | 39.7 | 8.4 | 7.9 | 2.6 |
| 77 | 2.5 | 2.2 | .26 | 34.0 | 9.4 | 4.8 | 2.6 |
| 76 | 1.2 | 1.2 | .13 | 38.3 | 6.9 | 2.8 | 2.6 |
| 75 | (0.4) | 1.5 | .09 | 45.1 | 3.1 | 3.2 | 2.6 |
| 74 | 2.6 | 1.1 | .05 | 52.5 | 2.3 | 2.4 | 2.0 |

Dollar figures are in millions

[1]Average for the Year

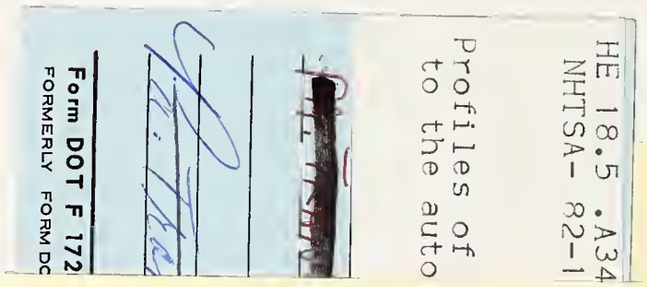
[2]Capitalization Defined as Total Liabilities – Current Liabilities

[3]Operating Profit/Interest

FIGURE 7-7. MOTCH & MERRYWEATHER CAPITAL ANALYSIS

## 7.5.2 Capital Analysis

The ratio of the company's long-term debt to capitalization declined from 52.5 percent in 1974 to 34 percent in 1977, rising again to 39.7 percent in 1978 when long-term debt increased by $5.8 million. Owners' equity other than retained earnings changed very little between '74 and '77. From 1975 to 1978, the current ratio was unchanged at 2.6. Working capital increased from 1976 on, and the company has expressed confidence in its ability to finance capital expenditures with a minimum of outside financing. If 1979 ended as it began, generating record levels of operating income, the firm's confidence would appear to have been justified.

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