SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K
FOR ANNUAL AND TRANSITION REPORTS
TO SECTIONS 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

(Mark One)

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2002

OR

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

FOR THE TRANSITION PERIOD FROM TO

COMMISSION FILE NUMBER 0-23621

MKS INSTRUMENTS, INC.
(Exact Name of Registrant as Specified in Its Charter)

MASSACHUSETTS (State or other Jurisdiction of Incorporation or Organization)	04-2277512 (I.R.S. Employer Identification No.)
SIX SHATTUCK ROAD, ANDOVER, MASSACHUSETTS (Address of Principal Executive Offices)	01810 (Zip Code)

REGISTRANT'S TELEPHONE NUMBER, INCLUDING AREA CODE:
(978) 975-2350
SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:
NONE.
SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT:
COMMON STOCK, NO PAR VALUE

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes [X] No [ ]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statement incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [ ]

Indicate by check mark whether the registrant is an accelerated filer (as defined in the Exchange Act Rule 12b-2). Yes [X] No [ ]

Aggregate market value of the voting and non-voting common equity held by nonaffiliates of the registrant as of June 28, 2002 based on the closing price of the registrant's Common Stock on such date as reported by the NASDAQ National Market: $488,736,351; Number of shares outstanding of the issuer's Common Stock, no par value, as of March 17, 2003: 51,359,857.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement for MKS' Annual Meeting of Stockholders to be held on May 14, 2003 are incorporated by reference into Part III of this Form 10-K.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

MKS believes that this Annual Report on Form 10-K contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. When used herein, the words "believes," "anticipates," "plans," "expects," "estimates" and similar expressions are intended to identify forward-looking statements. These forward-looking statements reflect management's current opinions and are subject to certain risks and uncertainties that could cause actual results to differ materially from those stated or implied. MKS assumes no obligation to update this information. Risks and uncertainties include, but are not limited to, those discussed in the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations - Factors that May Affect Future Results."

PART I

ITEM 1. BUSINESS

MKS Instruments, Inc. (the "Company" or "MKS"), was founded in 1961 and became a publicly held company in 1999. Today MKS is a leading worldwide provider of instruments, components and subsystems that measure, control, power and monitor critical parameters of semiconductor and other advanced manufacturing process environments.

MKS' objective is to enable its customers to improve their manufacturing process productivity and yields. The Company's strategy is to develop and provide sensor and data management instruments, components and subsystems that control critical parameters of the process environment in which advanced materials are manufactured. MKS is undertaking this strategy by further developing its core technologies, acquiring complementary technologies, embedding process expertise into its products, and integrating its products into process management subsystems that "surround the process chamber."

MKS is organized into three product groups: Instruments and Control Systems; Power and Reactive Gas Products; and Vacuum Products. The Company's products are derived from MKS' core competencies in pressure measurement and control; materials delivery; gas and thin-film composition analysis; control and information management; power and reactive gas generation; and vacuum technology.

MKS' products are used in diverse markets and applications including the manufacture of, among other things:

- semiconductor devices for diverse consumer electronics applications;
- flat panel displays for hand-held devices, laptop computers, desktop computer monitors and television sets;
- magnetic and optical storage media;
- optical filters and fiber optic cables for data and telecommunications;
- optical coatings for eyeglasses, architectural glass and solar panels;
- magnetic resonance imaging (MRI) medical equipment;
- gas lasers;
- cutting tools; and
- freeze-dried pharmaceuticals.

MKS' internet address is www.mksinst.com. MKS is not including the information contained in its website as part of, or incorporating it by reference into, this annual report on Form 10-K. MKS makes available free of charge through its web site its annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to these reports filed or furnished pursuant to Section 12(a) or 15(d) of the Securities Exchange Act of 1934, as amended as soon as reasonably practicable after MKS electronically files such materials with the Securities and Exchange Commission.

MARKETS AND APPLICATIONS

The Company is focused on three market sectors: semiconductor manufacturing; thin-film manufacturing applications; and other non-semiconductor manufacturing applications. MKS estimates that approximately 70%, 64% and 76% of its total sales in 2002, 2001 and 2000, respectively, were made to the semiconductor industry, including sales to semiconductor equipment manufacturers and semiconductor device manufacturers. Approximately 8%, 11% and 11% of its total sales in 2002, 2001 and 2000, respectively, were for thin-film processing equipment applications, including compact disks, digital video disks (DVDs) and other digital storage media; flat panel displays for computer and television screens; and thin-film coatings for architectural glass and optics. Approximately 22%, 25% and 13% of its total sales in 2002, 2001 and 2000, respectively, were for other non-semiconductor manufacturing applications. These include, but are not limited to, industrial manufacturing, magnetic resonance imaging (MRI) medical equipment, biopharmaceutical manufacturing, and university, government and industrial research laboratories.

MKS estimates that approximately 64%, 69% and 77% of its net sales in 2002, 2001 and 2000 were sold to customers located in the United States. A significant portion of MKS' sales are to customers in international markets. International sales include sales by MKS' foreign subsidiaries, but exclude direct export sales, which were less than 10% of MKS' total net sales for each of the years ended December 31, 2002, 2001 and 2000. International sales accounted for approximately 36% of net sales in 2002, 31% of net sales in 2001 and 23% of net sales in 2000.

SEMICONDUCTOR MANUFACTURING APPLICATIONS

MKS' products are sold to semiconductor capital equipment manufacturers and semiconductor device manufacturers. MKS' products are used in the major semiconductor processing steps such as:

- depositing materials onto substrates

- etching and cleaning circuit patterns

- implanting positively charged atoms into a substrate to alter electrical characteristics

MKS' products are also used for process facility applications such as gas distribution, pressure control and vacuum distribution in clean rooms where semiconductor manufacturing takes place. In addition, MKS provides specialized instruments that monitor the performance of manufacturing equipment and products that distribute and manage process control information. MKS anticipates that the semiconductor manufacturing market will continue to account for a substantial portion of its sales. While the semiconductor device manufacturing market is global, major semiconductor capital equipment manufacturers are concentrated in the United States, Japan and Europe.

THIN-FILM MANUFACTURING APPLICATIONS

Flat Panel Display Manufacturing

MKS' products are used in the manufacture of flat panel displays, which require the same or similar fabrication processes as semiconductor manufacturing. Flat panel displays are used in electronic hand-held devices, laptop computers, desktop computer monitors, and television sets. Computer monitors and television sets with flat panel display technology are designed to replace bulkier cathode ray tube (CRT) technology in computer monitors and television sets. MKS sells products to flat panel equipment manufacturers and to end-users in the flat panel display market. The transition to larger panel size and higher definition is driving the need for tighter process controls to reduce defects. The major manufacturers for flat panel displays and flat panel display equipment are concentrated in Japan, Korea, Taiwan and the United States.

Magnetic and Optical Storage Media

MKS' products are used to manufacture:

- magnetic storage media which store and read data magnetically;

- optical storage media which store and read data using laser technology;

- compact disks;

- hard disks;

- data storage devices; and

- digital video or versatile disks (DVDs).

The transition to higher density storage capacity requires manufacturing processes incorporating tighter process controls. While storage media manufacturing is global, the major manufacturers are concentrated in Japan and the Asia Pacific region, and storage media capital equipment manufacturers are concentrated in the United States, Japan and Europe.

Optical Filters, Optical Fibers and Other Coating

MKS' products are used in optical filter, optical fiber and other optical thin-film coating processes. MKS' products are sold both to coating equipment manufacturers and to manufacturers of products made using optical thin-film coating processes. Optical filters and fibers used for data transmission are manufactured using processes to deposit chemical vapors which are similar to those used in semiconductor manufacturing. The requirement for higher data transmission rates is driving the need for tighter control of optical filters and fiber coating processes. Optical thin films for eyeglasses, solar panels and architectural glass are deposited using processes to deposit chemical vapors and gaseous metals similar to those used in semiconductor manufacturing. Optical filter, optical fiber and other optical thin-film processing are concentrated in the United States, Japan and Europe.

Other Coating Markets

MKS' products are also used in processes for the application of thin films to harden tool bit surfaces, for the application of diamond thin films to enhance surface hardness and durability and for coatings used for food container packaging, jewelry and ornaments. The major equipment and process providers are concentrated in the United States, Japan and Europe.

OTHER NON-SEMICONDUCTOR MANUFACTURING APPLICATIONS

MKS' products are used in plasma processes used to sterilize medical instruments, in vacuum freeze drying of pharmaceuticals, foods and beverages, and in vacuum processes involved in light bulb and gas laser manufacturing. MKS' products are also incorporated into some other end-market products such as MRI medical equipment, industrial vehicles, and analytical instruments. MKS' products are also sold to government, university and industrial laboratories for vacuum applications involving research and development in materials science, physical chemistry and electronics materials. The major equipment and process providers and research laboratories are concentrated in the United States, Japan and Europe.

ACQUISITIONS

The semiconductor industry is undergoing significant consolidation to support its customers' requirements for fewer, broader based suppliers and to provide higher value products.

MKS completed four acquisitions in 2000, which were all accounted for under the purchase method of accounting. On March 10, 2000, MKS acquired Compact Instrument Technology, LLC ("Compact Instruments"), a company with proprietary technology in process monitoring for semiconductor manufacturing and other manufacturing processes. On May 5, 2000, MKS acquired Telvac Engineering, Ltd. ("Telvac"), a UK-based, privately held manufacturer of vacuum subsystems. On July 21, 2000, MKS acquired Spectra International, LLC ("Spectra"), a privately held company with products and technology in process monitoring. On September 6, 2000, MKS acquired D.I.P., Inc. ("D.I.P."), a privately held company with products and technology in digital process control.

MKS completed two acquisitions in 2001. On January 26, 2001, MKS acquired Applied Science and Technology, Inc. ("ASTeX"), a Wilmington, Massachusetts based company with products and technology in reactive gas generation and power delivery. The ASTeX acquisition was accounted for under the pooling of interests method of accounting. On April 27, 2001, MKS acquired On-Line Technologies, Inc. ("On-Line"), a privately held company that designs and manufactures products used for gas analysis, wafer metrology and complementary analysis and control software. The On-Line acquisition was accounted for under the purchase method.

MKS also completed four acquisitions in 2002, which were all accounted for under the purchase method of accounting. On January 31, 2002, MKS acquired the ENI division ("ENI"), of Emerson Electric Co. ("Emerson"). ENI is a leading supplier of solid-state radio frequency (RF) and direct current (DC) plasma power supplies, matching networks and instrumentation to the semiconductor and thin-film processing industries. ENI's critical solid-state power conversion technology complements ASTeX's core capability in plasma management. MKS also acquired three companies that expanded its position in distributed computer-based process control and data management. On March 13, 2002, MKS acquired Tenta Technology, Ltd. ("Tenta"), a privately held company that designs and supplies modular, computer-based process control systems for 300mm semiconductor process tool applications. On April 5, 2002, MKS acquired IPC Fab Automation GmbH ("IPC"), a privately held developer and provider of web-based hardware and software that enables e-diagnostics and advanced process control for advanced manufacturing applications. On October 1, 2002, MKS acquired EquipNet, Ltd. ("EquipNet"), a privately held company that develops web-based connectivity equipment for the semiconductor industry.

PRODUCTS

During 2002, the Company consolidated its product groups to accelerate product development, rationalize manufacturing operations, and reduce operating costs. This realignment of operations has organized the Company into three product groups: Instruments and Control Systems; Power and Reactive Gas Products; and Vacuum Products.

1. INSTRUMENTS AND CONTROL SYSTEMS

PRESSURE MEASUREMENT AND CONTROL PRODUCTS. Each of MKS' Pressure Measurement and Control product lines consists of products that are designed for a variety of pressure ranges and accuracies.

Baratron Pressure Measurement Products. MKS' Baratron products are high-precision pressure measurement instruments. MKS has five Baratron product families that range from high accuracy digital output instruments to simple electronic switches. These products are typically used to measure the pressure of the gases being distributed upstream of the process chambers, to measure process chamber pressures and to measure pressures between process chambers, vacuum pumps and exhaust lines. Baratron instruments measure pressures at ranges from two hundred times atmospheric pressure to one billionth of atmospheric pressure. MKS believes it offers the widest range of gas pressure measurement instruments in the semiconductor and advanced thin-film materials processing industries.

Automatic Pressure and Vacuum Control Products. Automatic pressure control products consist of analog and digital automatic pressure and vacuum control electronic instruments and valves. These products enable precise control of process pressure by electronically actuating valves that control the flow of gases in and out of the process chamber to minimize the difference between desired and actual pressure in the chamber. The electronic controllers vary from simple analog units with precise manual tuning capability to state-of-the-art self-tuning, digital signal processing controllers. The valve products vary from small gas inlet valves to large exhaust valves.

In most cases, Baratron pressure measurement instruments provide the pressure input to the automatic pressure control device. Together, these components create an integrated automatic pressure control subsystem. MKS' pressure control products can also accept inputs from other measurement instruments, enabling the automatic control of gas input or exhaust based on parameters other than pressure.

MATERIALS DELIVERY PRODUCTS. Each of MKS' Materials Delivery product lines consists of products that are designed for a variety of flow ranges and accuracies.

Flow Measurement and Control Products. Flow measurement products include gas, vapor and liquid flow measurement products based upon thermal conductivity, pressure and direct liquid injection technologies. The flow control products combine the flow measurement device with valve control elements based upon solenoid, piezo-electric and piston pump technologies. The products measure and automatically control the mass flow rate of gases and vapors into the process chamber. MKS' line of thermal-based mass flow controllers, which control gas flow based on the molecular weight of gases, includes all-metal-sealed designs and ultra-clean designs for semiconductor applications, as well as general-purpose controllers for applications where all-metal-sealed construction is not required. MKS has also developed pressure-based mass flow controllers, based on Baratron pressure instrument measurement and control technology, which restrict flow in the gas line to transform pressure control into mass flow control.

MKS' flow measurement products also include a calibration system which independently measures mass flow and compares this measurement to that of the process chamber mass flow controller. The demand for the MKS calibration system is driven by the increasingly stringent process control needs of the semiconductor industry and the need to reduce costly downtime resulting from stopping operations to address mass flow controller problems.

GAS AND THIN-FILM COMPOSITION ANALYSIS PRODUCTS. The technologies used in these products include mass spectrometry and infrared spectroscopy. Gas and thin-film composition analysis instruments are sold to a variety of industries including the semiconductor industry.

Mass Spectrometry-based Gas Composition Analysis Instruments. These products are based on quadrapole mass spectrometer sensors that separate gases based on molecular weight. These sensors include built-in electronics and are provided with software that analyzes the composition of background and process gases in the process chamber. These instruments are provided both as portable laboratory systems and as process gas monitoring systems used in the diagnosis of semiconductor manufacturing process systems.

Fourier Transform Infra-Red (FTIR) Based Gas and Thin-Film Composition Analysis Products. FTIR-based products provide information about the composition of gases and thin-films by measuring the absorption of infra-red light as it passes through the sample being measured. Gas analysis applications include measuring the compositions of mixtures of reactant gases; measuring the purity of individual process gases; measuring the composition of process exhaust gas streams to determine process health; monitoring gases to ensure environmental health and safety; and monitoring combustion exhausts. These instruments are provided as portable laboratory systems and as process gas monitoring systems used in the diagnosis of manufacturing processes.

Mass spectrometry-based and FTIR-based gas monitoring systems can indicate out-of-bounds conditions -- such as the presence of undesirable contaminant gases and water vapor or out-of-tolerance amounts of specific gases in the process -- which alert operators to diagnose and repair faulty equipment.

Leak Detection Products. MKS manufactures a range of mass spectrometer-based helium leak detection products. Helium leak detection is used in a variety of industries including semiconductor, HVAC, automotive and aerospace to ensure the leak integrity of both manufactured products and manufacturing equipment. MKS believes that its product is the smallest mass spectrometer-based leak detector currently available.

Optical Monitoring Instruments. MKS manufactures a range of optical monitoring instruments that are sold primarily for thin-film coating applications such as the manufacture of optical filters. The optical monitors measure the thickness and optical properties of a film being deposited, allowing the user to better control the process.

CONTROL AND INFORMATION MANAGEMENT PRODUCTS. MKS designs and manufactures a suite of products that allow customers to better control their processes through computer-controlled automation. The products include digital control network products, process chamber and system controllers and connectivity products. Digital control network products are used to connect sensors, actuators and subsystems to the chamber and system control computers. They support a variety of industry-standard connection methods including DeviceNet, Profibus, ethernet and conventional discrete digital and analog signals. Chamber and system control computers process these signals in real time and allow the customer to precisely manage the process conditions. Connectivity products allow information to flow from the process sensors and subsystems and from the process tool control computer to the factory network. By enabling this information flow, customers can better optimize their processes through new techniques known as Advanced Process Control (APC), and diagnose problems with the equipment and process from a remote location (e-diagnostics).

2. POWER AND REACTIVE GAS PRODUCTS

In the Power and Reactive Gas Products group, MKS designs and manufactures a wide variety of power supplies and reactive gas generation modules used in semiconductor device manufacturing and medical equipment markets.

Power Delivery Products. MKS' power delivery products are used in the semiconductor, flat panel display, data storage and medical markets. In the semiconductor, flat panel and data storage markets, MKS' microwave, RF and DC power supplies are used to provide energy to various etching, stripping and deposition processes. In the medical market, MKS' power delivery products are used to provide power for MRI equipment. MKS' power delivery products cover frequencies ranging from DC to 2.45GHZ (gigahertz) at power levels from tens of watts to over 100 kilowatts. A range of impedance matching units transfer power from the power supplies to the customer's process. They are automated with modern digital control electronics that ensure optimum power transfer and rapid response to changing process conditions. MKS' MRI power amplifiers are used in the most advanced MRI systems including the 3T (three Tesla) machines. These machines provide higher resolution images to medical professionals, allowing better diagnosis and treatment. MKS' high power and high frequency technology is particularly well suited to these applications.

Reactive Gas Generation Products. Reactive gases are used in many of the process steps in chip fabrication. Reactive gases are used to etch, strip and deposit films on wafers, to clean wafers during processing, and to clean process chambers to reduce particle contamination. A reactive gas is created when energy is added to a stable gas to break apart its molecules. The resulting dissociated gas produces rapid chemical reactions when it comes into contact with other matter. Reactive gas processes have important advantages relative to other types of chemical processes. These advantages include: greater precision in etch, strip and deposition process steps; lower temperatures that protect materials involved in the process from heat damage; greater efficiency and shorter reaction times to improve manufacturing yields; and lower cost. Examples of MKS reactive gas products include ozone generators and subsystems used for deposition of insulators on to semiconductor devices, ozonated water delivery systems for advanced semiconductor wafer and flat panel display cleaning, atomic fluorine generators for process chamber cleaning, and microwave plasma based products for photo resist removal.

3. VACUUM PRODUCTS

In the Vacuum Products group, MKS designs and manufactures a wide variety of vacuum technology products, including vacuum gauges, valves and components.

Vacuum Gauging Products. MKS offers a wide range of vacuum instruments consisting of vacuum measurement sensors and associated power supply and readout units. These vacuum gauges measure phenomena that are related to the level of pressure in the process chamber and downstream of the process chamber between the chamber and the pump. These gauges are used to measure vacuum at pressures lower than those measurable with a Baratron instrument or to measure vacuum in the Baratron instrument range where less accuracy is required. MKS' indirect pressure gauges use thermal conductivity and ionization gauge technologies to measure pressure from atmospheric pressure to one trillionth of atmospheric pressure.

Vacuum Valves and Components. MKS' vacuum valves are used on the gas lines between the process chamber and the pump downstream of the process chamber. MKS' vacuum components consist of flanges, fittings, traps and heated lines that are used downstream from the process chamber to provide leak free connections and to prevent condensable materials from depositing particles near or back into the chamber. The manufacture of devices with small circuit patterns cannot tolerate contamination from atmospheric leaks or particles. MKS' vacuum components are designed to minimize such contamination and thus increase yields and uptimes.

APPLICATION-SPECIFIC INTEGRATED SUBSYSTEMS

MKS also combines products and technologies to provide application-specific integrated subsystems. Integrated subsystems are made by each product group, depending upon the application of the subsystem. MKS' integrated subsystems represented a high-teens percentage of 2002 revenues.

For example, MKS has a line of integrated flow and pressure control subsystems that combine two or more MKS products and technologies into products for specific process applications. MKS has developed a range of Back-Side Wafer Cooling Subsystems which are needed to control the flow and pressure of the helium used to effect the cooling of wafers in semiconductor manufacture. By combining the functions of MKS' Baratron pressure measurement instruments, flow measurement instruments, control electronics and valves into a range of compact instruments, this product line addresses the need for smaller components that save valuable clean room space.

CUSTOMERS

MKS is organized into three product groups. Each product groups' largest customers are leading semiconductor capital equipment manufacturers such as Applied Materials, Lam Research, Novellus and Tokyo Electron, and semiconductor device manufacturers such as IBM and Intel. Sales to MKS' top ten customers accounted for approximately 49%, 39% and 52% of net sales in 2002, 2001, and 2000, respectively. Applied Materials accounted for approximately 23%, 18% and 30% of MKS' net sales in 2002, 2001 and 2000, respectively. None of MKS' significant customers has entered into an agreement requiring it to purchase any minimum quantity of MKS products.

SALES, MARKETING AND SUPPORT

MKS' worldwide sales, marketing and support organization is critical to its strategy of maintaining close relationships with semiconductor capital equipment manufacturers and semiconductor device manufacturers. MKS sells its products primarily through its direct sales force. As of December 31, 2002, MKS had 180 sales employees in 47 offices in France, Germany, Japan, Korea, The Netherlands, Singapore, Taiwan, the United Kingdom and the United States. Sales representatives and agents in countries including Canada, China, India, Israel, and Italy and in select U.S. cities supplement this direct sales force. MKS maintains a marketing staff that identifies customer requirements, assists in product planning and specifications, and focuses on future trends in the semiconductor and other markets.

As semiconductor device manufacturers have become increasingly sensitive to the significant costs of system downtime, they have required that suppliers offer comprehensive local repair service and close customer support. Manufacturers require close support to enable them to repair, modify, upgrade and retrofit their equipment to improve yields and adapt new materials or processes. To meet these market requirements, MKS maintains a worldwide sales and support organization with offices in 47 locations. Technical support is provided by applications engineers located at offices in Arizona, California, Colorado, Massachusetts, Oregon and Texas, as well as Canada, France, Germany, India, Israel, Italy, Japan, Korea, The Netherlands, Singapore, Taiwan and the United Kingdom. Repair and calibration services are provided at 18 service depots located worldwide. MKS provides warranties from one to three years, depending upon the type of product.

RESEARCH AND DEVELOPMENT

MKS' research and development is focused on developing and improving MKS' process control instruments, components and subsystems for semiconductor and advanced thin-film processing applications and on identifying and developing products for new applications in which gas management plays a critical role. MKS has undertaken an initiative to involve its marketing, engineering, manufacturing and sales personnel in the concurrent development of new products in order to reduce the time to market for new products. MKS employees also work closely with customers' development personnel. These relationships help MKS identify and define future technical needs on which to focus research and development efforts. MKS participates in SEMI (Semiconductor Equipment and Materials International), a trade group representing semiconductor equipment suppliers, to assist in product development and standardization of product technology, and the Company supports research at academic institutions targeted at advances in materials science and semiconductor process development. MKS' research and development expense was $46 million, $38 million and $37 million in 2002, 2001 and 2000, respectively. The Company's research and development efforts include numerous projects that generally have a duration of 18 to 30 months. In addition, the Company acquired in-process technology of $8 million in 2002 and $2 million in 2001.

MANUFACTURING

MKS' manufacturing facilities are located in the United States, the United Kingdom, Germany, Israel, Japan and China. Manufacturing activities include the assembly and testing of components and subassemblies, which are integrated into products. MKS outsources some of its subassembly work. The Company purchases a wide range of electronic, mechanical and electrical components, some of which are designed to MKS' specifications. MKS considers its ability to flexibly respond to customers' significantly fluctuating product demands by using lean manufacturing techniques to be a distinct competitive advantage.

COMPETITION

The market for MKS' products is highly competitive. Principal competitive factors include:

- historical customer relationships

- product quality, performance and price

- breadth of product line

- manufacturing capabilities

- customer service and support

Although MKS believes that it competes favorably with respect to these factors, there can be no assurance that it will continue to do so.

MKS encounters substantial competition in most of its product lines, although no one competitor competes with MKS across all product lines. Certain of MKS' competitors may have greater financial and other resources than MKS. In some cases, competitors are smaller than MKS, but well established in specific product niches. Mykrolis offers products that compete with MKS' pressure and materials delivery products. Advanced Energy, Horiba/STEC, and Celerity/Unit Instruments, each offer materials delivery products that compete with MKS' product line of mass flow controllers. Nor-Cal Products, Inc. and MDC Vacuum Products, Inc., each offer products that compete with MKS' vacuum components. Inficon offers products that compete with MKS' vacuum measurement and gas analysis products. Helix Technology offers products that compete with MKS' vacuum gauging products. Advanced Energy offers products that compete with MKS' power delivery and reactive gas generator products and with certain data management and information products.

In some cases, particularly with respect to mass flow controllers, semiconductor device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier's product in their equipment. Accordingly, MKS' success depends in part on its ability to have semiconductor device manufacturers specify that its products be used at their fabrication facilities. MKS may encounter difficulties in changing established relationships of competitors with a large installed base of products at such customers' fabrication facilities. In addition, MKS' competitors can be expected to continue to improve the design and performance of their products. There can be no assurance that competitors will not develop products that offer price or performance features superior to those of MKS' products.

PATENTS AND OTHER INTELLECTUAL PROPERTY RIGHTS

MKS relies on a combination of patent, copyright, trademark and trade secret laws and license agreements to establish and protect its proprietary rights. As of December 31, 2002, MKS owned 170 U.S. patents and 128 foreign patents and had 89 pending U.S. patent applications. Foreign counterparts of certain of these applications have been filed or may be filed at the appropriate time. Although MKS believes that certain patents may be important for certain aspects of its business, MKS believes that its success also depends upon close customer contact, innovation, technological expertise, responsiveness and worldwide distribution.

MKS requires each of its employees, including its executive officers, to enter into standard agreements pursuant to which the employee agrees to keep confidential all of MKS' proprietary information and to assign to MKS all inventions while they are employed by MKS.

On November 30, 2000, Applied Science and Technology, Inc. ("ASTeX"), which was acquired by MKS in January 2001, brought suit in federal district court in Delaware against Advanced Energy Industries, Inc. ("Advanced Energy") for infringement of ASTeX's patent related to its Astron product. On May 17, 2002, a jury affirmed the validity of the Company's patent and found that Advanced Energy infringed the patent. On May 31, 2002, based on the jury's findings, the Court entered a judgement on the infringement claim in favor of the Company and against Advanced Energy, and awarded $4,200,000 in damages to compensate the Company for Advanced Energy's infringing activity. Advanced Energy filed motions to overturn the verdict. During August of 2002, the Company and Advanced Energy entered into an agreement whereby Advanced Energy agreed to pay the awarded damages amount to the Company and withdraw its motions to overturn the verdict. The Company received the $4,200,000 in September 2002, and recorded the amount as Income from litigation settlement.

On November 3, 1999, On-Line Technologies, Inc., which was acquired by MKS in April 2001, brought suit in federal district court in Connecticut against Perkin-Elmer, Inc. and certain other defendants for infringement of On-Line's patent related to its FTIR spectrometer product. The suit seeks injunctive relief and damages for infringement. Perkin-Elmer, Inc. has filed a counterclaim seeking invalidity of the patent, costs, and attorneys' fees. MKS believes that the counterclaim is without merit. MKS cannot be certain of the outcome of this litigation, but does plan to assert its claims and oppose the counterclaims against it vigorously.

MKS is subject to other legal proceedings and claims, which have arisen in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on MKS' results of operations, financial condition or cash flows.

EMPLOYEES

As of December 31, 2002, MKS employed 2,040 persons. Management believes that MKS' ongoing success depends upon its continued ability to attract and retain highly skilled employees for whom competition is intense. No MKS employees are represented by a labor union or are party to a collective bargaining agreement. MKS believes that its employee relations are good.

ITEM 2. PROPERTIES

As of December 31, 2002, the following table provides information concerning MKS' principal and certain other owned and leased facilities:

LOCATION SQ. FT.
ACTIVITY PRODUCTS
MANUFACTURED LEASE
EXPIRES - -------- ---
---- ----------------
----- ---------------
----- ---------------
Andover,
Massachusetts...
82,000 Headquarters,
Pressure Measurement
(1) Manufacturing, and
Control Products
Customer Support and
Research & Development
Austin,
Texas...........
14,000 Sales, Customer
Not applicable (7)
Support, Service and
Research & Development
Berlin,
Germany..........
18,250 Manufacturing,
Reactive Gas March 31,
2006 Customer Support,
Generation Products
Service and Research &
Development Boulder,
Colorado........
119,000 Manufacturing,
Vacuum Products (2)
Customer Support,
Service and Research &
Development Carmiel,
Israel.......... 7,000
Manufacturing Control
& Information June 30,
2003 Management
Products Cheshire,
U.K............ 13,000
Manufacturing, Sales,
Materials Delivery (3)
Customer Support and
Products Service
Colorado Springs,
40,600 Manufacturing,
Power Delivery (6)
Colorado...............
Customer Support,
Products Service and
Research & Development
East Hartford, 11,000
Manufacturing, Gas and
Thin-Film June 30,
2003
Connecticut............
Customer Support,
Composition Analysis
Service and Research &
Products Development
Fremont,
California......
13,600 Sales, Customer
Not applicable August
31, 2005 Support and
Service Lawrence,
40,000 Manufacturing
Pressure Measurement
(1)
Massachusetts..........
and Control Products
Le Bourget,

France....... 14,000
Sales, Customer Not
applicable (1) Support
and Service Lod,
Israel..............
5,175 Research &
Development Not
applicable May 14,
2007 and
Administration
Methuen,
Massachusetts...
85,000 Manufacturing,
Pressure Measurement
(1) Customer Support,
and Control Products;
Service and Research &
Materials Delivery
Development Products
Morgan Hill, 27,600
Customer Support and
Not applicable June
30, 2007
California.............
Research & Development
Munich,
Germany..........
14,000 Manufacturing,
Sales, Pressure
Measurement (1)
Customer Support, and
Control Products;
Service and Research &
Materials Delivery
Development Products
Richardson,
Texas........ 15,000
Manufacturing, Sales,
Pressure Measurement
August 31, 2004
Customer Support and
and Control Products;
Service Materials
Delivery Products

LOCATION SQ. FT.
ACTIVITY PRODUCTS
MANUFACTURED LEASE
EXPIRES - -------- -----
-- ---------------------
- ---------------------

Riverside,
California.... 9,800
Manufacturing, Service
Control & Information
April 30, 2003
Management Products
Rochester, New
York...... 156,000
Manufacturing, Sales,
Power Delivery (1)
Customer Support,
Products Service and
Research & Development
San Jose,
California..... 32,000
Sales, Customer Not
applicable April 30,
2009 Support and Service
Santa Clara, 13,000
Manufacturing, Sales,
Control & Information
(4)
California.............
Customer Support,
Management Products
Service and Research &
Development Seoul,
Korea.............
10,600 Sales, Customer
Not applicable May 31,
2003 Support and Service
Shenzhen,
China.......... 63,000
Manufacturing Power
Delivery January 31,
2005 Products
Shropshire,
U.K.......... 25,000
Manufacturing Vacuum
Products October 18,
2010
Singapore................
4,000 Sales, Customer
Not applicable February
1, 2003 Support and
Service
Taiwan...................
13,700 Sales, Customer
Not applicable (8)
Support and Service
Tokyo,
Japan.............
30,000 Manufacturing,
Sales, Materials
Delivery (5) Customer
Support, Products
Service and Research &
Development Wilmington,
118,000 Manufacturing,
Reactive Gas (1)
Massachusetts..........
Customer Support,
Generation Products;
Service and Research &
Power Delivery
Development Products

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(1) This facility is owned by MKS.

(2) MKS leases two facilities, one has 39,000 square feet of space and a lease term which expires October 31, 2004 and the second has 33,000 square feet of space and a lease term which expires August 31, 2005. MKS also owns a third and fourth facility with 27,000 and 20,000 square feet of space, respectively.

(3) MKS leases two facilities, one has 2,000 square feet of space and a lease term which expires October 5, 2009 and the second has 11,000 square feet of space and a lease term which expires November 30, 2009.

(4) MKS leases two facilities, one has 4,000 square feet of space and a lease term which expires February 28, 2003 and the second has 4,000 square feet and a lease term which expires April 30, 2005. MKS owns another facility with 5,000 square feet of space.

(5) MKS leases two facilities, one has 14,500 square feet of space and a lease term which expires April 30, 2003 and the second has 10,500 square feet of space and a lease term which expires on September 30, 2006. MKS owns a third facility of 5,000 square feet.

(6) MKS leases one facility with 16,600 square feet of space and a lease term which expires on February 28, 2005. MKS owns another facility with 24,000 square feet.

(7) MKS leases two facilities, one has 8,000 square feet of space and a lease term which expires April 30, 2003 and the second has 6,000 square feet of space and a lease term which expires December 31, 2004.

(8) MKS leases two facilities, one has 10,300 square feet of space and a lease term which expires November 30, 2003 and the second has 3,400 square feet of space and a lease term which expires December 30, 2003.

In addition to manufacturing and other operations conducted at the foregoing leased or owned facilities, MKS provides worldwide sales, customer support and services from various other leased facilities throughout the world not listed in the table above. See "Business -- Sales, Marketing and Support."

ITEM 3. LEGAL PROCEEDINGS

On November 30, 2000, ASTeX, which was acquired by MKS in January 2001, brought suit in federal district court in Delaware against Advanced Energy for infringement of ASTeX's patent related to its Astron product. On May 17, 2002, a jury affirmed the validity of the Company's patent and found that Advanced Energy infringed the patent. On May 31, 2002, based on the jury's findings, the Court entered a judgement on the infringement claim in favor of the Company and against Advanced Energy, and awarded $4,200,000 in damages to compensate the Company for Advanced Energy's infringing activity. Advanced Energy filed motions to overturn the verdict. During August of 2002, the Company and Advanced Energy entered into an agreement whereby Advanced Energy agreed to pay the awarded damages amount to the Company and withdraw its motions to overturn the verdict. The Company received the $4,200,000 in September 2002, and recorded the amount as Income from litigation settlement.

On November 3, 1999, On-Line Technologies, Inc., which was acquired by MKS in April 2001, brought suit in federal district court in Connecticut against Perkin-Elmer, Inc. and certain other defendants for infringement of On-Line's patent related to its FTIR spectrometer product. The suit seeks injunctive relief and damages for infringement. Perkin-Elmer, Inc. has filed a counterclaim seeking invalidity of the patent, costs, and attorneys' fees. MKS believes that the counterclaim is without merit. MKS cannot be certain of the outcome of this litigation, but does plan to assert its claims and oppose the counterclaims against it vigorously.

MKS is subject to other legal proceedings and claims, which have arisen in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on MKS' results of operations, financial condition or cash flows.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

No matters were submitted to a vote of security holders during the fourth quarter of 2002 through the solicitation of proxies or otherwise.

PART II

ITEM 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

PRICE RANGE OF COMMON STOCK

The Common Stock of MKS is traded on the Nasdaq National Market under the symbol MKSI. On February 28, 2003, the closing price of the Company's Common Stock, as reported on the Nasdaq National Market, was $13.25 per share. The following table sets forth for the periods indicated the high and low sales prices per share of the Common Stock as reported by the Nasdaq National Market.

	2002		2001	
PRICE RANGE OF COMMON STOCK	HIGH	LOW	HIGH	LOW
First Quarter......................................	$34.29	$22.05	$24.63	$15.41
Second Quarter.....................................	39.46	16.54	31.97	17.13
Third Quarter......................................	20.75	9.75	29.94	15.17
Fourth Quarter.....................................	20.15	8.41	27.67	16.16

On March 17, 2003, MKS had approximately 224 stockholders of record.

DIVIDEND POLICY

During each of the years ended December 31, 2002 and 2001, MKS did not declare or pay any cash dividends. MKS currently intends to retain earnings, if any, to support its growth strategy and does not anticipate paying cash dividends in the foreseeable future. Payment of future dividends, if any, will be at the discretion of the MKS board of directors after taking into account various factors, including MKS' financial condition, operating results, current and anticipated cash needs, plans for expansion, and changes in tax and regulatory rulings.

ITEM 6. SELECTED FINANCIAL DATA

SELECTED CONSOLIDATED FINANCIAL DATA

	YEAR ENDED DECEMBER 31				
	2002	2001	2000	1999	1998
	(IN THOUSANDS, EXCEPT PER SHARE DATA)				
STATEMENT OF INCOME (LOSS) DATA(1)					
Net sales	$314,773	$286,808	$466,852	$265,292	$223,199
Gross profit(2)	105,795	85,583	205,396	102,509	84,428
Income (loss) from operations(3)	(43,047)	(47,360)	91,535	25,037	15,044
Net income (loss)	$(39,537)	$(31,043)	$ 60,260	$ 22,786	$ 11,207
Historical net income (loss) per share					
Basic	$ (0.79)	$ (0.83)	$ 1.74	$ 0.76	$ 0.46
Diluted	$ (0.79)	$ (0.83)	$ 1.67	$ 0.72	$ 0.44
PRO FORMA STATEMENT OF INCOME (LOSS) DATA(4)					
Pro forma net income				$ 17,161	$ 9,065
Pro forma net income per share:					
Basic				$ 0.57	$ 0.37
Diluted				$ 0.55	$ 0.36
BALANCE SHEET DATA					
Cash and cash equivalents	$ 88,820	$120,869	$123,082	$ 67,489	$ 18,875
Short-term investments	39,894	16,625	17,904	26,387	538
Working capital	192,008	216,855	237,321	137,999	59,511
Long-term investments	15,980	11,029	17,100	1,063	--
Total assets	685,623	411,189	454,403	253,772	146,972
Short-term obligations	18,472	14,815	19,134	20,828	12,819
Long-term obligations, less current portion	11,726	11,257	12,386	5,662	13,786
Stockholders' equity	610,690	352,871	357,522	185,685	98,074

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(1) Amounts have been restated to reflect the acquisition of Applied Science and Technology, Inc. ("ASTeX") in a pooling of interests transaction effective January 26, 2001.

(2) Gross profit for the year ended December 31, 2001 includes significant charges for excess and obsolete inventory of $16.6 million. These charges

were primarily caused by a significant reduction in demand, including reduced demand for older technology products.

(3) Income (loss) from operations for the year ended December 31, 2002 includes restructuring and asset impairment charges of $2.7 million.

(4) The historical net income (loss) per share data of MKS does not include provisions for federal income taxes prior to its initial public offering in 1999, because MKS was treated as an S corporation for federal income tax purposes. The pro forma statement of income data presents net income and net income per share data as if MKS had been subject to federal income taxes as a C corporation during the periods presented. No pro forma presentation is necessary for the fiscal years ended December 31, 2002, 2001 and 2000 because MKS was subject to income taxes as a C corporation for these periods. Management believes this pro forma presentation is useful because it provides for consistent federal income tax treatment for all years presented.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

OVERVIEW

MKS Instruments, Inc. was founded in 1961. MKS Instruments, Inc. is a leading worldwide provider of instruments, components and subsystems that measure, control, power and monitor critical parameters of semiconductor and other advanced manufacturing process environments.

MKS completed four acquisitions in 2000, which were all accounted for under the purchase method of accounting. On March 10, 2000, MKS acquired Compact Instrument Technology, LLC ("Compact Instruments"), a company with proprietary technology in process monitoring for semiconductor manufacturing and other manufacturing processes. On May 5, 2000, MKS acquired Telvac Engineering, Ltd. ("Telvac"), a UK-based, privately held manufacturer of vacuum subsystems. On July 21, 2000, MKS acquired Spectra International, LLC ("Spectra"), a privately held company with products and technology in process monitoring. On September 6, 2000, MKS acquired D.I.P., Inc. ("D.I.P."), a privately held company with products and technology in digital process control.

MKS completed two acquisitions in 2001. On January 26, 2001, MKS acquired Applied Science and Technology, Inc. ("ASTeX"), a Wilmington, Massachusetts based company with products and technology in reactive gas generation and power delivery. The ASTeX acquisition was accounted for under the pooling of interests method of accounting, and accordingly, the consolidated financial statements reflect the combined financial position and results of operations and cash flows of MKS Instruments, Inc. and ASTeX (together, the "Company" or "MKS"), for all periods presented. This presentation combines the historical financial statements of MKS Instruments, Inc. for the year ended December 31, 2000 with the historical financial statements of ASTeX for the fiscal year ended July 1, 2000. On April 27, 2001, MKS acquired On-Line Technologies, Inc. ("On-Line"), a privately held company that designs and manufactures products used for gas analysis, wafer metrology and complementary analysis and control software. The On-Line acquisition was accounted for under the purchase method.

On January 31, 2002, MKS acquired the ENI Business of Emerson Electric Co. ("ENI"), a supplier of solid-state RF and DC plasma power supplies, matching networks and instrumentation to the semiconductor and thin-film processing industries. The reasons for the acquisition of ENI were based upon the ability to offer higher value and more integrated application solutions by combining ENI's solid-state power conversion technology with the Company's core competency in plasma and reactive gas solutions. The acquisition has been accounted for under the purchase method of accounting. The purchase price was approximately $266,530,000 and consisted of approximately 12,000,000 shares of MKS common stock valued at approximately $261,264,000 and transaction expenses of approximately $5,266,000. The value of MKS common stock was approximately $21.7720 per share based on the average closing price of MKS' common stock for the five-day period including the date of the announcement of the signing of the merger agreement and the two days preceding and succeeding such date. The purchase price was allocated to the assets acquired based upon their estimated fair values and resulted in an allocation of approximately $197,123,000 to goodwill. The results of operations are included in the Company's consolidated statement of income as of and since the date of the purchase.

In 2002, MKS also acquired three companies that expanded its position in distributed computer-based process control and data management. On March 13, 2002, MKS acquired Tenta Technology, Ltd. ("Tenta"), a privately held company that designs and supplies modular, computer-based process control systems for 300mm semiconductor process tool applications. On April 5, 2002, MKS acquired IPC Fab Automation GmbH ("IPC"), a privately held developer and provider of web-based hardware and software that enables e-diagnostics and advanced process control for advanced manufacturing applications. On October 1, 2002, MKS acquired EquipNet, Ltd. ("EquipNet"), a privately held company that develops web-based connectivity equipment for the semiconductor industry.

The Company's customers include semiconductor capital equipment manufacturers, semiconductor device manufacturers, industrial manufacturing companies and university, government and industrial research laboratories. During 2002, 2001 and 2000, MKS estimates that approximately 70%, 64% and 76% of its net sales, respectively, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers. MKS expects that sales to such customers will continue to account for a substantial majority of its sales. In 2002, 2001 and 2000, sales to MKS' top ten customers accounted for approximately 49%, 39% and 52%, respectively, of MKS' net sales. During 2002, 2001 and 2000, Applied Materials, Inc. accounted for approximately 23%, 18% and 30% of MKS' net sales, respectively.

A significant portion of MKS' sales are to operations in international markets. International sales include sales by MKS' foreign subsidiaries, but exclude direct export sales, which were less than 10% of MKS' total net sales for each of the years ended December 31, 2002, 2001 and 2000. International sales accounted for approximately 36% of net sales in 2002, 31% of net sales in 2001 and 23% of net sales in 2000. Sales by MKS' Japan subsidiary comprised 14%, 12% and 11% of net sales in 2002, 2001 and 2000, respectively.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Management's Discussion and Analysis of Financial Condition and Results of Operations discusses MKS' consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an on-going basis, management evaluates its estimates and judgments, including those related to revenue recognition, inventory, intangible assets, goodwill and other long-lived assets, in-process research and development, merger expenses, income taxes and investments. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Management believes the following critical accounting policies affect its more significant judgments and estimates used in the preparation of its consolidated financial statements:

Revenue recognition. Revenue from product sales is recorded upon transfer of title and risk of loss to the customer provided that there is evidence of an arrangement, the sales price is fixed or determinable, and collection of the related receivable is reasonably assured. The Company has no obligations to customers after the date products are shipped other than pursuant to warranty obligations. The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. Shipping and handling fees, if any, billed to customers are recognized as revenue. The related shipping and handling costs are recognized in cost of sales. The Company monitors and tracks the amount of product returns, provides for accounts receivable allowances and reduces revenue at the time of shipment for the estimated amount of such future returns, based on historical experience. While product returns and warranty costs have historically been within the Company's expectations and the provisions established, there is no assurance that the Company will continue to experience the same return rates and warranty repair costs that it has in the past. Any significant increase in product return rates or a significant increase in the cost to repair the Company's products could have a material adverse impact on our operating results for the period or periods in which such returns or increased costs materialize. The Company makes estimates evaluating its accounts receivable allowance for doubtful accounts. The Company continuously monitors collections and payments from its customers and maintains a provision for estimated credit losses based upon the Company's historical experience and any specific customer collection issues that the Company has identified. While such credit losses have historically been within the Company's expectations and the provisions established, there is no assurance that the Company will continue to experience the same credit loss rates that it has in the past. A significant change in the liquidity or financial position of the Company's customers could have a material adverse impact on the collectability of accounts receivable and the Company's future operating results.

Inventory. The Company values its inventory at the lower of cost (first-in, first-out method) or market . The Company regularly reviews inventory quantities on hand and records a provision to write down excess and obsolete inventory to its estimated net realizable value, if less than cost, based primarily on its estimated forecast of product demand. As demonstrated during 2002 and 2001, demand for the Company's products can fluctuate significantly. The Company recorded significant charges for excess and obsolete inventory of $16.6 million in 2001. The charges were primarily caused by a significant reduction in demand including reduced demand for older technology products. A significant increase in the demand for the Company's product could result in an increase or decrease in the cost of inventory purchases while a significant decrease in demand could result in an increase in the charges for excess inventory quantities on hand. In addition, the Company's industry is subject to technological change, new product development, and product technological obsolescence that could result in an increase in the amount of obsolete inventory quantities on hand. Therefore, any significant unanticipated changes in demand or technological developments could have a significant impact on the value of the Company's inventory and its reported operating results.

Intangible assets, goodwill and other long-lived assets. The Company reviews intangible assets and other long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Factors the Company consider important which could indicate an impairment include significant under performance relative to expected historical or projected future operating results, significant changes in the manner of the Company's use of the asset or the strategy for the Company's overall business and significant and negative industry or economic trends. When the Company determines that the carrying value of the asset may not be recoverable based upon the existence of one or more of the above indicators of impairment, the Company compares the undiscounted cash flows to the carrying value of the asset. If an impairment is indicated, the asset is written down to its estimated fair value. Intangible assets, such as purchased technology, are generally recorded in connection with a business acquisition. The value assigned to intangible assets is determined based on estimates and judgment regarding expectations for the success and life cycle of products and technology acquired. If actual product acceptance differs significantly from the estimates, the Company may be required to record an impairment charge to write down the asset to its net realizable value. The Company assesses goodwill for impairment at least annually, or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired. If the book value of a reporting unit exceeds its fair value, the implied fair value of goodwill is compared with the carrying amount of goodwill. If the carrying amount of goodwill exceeds the implied fair value, an impairment loss is recorded in an amount equal to that excess. The fair value of a reporting unit is estimated using the discounted cash flow approach, and is dependent on estimates and judgments related to future cash flows and discount rates.

In-process research and development. The Company values tangible and intangible assets acquired through our business acquisitions at fair value including in-process research and development ("IPR&D"). The Company determines IPR&D through established valuation techniques for various projects for the development of new products and technologies and expenses IPR&D when technical feasibility is not reached. The value of IPR&D is determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. Each project is analyzed and estimates and judgments are made to determine the technological innovations included; the utilization of core technology; the complexity, cost and time to complete development; any alternative future use or current technological feasibility; and the stage of completion. During 2002 and 2001, the Company expensed approximately $8.4 million and $2.3 million, respectively, in IPR&D charges primarily related to the ENI acquisition and the

On-Line acquisition because the technological feasibility of certain products under development had not been established and no future alternative uses existed. If MKS acquires other companies with IPR&D in the future, the Company will value the IPR&D through established valuation techniques and incur future IPR&D charges if those products under development have not reached technical feasibility.

Income taxes. The Company evaluates the realizability of its net deferred tax assets and assesses the need for a valuation allowance on a quarterly basis. The future benefit to be derived from its deferred tax assets is dependent upon its ability to generate sufficient future taxable income to realize the assets. The Company records a valuation allowance to reduce its net deferred tax assets to the amount that may be more likely than not to be realized. To the extent the Company establishes a valuation allowance, an expense will be recorded within the provision for income taxes line on the statement of income. During the year ended December 31, 2002, the Company established a full valuation allowance for its net deferred tax assets. In periods subsequent to establishing a valuation allowance, if the Company were to determine that it would be able to realize its net deferred tax assets in excess of their net recorded amount, an adjustment to the valuation allowance would be recorded as a reduction to income tax expense in the period such determination was made. Also in future periods, if the Company were to determine that it would not be able to realize the recorded amount of its remaining net deferred tax assets, an adjustment to the valuation allowance would be recorded as an increase to income tax expense in the period such determination was made.

RESULTS OF OPERATIONS

The following table sets forth for the periods indicated the percentage of total net sales of certain line items included in MKS' consolidated statement of income data:

	YEAR ENDED DECEMBER 31		
	2002	2001	2000
Net sales	100.0%	100.0%	100.0%
Cost of sales	66.4	70.2	56.0
Gross profit	33.6	29.8	44.0
Research and development	14.6	13.2	8.0
Selling, general and administrative	24.7	24.5	15.2
Amortization of goodwill and acquired intangible assets	4.4	3.8	1.1
Restructuring and asset impairment charges	0.9	1.3	--
Merger expenses	--	2.7	--
Purchase of in-process technology	2.7	0.8	0.1
Income (loss) from operations	(13.7)	(16.5)	19.6
Interest income (expense), net	0.5	1.3	1.0
Income from litigation settlement	1.3	--	--
Other expense, net	1.3	0.9	--
Income (loss) before income taxes	(13.2)	(16.1)	20.6
Provision (benefit) for income taxes	(0.6)	(5.3)	7.7
Net income (loss)	(12.6)%	(10.8)%	12.9%

YEAR ENDED 2002 COMPARED TO 2001

Net Sales. Net sales increased 9.8% to $314.8 million for the year ended December 31, 2002 from $286.8 million for the year ended December 31, 2001. International net sales were approximately $114.6 million for the year ended December 31, 2002 or 36.4% of net sales and $90.0 million for the year ended December 31, 2001 or 31.4% of net sales. The increase in worldwide net sales in 2002 is from the incremental partial year revenues of $58.5 million from ENI, Tenta and IPC, companies which were acquired during the year. This increase was offset by a decline of $30.5 million or 10.6%, due to the worldwide slowdown in demand for the Company's products from the Company's semiconductor capital equipment manufacturer and semiconductor device manufacturer customers, which began in the first quarter of 2001 and continued through 2002. The semiconductor capital equipment industry has been cyclical, and the Company cannot determine how long the downturn will last. In the absence of significant improvement, net sales could continue to decline or remain low, and the amount of goodwill, other long-lived assets, and inventory considered realizable could be significantly reduced.

Gross Profit. Gross profit as a percentage of net sales increased to 33.6% for the year ended December 31, 2002 from 29.8% for the year ended December 31, 2001. The increase in gross margin was primarily due to lower provisions for excess and obsolete inventory in 2002 compared to 2001. In 2001, the Company recorded significant charges for excess and obsolete inventory of $16.6 million, or 5.8% of net sales. These charges were primarily caused by a significant reduction in demand, including demand for older technology products. During 2002, the Company realized a benefit of $1.4 million in cost of sales, or 0.4% of net sales, from sales of inventory which were included as part of the excess and obsolete inventory charges in 2001. The lower excess and obsolete inventory charges in 2002 were offset by the addition of manufacturing overhead costs from the companies acquired in 2002, which resulted in a decrease in gross margin of approximately 2%.

Research and Development. MKS' research and development efforts are directed toward developing and improving MKS process control instruments, components and subsystems for semiconductor and advanced thin-film processing applications and identifying and developing products for new applications for which gas management plays a critical role. Research and development expense increased 21.2% to $46.0 million or 14.6% of net sales for the year ended December 31, 2002 from $38.0 million or 13.2% of net sales for the year ended December 31, 2001. Compensation expense increased by $2.7 million during 2002, which was comprised of an increase of $6.5 million from the companies acquired during the year, offset by a $3.8 million decrease resulting from cost saving programs including workforce reductions, salary reductions, and furloughs. Also, expenses for project materials increased $3.5 million during 2002, primarily from the companies acquired during the year. The Company's research and development efforts include numerous projects which generally have a duration of 18 to 30 months.

Selling, General and Administrative. Selling, general and administrative expenses increased 10.9% to $77.8 million or 24.7% of net sales for the year ended December 31, 2002 from $70.2 million or 24.5% of net sales for the year ended December 31, 2001. The increase was due to increased compensation expense of $4.8 million primarily from the companies acquired during the year, increased professional fees of $1.1 million and other selling, general and administrative expenses.

Amortization of Goodwill and Acquired Intangible Assets. Amortization expense of $13.9 million for the year ended December 31, 2002, represents the amortization of the identifiable intangibles resulting from the acquisitions completed by MKS. In accordance with SFAS No. 142, the Company ceased amortizing goodwill on January 1, 2002. Amortization of goodwill and acquired intangible assets of $11.0 million for the year ended December 31, 2001, represents the amortization of goodwill and other intangibles resulting from the acquisitions completed by the Company, of which $5.2 million relates to acquired intangibles and $5.8 million relates to goodwill.

Merger Costs. On January 26, 2001 MKS completed its acquisition of ASTeX in a transaction accounted for under the pooling of interests method of accounting. Under the pooling of interests method of accounting, fees and expenses related to the merger are expensed in the period of the merger. During the year ended December 31, 2001, MKS expensed approximately $7.7 million of merger related expenses, consisting of $6.9 million of investment banking, legal, accounting, printing and other professional fees, and $0.8 million of regulatory and other costs. In July 2001, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards No. 141 ("SFAS 141"), "Business Combinations." SFAS 141 requires the purchase method of accounting for business combinations initiated after June 30, 2001 and eliminates the pooling of interests method. Merger expenses associated with any future business combination will be accounted for under the purchase method of accounting and included as part of the purchase price.

Purchase of In-process Technology. In-process research and development of $8.4 million and $2.3 million for the years ended December 31, 2002 and 2001 arose from the acquisitions the Company made in 2002 and 2001, respectively.

In January 2002, the Company acquired ENI in a transaction accounted for under the purchase method. The purchase price was allocated to the assets acquired, including intangible assets, based on their estimated fair values. The intangible assets include approximately $7.5 million for acquired in-process technology for projects, generally expected to have durations of 12 months, that did not have future alternative uses. The value of the purchased in-process technology was determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. Each project was analyzed to determine the technological innovations included; the utilization of core technology; the complexity, cost and time to complete development; any alternative future use or current technological feasibility; and the stage of completion. The cash flows derived from the in-process technology projects were discounted at rates ranging from 25% to 30%. The Company believes these rates were appropriate given the risks associated with the technologies for which commercial feasibility had not been established. The percentage of completion for each in-process project was determined by identifying the cost incurred to date of the project as a ratio of the total cost required to bring the project to technical and commercial feasibility. The percentage completion for in-process projects acquired ranged from 65% to 80% complete, based on management's estimates of tasks completed and the tasks to be completed to bring the projects to technological and commercial feasibility. At the date of the acquisition, the development of these projects had not yet reached technological feasibility, and the technology in progress had no alternative future uses. Accordingly, these costs were expensed in 2002.

In April 2001, the Company acquired On-Line in a transaction accounted for under the purchase method. The purchase price was allocated to the assets acquired, including intangible assets, based on their estimated fair values. The intangible assets include approximately $2.3 million for acquired in-process technology for various projects, generally expected to have durations of 24 to 48 months, that did not have future alternative uses. The value of the purchased in-process technology was determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. Each project was analyzed to determine the technological innovations included; the utilization of core technology; the complexity, cost and time to complete development; any alternative future use or current technological feasibility; and the stage of completion. The cash flows derived from the in-process technology projects were discounted at a rate of 25%. The Company believes this rate was appropriate given the risks associated with the technologies for which commercial feasibility had not been established. The percentage of completion for each in-process project was determined by identifying the elapsed time invested in the project as a ratio of the total time required to bring the project to technical and commercial feasibility. The percentage of completion for in-process projects acquired ranged from 55% to 65%, based on management's estimates of tasks completed and the tasks to be completed to bring the projects to technological and commercial feasibility. At the date of the acquisition, the development of these projects had not yet reached technological feasibility, and the technology in progress had no alternative future uses. Accordingly, these costs were expensed in 2001.

Restructuring and Asset Impairment Charges. During 2002 the Company implemented a consolidation of recent acquisitions to accelerate product development, rationalize manufacturing operations, and reduce operating costs. As a result of these actions, the Company recorded restructuring and asset impairment charges of $2.7 million in 2002. The charges consisted of $0.6 million of severance costs related to a workforce reduction, $1.2 million related to consolidation of leased facilities, and an asset impairment charge of $0.9 million primarily related to the impairment of an intangible asset from the discontinuance of certain product development activities. The fair value of the impaired intangible asset was determined using the expected present value of future cash flows. The workforce reduction was across all functional groups and consisted of 225 employees, with 179 terminated during 2002. Severance costs of $0.3 million were paid during 2002. The remaining severance costs of $0.3 million are expected to be paid by the end of the first quarter of 2004. The facilities consolidation charges will be paid over the respective lease terms, the latest of which ends in 2007. The accrual for severance costs and lease payments is recorded in Other accrued expenses and Other liabilities.

A summary of the restructuring charges and related asset impairments during 2002 is outlined as follows (in thousands):

	INITIAL CHARGE	CASH PAYMENTS	NON-CASH CHARGES	ENDING ACCRUAL BALANCE
Workforce reductions.................	$ 631	$(300)	$ --	$ 331
Facility consolidations..............	1,228	(69)	--	1,159
Assets impairment....................	867	--	(867)	--
	$2,726	$(369)	$(867)	$1,490

As a result of the restructuring program, the Company expects to reduce cost of sales, research and development expenses, and selling, general, and administrative expenses. The restructuring program, once fully implemented, is expected to reduce costs by approximately $10.0 million per year. The Company began to realize a portion of the benefits in the fourth quarter of 2002.

When the Company acquired the Shamrock product line, it was expected that sales of the existing system design and development of new system designs would generate future revenues. The Company had provided potential customers with purchase quotations for Shamrock systems, including a significant quotation to a potential customer in January 2001 for the sale of several systems. The potential customer did not purchase the systems, and the quotation expired in March 2001. The Company was unsuccessful in selling any systems of the product line after the acquisition and, with the expiration of the significant quote in March 2001, the Company evaluated the recoverability of the long-lived assets, primarily goodwill. As a result, based on discounted cash flow analysis, the Company recorded an impairment charge for the carrying value of the related goodwill of approximately $3.7 million in the quarter ended March 31, 2001.

Interest Income (Expense), Net. During the year ended December 31, 2002, the Company generated net interest income of $1.5 million, primarily from interest on its invested cash and investments, offset by interest expense of $1.2 million on outstanding debt. Interest income declined $2.5 million to $2.7 million for the year ended December 31, 2002 from $5.2 million for the year ended December 31, 2001. The decrease was due to lower interest rate yields on investments during 2002 compared to 2001.

Income from Litigation Settlement. On November 30, 2000, ASTeX, which was acquired by MKS in January 2001, brought suit in federal district court in Delaware against Advanced Energy Industries, Inc. ("Advanced Energy") for infringement of ASTeX's patent related to its Astron product. On May 17, 2002, a jury affirmed the validity of the Company's patent and found that Advanced Energy infringed the patent. On May 31, 2002, based on the jury's findings, the Court entered a judgement on the infringement claim in favor of the Company and against Advanced Energy, and awarded $4.2 million in damages to compensate the Company for Advanced Energy's infringing activity. Advanced Energy filed motions to overturn the verdict. During August of 2002, the Company and Advanced Energy entered into an agreement whereby Advanced Energy agreed to pay the awarded damages amount to the Company and withdraw its motions to overturn the verdict. The Company received the $4.2 million in September 2002, and recorded the amount as Income from litigation settlement.

Other Expense, Net. During 2001, MKS recorded a loss on the sale of an investment in a company of $1.1 million, which was recorded as other expense. Also during 2001, MKS sold certain assets for proceeds of approximately $9.0 million, including a note receivable of approximately $3.9 million and warrants of $0.2 million. The loss on the transaction was $1.2 million and was recorded as other expense in 2001. During 2002, due to the downturn in the semiconductor industry and its result on the acquirer's operations, and the acquirer's inability to raise financing, the Company considered the value of the note and warrants to be impaired. Accordingly, during 2002, MKS recorded a charge of $4.1 million to other expense for the Company's estimate of the impairment on the note receivable and warrants.

Benefit for Income Taxes. The Company recorded a benefit for income taxes of $2.0 million for the year ended December 31, 2002, for an effective tax rate of 4.8%. The Company recorded a benefit for income taxes of $15.0 million for the year ended December 31, 2001, for an effective tax rate of 32.6% in 2001.

The change in the Company's effective tax rate from 2001 to 2002 was primarily due to the recording of a valuation allowance against its net deferred tax assets in 2002. As a result of incurring significant operating losses during 2001 and 2002, and the continuing uncertainty in the semiconductor industry, management determined that it is more likely than not that the Company's deferred tax assets may not be realized and, accordingly, recorded a charge of $13.4 million to establish a full valuation allowance for its deferred tax assets in the fourth quarter of 2002. The benefit for income taxes of $2.0 million for the year ended December 31, 2002 is primarily comprised of an estimated current tax benefit of $3.8 million from 2002 United States net operating losses which the Company may carryback against previously taxed income offset by $1.6 million of tax expense from foreign operations and state taxes.

YEAR ENDED 2001 COMPARED TO 2000

Net Sales. Net sales decreased 38.6% to $286.8 million for the year ended December 31, 2001 from $466.9 million for the year ended December 31, 2000. International net sales were approximately $90.0 million for the year ended December 31, 2001 or 31.4% of net sales and $108.1 million for the year ended December 31, 2000 or 23.1% of net sales. The decrease in net sales is due to a worldwide slowdown in demand for semiconductors during 2001 which resulted in a decline in demand for the Company's products from the Company's semiconductor capital equipment manufacturers and semiconductor device manufacturer customers, offset by an increase in net sales of approximately $15.4 million from the companies acquired in 2001 and 2000.

Gross Profit. Gross profit as a percentage of net sales decreased to 29.8% for the year ended December 31, 2001 from 44.0% for the year ended December 31, 2000. Gross margin was negatively effected by significant charges for excess and obsolete inventory of $16.6 million in 2001. These charges were primarily caused by a significant reduction in demand, including reduced demand for older technology products. Additionally, gross margin was negatively effected due to lower absorption of manufacturing overhead costs.

Research and Development. MKS' research and development efforts are directed toward developing and improving MKS process control instruments, components and subsystems for semiconductor and advanced thin-film processing applications and identifying and developing products for new applications for which gas management plays a critical role. Research and development expense increased 1.7% to $38.0 million or 13.2% of net sales for the year ended December 31, 2001 from $37.3 million or 8.0% of net sales for the year ended December 31, 2000. The increase was primarily due to increased compensation expense resulting from the companies acquired in 2001 and 2000. The Company's research and development efforts include numerous projects which generally have a duration of 18 to 30 months.

Selling, General and Administrative. Selling, general and administrative expenses decreased 1.4% to $70.2 million or 24.5% of net sales for the year ended December 31, 2001 from $71.2 million or 15.2% of net sales for the year ended December 31, 2000. The decrease was primarily due to decreased salaries and wages and incentive compensation expense of $5.7 million, offset by increased professional fees of $4.3 million primarily related to costs associated with defending certain of the Company's patents.

Amortization of Goodwill and Acquired Intangible Assets. Amortization of goodwill and acquired intangible assets of $11.0 million for the year ended December 31, 2001, represents the amortization of goodwill and other intangibles resulting from the acquisitions completed by the Company, of which $5.2 million relates to acquired intangibles and $5.8 million relates to goodwill. Effective with the January 1, 2002 adoption of SFAS 142, the Company will cease to amortize approximately $40.3 million of goodwill.

Restructuring and Asset Impairment Charges. When the Company acquired the Shamrock product line, it was expected that sales of the existing system design and development of new system designs would generate future revenues. Since the acquisition, the Company has provided potential customers with purchase quotations for Shamrock systems, including a significant quotation to a potential customer in January 2001 for the sale of several systems. The potential customer did not purchase the systems, and the quotation expired in March 2001. The Company has been unsuccessful in selling any systems of the product line since the acquisition and, with the expiration of the significant quote in March 2001, the Company evaluated the recoverability of the long-lived assets, primarily goodwill. As a result, based on a discounted cash flow analysis, the Company recorded an impairment charge for the carrying value of the related goodwill of approximately $3.7 million in the quarter ended March 31, 2001.

Merger Costs. On January 26, 2001 MKS completed its acquisition of ASTeX in a transaction accounted for under the pooling of interests method of accounting. Under the pooling of interests method of accounting, fees and expenses related to the merger are expensed in the period of the merger. During the year ended December 31, 2001, MKS expensed approximately $7.7 million of merger related expenses, consisting of $6.9 million of investment banking, legal, accounting, printing and other professional fees, and $0.8 million of regulatory and other costs.

Purchase of In-process Technology. In April 2001, the Company acquired On-Line in a transaction accounted for as a purchase. The purchase price was allocated to the assets acquired, including intangible assets, based on their estimated fair values. The intangible assets include approximately $2.3 million for acquired in-process technology for various projects, generally expected to have durations of 24 to 48 months, that did not have future alternative uses. The value of the purchased in-process technology was determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. Each project was analyzed to determine the technological innovations included; the utilization of core technology; the complexity, cost and time to complete development; any alternative future use or current technological feasibility; and the stage of completion. The cash flows derived from the in-process technology projects were discounted at a rate of 25%. The Company believes this rate was appropriate given the risks associated with the technologies for which commercial feasibility had not been established. The percentage of completion for each in-process project was determined by identifying the elapsed time invested in the project as a ratio of the total time required to bring the project to technical and commercial feasibility. The percentage of completion for in-process projects acquired ranged from 55% to 65%, based on management's estimates of tasks completed and the tasks to be completed to bring the projects to technological and commercial feasibility. At the date of the acquisition, the development of these projects had not yet reached technological feasibility, and the technology in progress had no alternative future uses. Accordingly, these costs were expensed.

Interest Income (Expense), Net. During the years ended December 31, 2001 and 2000, the Company generated net interest income of $3.7 million and $4.8 million, respectively, primarily from the invested net proceeds of its common stock offerings, offset by interest expense on outstanding debt. Interest income decreased by $1.0 million for the year ended December 31, 2001 from $6.2 million for the year ended December 31, 2000. The decrease was due to lower interest rate yields on investments during 2001.

Other Expense, Net. Other expense of $2.4 million for the year ended December 31, 2001 represents a loss on sale of assets of $1.2 million and a loss on the sale of an investment in a company of $1.1 million. Other expense of $0.2 million in the year ended December 31, 2000 represents expenses related to the preparation of the registration statement for the Company's follow-on public stock offering. The Company decided not to proceed with the follow-on offering, and converted the registration statement to a shelf registration statement.

Provision (Benefit) for Income Taxes. The effective tax rates for the years ended December 31, 2001 and 2000 were 32.6% and 37.3%, respectively, resulting in an income tax benefit of $15.0 million and provision for income taxes of $35.9 million, respectively. The reduction in the effective tax rate and the resulting income tax benefit for the year ended December 31, 2001 as compared to the effective tax rate for the year ended December 31, 2000 was primarily due to non-deductible charges associated with acquisitions made in 2001.

LIQUIDITY AND CAPITAL RESOURCES

MKS has financed its operations and capital requirements through a combination of cash provided by operations, long-term real estate financing, capital lease financing and short-term lines of credit.

On April 5, 1999, the Company completed the initial public offering of its Common Stock. In connection with this offering and the exercise of an over-allotment option by the underwriters, the Company sold 6,375,000 shares of Common Stock at a price of $14.00 per share. The net proceeds to the Company were approximately $82.0 million and were received in the second quarter of 1999. Underwriting discounts and commissions were approximately $6.2 million, and other offering costs were approximately $1.0 million. On April 5, 1999 MKS distributed $40.0 million, which was the estimated amount of its undistributed S Corporation earnings as of the day prior to the closing of the offering.

On March 30, 2000, ASTeX completed the registration and sale of 1,917,250 shares of common stock at $40.42 per share. The net proceeds from the offering were approximately $73.2 million.

On March 5, 1999, ASTeX completed the registration and sale of 1,533,800 shares of common stock at $14.34 per share. On April 6, 1999, the underwriters exercised their over-allotment option to purchase an additional 230,070 shares of common stock. The net proceeds from the offering were approximately $23.8 million.

Operations provided cash of $13.8 million in 2002 compared to $20.1 million in 2001 and $40.0 million in 2000. The cash flow from operations in 2002 was impacted by the net loss of $39.5 million, offset by non-cash charges included in the net loss for depreciation and amortization of $28.7 million, purchases of in-process technology of $8.4 million, and asset impairment charges of $5.0 million. Additionally, changes in operating assets and liabilities contributed $9.6 million to cash flow from operations. The changes in operating assets and liabilities were primarily related to a reduction in other current assets of $12.3 million from receipt of income tax refunds in 2002, and a decrease in inventory of $6.6 million, offset by decreases in accrued expenses of $7.3 million. The cash flow from operations in 2001 was impacted by the net loss of $31.0 million and a non-cash deferred tax benefit of $11.5 million, offset by non-cash charges included in the net loss of $26.7 million for depreciation and amortization. Additionally, changes in operating assets and liabilities contributed $31.1 million to cash flow from operations in 2001. The changes in operating assets and liabilities were primarily related to decreases in accounts receivable and inventory of $58.9 million and $16.2 million, respectively, offset by an increase in other current assets of $9.6 million, and decreases in accrued expenses of $12.2 million, accounts payable of $14.3 million, and taxes payable of $8.0 million.

Investing activities utilized cash of $51.9 million in 2002, compared to $18.1 million in 2001 and $64.8 million in 2000. The cash used in investing activities in 2002 increased $33.8 million as compared to 2001, primarily from an increase of $27.2 million for purchases of available-for-sale investments. In addition, cash used to acquire businesses increased $10.6 million in 2002 compared to 2001. This increase was offset by a $6.7 million decrease in cash used to purchase equipment in 2002 compared to 2001. Investing activities utilized cash of $18.1 million for 2001 as compared to $64.8 million for 2000. The decrease of $46.7 million was primarily due to a $17.5 million decrease in purchases of property and equipment and a $16.8 million decrease in cash used to acquire businesses.

Financing activities provided cash of $5.5 million in 2002, as compared to utilizing cash of $1.1 million in 2001 and providing cash of $81.1 million in 2000. The change in cash provided by investing activities in 2002 was primarily related to increased proceeds of $2.5 million from employees exercising stock options and participating in the Company's Employee Stock Purchase Plan. Additionally, net payments on short-term and long-term borrowings declined to $3.0 million in 2002, as compared to $6.8 million in 2001. Financing activities utilized cash of $1.1 million in 2001 and provided cash of $81.1 million in 2000. Net cash provided by financing activities in 2000 was primarily from the sale of 1,917,250 shares of common stock for $73.2 million.

Working capital was $192.0 million as of December 31, 2002, a decrease of $24.8 million from December 31, 2001. MKS has a combined $40.0 million unsecured line of credit with two large domestic banks, expiring July 31, 2003. There were no borrowings under the line of credit as of December 31, 2002. The terms of the line of credit contain, among other provisions, requirements for maintaining certain levels of tangible net worth and other financial ratios. The agreements also contain restrictions with respect to acquisitions. Under the most restrictive covenant, the Company's consolidated tangible net worth may not be below an amount as defined in the agreement. In the event of default of these covenants or restrictions, any obligation then outstanding under the line of credit shall become payable upon demand by the banks. The Company was in compliance with all debt covenants as of December 31, 2002.

Future payments due under debt, lease and inventory purchase commitment obligations as of December 31, 2002 (in thousands) are as follows:

	PAYMENT DUE BY PERIOD				
CONTRACTUAL OBLIGATIONS	TOTAL	LESS THAN 1 YEAR	1-3 YEARS	4-5 YEARS	AFTER 5 YEARS
Debt.............................	$29,609	$18,140	$ 6,112	$ 357	$5,000
Capital Leases....................	651	367	245	39	--
Operating Leases..................	21,514	5,686	9,795	1,971	4,062
Inventory Purchase Commitments....	27,090	27,090	--	--	--
Total............................	$78,864	$51,283	$16,152	$2,367	$9,062

MKS believes that its working capital, together with the cash anticipated to be generated from operations and funds available from existing credit facilities, will be sufficient to satisfy its estimated working capital and planned capital expenditure requirements through at least the next 12 months.

Prior to its initial public offering, the Company entered into a Tax Indemnification and S Corporation Distribution Agreement with its then existing stockholders (the "Pre-IPO stockholders"). The agreement includes provisions for the payment, with interest, by the Pre-IPO stockholders or MKS, as the case may be, for the difference between the $40.0 million distributed as an estimate of the amount of the accumulated adjustments account as of April 4, 1999, which is the date the Company's S Corporation status was terminated, and the actual amount of the accumulated adjustments account on that day. The actual amount of the accumulated adjustments account was $41.4 million. Accordingly, the Company made an additional distribution of $1.4 million, plus interest of $0.2 million, to the Pre-IPO stockholders during the three months ended September 30, 2000. The amount of the additional distribution payable had been estimated to be $3.3 million. This estimated amount was charged directly to retained earnings during 1999 and had no impact on net income or earnings per share. The difference of $1.9 million between the actual additional distribution and the estimated additional distribution was credited directly to retained earnings during the three months ended September 30, 2000 and had no impact on net income or earnings per share. The amount of the accumulated adjustments account can be affected by future income tax audits of MKS. If any audit increases or decreases the accumulated adjustments account, MKS or the Pre-IPO stockholders, as the case may be, will also be required to make a payment, with interest, of such difference to the other party. No shareholders, other than the Pre-IPO stockholders, are parties to the Tax Indemnification and S Corporation Distribution Agreement.

To the extent permitted by Massachusetts law, the Company's Restated Articles of Organization, as amended, requires the Company to indemnify any current or former officer or director of the Company or any person who has served or is serving in any capacity with respect to any employee benefit plan of the Company. Because no claim for indemnification has been made by any person covered by the relevant provisions of the Company's Restated Articles of Organization, the Company believes that its estimated exposure for these indemnification obligations is currently minimal. Accordingly, the Company has no liabilities recorded for these requirements as of December 31, 2002.

The Company enters into standard indemnification agreements in the ordinary course of business. Pursuant to these agreements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally the Company's customers, in connection with any patent, or any other intellectual property infringement claim by any third party with respect to the Company's products. The term of these indemnification agreements is generally perpetual any time after execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in some instances, unlimited. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, the

Company believes the estimated fair value of these agreements is minimal. Accordingly, the Company has no liabilities recorded for these agreements as of December 31, 2002.

When as part of an acquisition, the Company acquires all of the stock or all of the assets and liabilities of another company, the Company assumes liability for certain events or occurrences that took place prior to the date of acquisition. The maximum potential amount of future payments the company could be required to make for such obligations is undeterminable at this time. Other than obligations recorded as liabilities at the time of the acquisitions, historically the Company has not made significant payments for these indemnifications. Accordingly, no liabilities have been recorded for these obligations.

In conjunction with certain asset sales, the Company may provide routine indemnifications whose terms range in duration and often are not explicitly defined. Where appropriate, an obligation for such indemnifications is recorded as a liability. Because the amount of liability under these types of indemnifications are not explicitly stated, the overall maximum amount of the obligation under such indemnifications cannot be reasonably estimated. Other than obligations recorded as liabilities at the time of the asset sale, historically the Company has not made significant payments for these indemnifications.

DERIVATIVES

The Company conducts its operations globally. Consequently the results of our operations are exposed to movements in foreign currency exchange rates. The Company hedges a portion of its forecasted foreign currency denominated intercompany sales of inventory, over a maximum period of fifteen months, using forward exchange contracts and currency options primarily related to Japanese and European currencies. These derivatives are designated as cash-flow hedges, and changes in their fair value are carried in accumulated other comprehensive income until the hedged transaction affects earnings. When the hedged transaction affects earnings, the appropriate gain or loss from the derivative designated as a hedge of the transaction is reclassified from accumulated other comprehensive income to cost of sales. As of December 31, 2002 the amount that will be reclassified from accumulated other comprehensive income to earnings over the next twelve months is an unrealized loss of $0.4 million, net of taxes. The ineffective portion of the derivatives is primarily related to option premiums, is recorded in cost of sales, and was immaterial in 2002, 2001, and 2000.

The Company hedges certain intercompany and other payables with foreign exchange contracts and currency options. Since these derivatives hedge existing amounts that are denominated in foreign currencies, the derivatives do not qualify for hedge accounting. The foreign exchange gain on these derivatives was not material in 2002, 2001 and 2000.

Realized and unrealized gains and losses on forward exchange contracts and local currency purchased option contracts that do not qualify for hedge accounting are recognized immediately in earnings. The cash flows resulting from forward exchange contracts and local currency purchased options that qualify for hedge accounting are classified in the statement of cash flows as part of cash flows from operating activities. Cash flows resulting from forward exchange contracts and local currency purchased options that do not qualify for hedge accounting are classified in the statement of cash flows as investing activities. The Company does not hold or issue derivative financial instruments for trading purposes.

There were forward exchange contracts with notional amounts totaling $23.3 million outstanding at December 31, 2002. Of such forward exchange contracts, $17.2 million were outstanding to exchange Japanese yen for US dollars. There were no forward exchange contracts outstanding at December 31, 2001. Forward exchange contracts with notional amounts totaling $1.5 million to exchange Japanese yen for U.S. dollars were outstanding at December 31, 2000. Local currency purchased options with notional amounts totaling $5.1 million, $11.3 million and $25.4 million to exchange foreign currencies for U.S. dollars were outstanding at December 31, 2002, 2001 and 2000, respectively.

Foreign exchange gains and losses on forward exchange contracts and currency options which did not qualify for hedge accounting were immaterial during 2002 and 2000. There were no foreign exchange gains or losses on forward exchange contracts which did not qualify for hedge accounting in 2001. Gains and losses on forward exchange contracts and local currency purchased options that qualify for hedge accounting are classified in cost of goods sold and totaled a gain of $0.5 million and $0.2 million for the years ended December 31, 2002 and 2001, respectively, and was immaterial in 2000.

The fair values of local currency purchased options at December 31, 2002 and 2001, which were obtained through dealer quotes were immaterial.

RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

In August 2001, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards No. 143, "Accounting for Obligations Associated with the Retirement of Long-Lived Assets" ("SFAS 143"). The objective of SFAS 143 is to provide accounting guidance for legal obligations associated with the retirement of long-lived assets. The retirement obligations included within the scope of this pronouncement are those that an entity cannot avoid as a result of either the acquisition, construction or normal operation of a long-lived asset. Components of larger systems also fall under this pronouncement, as well as tangible long-lived assets with indeterminable lives. The provisions of SFAS 143 are effective for financial statements issued for fiscal years beginning after June 15, 2002. The Company is currently evaluating the expected impact of the adoption of SFAS 143 on the Company's financial condition, cash flows and results of operations. The Company will adopt the standard in the first quarter of fiscal 2003.

In June 2002, Statement of Financial Accounting Standards No. 146, "Accounting for Costs Associated with Exit or Disposal Activities" ("SFAS 146") was issued. This Statement addresses financial accounting and reporting for costs associated with exit or disposal activities and nullifies Emerging Issues Task Force (EITF) Issue No. 94-3, "Liability Recognition for Certain Employee Termination Benefits and Other Costs to Exit an Activity (including Certain Costs Incurred in a Restructuring)." The provisions of SFAS 146 are effective for exit or disposal activities that are initiated after December 31, 2002, with early application encouraged. The Company is currently reviewing the provisions of SFAS 146 to determine the standard's impact upon adoption. The Company will adopt the standard in the first quarter of fiscal 2003.

In November 2002, the FASB issued FASB Interpretation ("FIN") No. 45, "Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others." FIN No. 45 clarifies that a guarantor is required to recognize, at the inception of a guarantee, a liability for the fair value of the obligation undertaken in issuing the guarantee. The initial recognition and initial measurement provisions of FIN No. 45 are applicable on a prospective basis to guarantees issued or modified after December 31, 2002. The disclosure requirements of FIN No. 45 are applicable for financial statements of interim or annual periods ending after December 15, 2002. The Company adopted the disclosure provisions of FIN No. 45 in the fourth quarter of fiscal year 2002.

In December 2002, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 148, "Accounting for Stock-Based Compensation -- Transition and Disclosure" ("SFAS 148"). SFAS 148 provides alternative methods of transition for a voluntary change to the fair value method of accounting for stock-based employee compensation as originally provided by SFAS No. 123 "Accounting for Stock-Based Compensation". Additionally, SFAS 148 amends the disclosure requirements of SFAS 123 to require prominent disclosure in both the annual and interim financial statements about the method of accounting for stock-based compensation and the effect of the method used on reported results. The transitional requirements of SFAS 148 are effective for all financial statements for fiscal years ending after December 15, 2002. The Company adopted the disclosure provisions of this statement as of December 31, 2002. The application of this standard did not have a material impact on the Company's consolidated financial position or results of operations.

In January 2003, the FASB issued FASB Interpretation No. 46, "Consolidation of Variable Interest Entities." In general, a variable interest entity is a corporation, partnership, trust or any other legal structure used for business purposes that either (a) does not have equity investors with voting rights or (b) has equity investors that do not provide sufficient financial resources for the entity to support its activities. A variable interest entity often holds financial assets, including loans or receivables, real estate or other property. Variable interest entities have been commonly referred to as special-purpose entities or off-balance sheet structures. This Interpretation requires a variable interest entity to be consolidated by a company if that company is subject to a majority of the risk of loss from the variable interest entity's activities or entitled to receive a majority of the entity's residual returns or both. The Company does not expect that this Interpretation will have a material impact on its financial position or results of operations.

In November 2002, the EITF reached a consensus on issue 00-21, "Revenue Arrangements with Multiple Deliverables." EITF 00-21 addresses revenue recognition on arrangements encompassing multiple elements that are delivered at different points in time, defining criteria that must be met for elements to be considered to be a separate unit of accounting. If an element is determined to be a separate unit of accounting, the revenue for the element is recognized at the time of delivery. EITF 00-21 is effective for revenue arrangements entered into in fiscal periods beginning after June 15, 2003. The Company does not expect that the pronouncement will have a material impact on its financial position or results of operations.

FACTORS THAT MAY AFFECT FUTURE RESULTS

MKS' BUSINESS DEPENDS SUBSTANTIALLY ON CAPITAL SPENDING IN THE SEMICONDUCTOR INDUSTRY WHICH IS CHARACTERIZED BY PERIODIC FLUCTUATIONS THAT MAY CAUSE A REDUCTION IN DEMAND FOR MKS' PRODUCTS.

MKS estimates that approximately 70% of its sales during 2002, 64% of its sales during 2001, and 76% of its sales during 2000 were to semiconductor capital equipment manufacturers and semiconductor device manufacturers, and it expects that sales to such customers will continue to account for a substantial majority of its sales. MKS' business depends upon the capital expenditures of semiconductor device manufacturers, which in turn depend upon the demand for semiconductors. Periodic reductions in demand for the products manufactured by semiconductor capital equipment manufacturers and semiconductor device manufacturers may adversely affect MKS' business, financial condition and results of operations. Historically, the semiconductor market has been highly cyclical and has experienced periods of overcapacity, resulting in significantly reduced demand for capital equipment. For example, in 1996 and 1998, the semiconductor capital equipment industry experienced significant declines, which caused a number of MKS' customers to reduce their orders. More recently, in 2001 and 2002, MKS has experienced a significant reduction in demand from OEM customers, and lower gross margins due to reduced absorption of manufacturing overhead. MKS incurred significant charges for excess and obsolete inventory of $16.6 million in 2001. The charges were primarily caused by a significant reduction in demand including reduced demand for older technology products. In addition, many semiconductor manufacturers have operations and customers in Asia, a region which in recent years has experienced serious economic problems including currency devaluations, debt defaults, lack of liquidity and recessions. MKS cannot be certain that semiconductor downturns will not recur. A decline in the level of orders as a result of any future downturn or slowdown in the semiconductor capital equipment industry could have a material adverse effect on MKS' business, financial condition and results of operations.

MKS' QUARTERLY OPERATING RESULTS HAVE VARIED, AND ARE LIKELY TO CONTINUE TO VARY SIGNIFICANTLY. THIS MAY RESULT IN VOLATILITY IN THE MARKET PRICE FOR MKS' SHARES.

A substantial portion of MKS' shipments occur shortly after an order is received and therefore MKS operates with a low level of backlog. As a result, a decrease in demand for MKS' products from one or more customers could occur with limited advance notice and could have a material adverse effect on MKS' results of operations in any particular period. A significant percentage of MKS' expenses are relatively fixed and based in part on expectations of future net sales. The inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net sales on MKS' results of operations. Factors that could cause fluctuations in MKS' net sales include:

- the timing of the receipt of orders from major customers;

- shipment delays;

- disruption in sources of supply;

- seasonal variations of capital spending by customers;

- production capacity constraints; and

- specific features requested by customers.

For example, MKS was in the process of increasing its production capacity when the semiconductor capital equipment market began to experience a significant downturn in 1996. This downturn had a material adverse effect on MKS' operating results in the second half of 1996 and the first half of 1997. After an increase in business in the latter half of 1997, the market experienced another downturn in 1998, which had a material adverse effect on MKS' 1998 and first quarter 1999 operating results. More recently, the semiconductor capital equipment market experienced a significant downturn during 2001 and 2002. As a result, MKS has experienced a reduction in demand from OEM customers, which has had a material adverse effect on MKS' operating results. During 2001 gross margins were negatively affected by significant charges for excess and obsolete inventory of $16.6 million in 2001. The charges were primarily caused by a significant reduction in demand including reduced demand for older technology products. As a result of the factors discussed above, it is likely that MKS will in the future experience quarterly or annual fluctuations and that, in one or more future quarters, its operating results will fall below the expectations of public market analysts or investors. In any such event, the price of MKS' common stock could decline significantly.

THE LOSS OF NET SALES TO ANY ONE OF MKS' MAJOR CUSTOMERS WOULD LIKELY HAVE A MATERIAL ADVERSE EFFECT ON MKS.

MKS' top ten customers accounted for approximately 49% of its net sales in 2002, 39% of its net sales in 2001 and 52% of its net sales in 2000. The loss of a major customer or any reduction in orders by these customers, including reductions due to market or competitive conditions, would likely have a material adverse effect on MKS' business, financial condition and results of operations. During 2002, 2001 and 2000, one customer, Applied Materials, accounted for approximately 23%, 18% and 30%, respectively, of MKS' net sales. None of MKS' significant customers, including Applied Materials, has entered into an agreement requiring it to purchase any minimum quantity of MKS' products. The demand for MKS' products from its semiconductor capital equipment customers depends in part on orders received by them from their semiconductor device manufacturer customers.

Attempts to lessen the adverse effect of any loss or reduction through the rapid addition of new customers could be difficult because prospective customers typically require lengthy qualification periods prior to placing volume orders with a new supplier. MKS' future success will continue to depend upon:

- its ability to maintain relationships with existing key customers;

- its ability to attract new customers; and

- the success of its customers in creating demand for their capital equipment products which incorporate MKS' products.

AS PART OF MKS' BUSINESS STRATEGY, MKS HAS ENTERED INTO AND MAY ENTER INTO OR SEEK TO ENTER INTO BUSINESS COMBINATIONS AND ACQUISITIONS THAT MAY BE DIFFICULT TO INTEGRATE, DISRUPT ITS BUSINESS, DILUTE STOCKHOLDER VALUE OR DIVERT MANAGEMENT ATTENTION.

MKS acquired Compact Instrument Technology, LLC ("Compact Instrument") in March 2000, Telvac Engineering, Ltd. ("Telvac") in May 2000, Spectra Instruments, LLC ("Spectra") in July 2000, D.I.P., Inc. ("D.I.P.") in September 2000, Applied Science and Technology, Inc. ("ASTeX") in January 2001, On-Line Technologies, Inc. ("On-Line") in April 2001, the ENI Business ("ENI") of Emerson Electric Co. in January 2002, Tenta Technologies Ltd. ("Tenta") in March 2002, IPC Fab Automation GmbH ("IPC") in April 2002 and EquipNet, Ltd. ("EquipNet") in October 2002. As a part of its business strategy, MKS may enter into additional business combinations and acquisitions. Acquisitions are typically accompanied by a number of risks, including the difficulty of integrating the operations and personnel of the acquired companies, the potential disruption of MKS' ongoing business and distraction of management, expenses related to the acquisition and potential unknown liabilities associated with acquired businesses.

As a result of its recent acquisitions, the Company has added several different decentralized accounting systems, resulting in a complex reporting environment. The Company expects that it will need to continue to modify its accounting policies, internal controls, procedures and compliance programs to provide consistency across all its operations.

If MKS is not successful in completing acquisitions that it may pursue in the future, it may be required to reevaluate its growth strategy, and MKS may have incurred substantial expenses and devoted significant management time and resources in seeking to complete proposed acquisitions that will not generate benefits for it.

In addition, with future acquisitions, MKS could use substantial portions of its available cash as all or a portion of the purchase price. MKS could also issue additional securities as consideration for these acquisitions, which could cause significant stockholder dilution. MKS' acquisitions of Compact Instrument, Telvac, Spectra, D.I.P., ASTeX, On-Line, ENI, Tenta, IPC, and EquipNet and any future acquisitions may not ultimately help MKS achieve its strategic goals and may pose other risks to MKS.

AN INABILITY TO CONVINCE SEMICONDUCTOR DEVICE MANUFACTURERS TO SPECIFY THE USE OF MKS' PRODUCTS TO MKS' CUSTOMERS, WHO ARE SEMICONDUCTOR CAPITAL EQUIPMENT MANUFACTURERS, WOULD WEAKEN MKS' COMPETITIVE POSITION.

The markets for MKS' products are highly competitive. Its competitive success often depends upon factors outside of its control. For example, in some cases, particularly with respect to mass flow controllers, semiconductor device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier's product in their equipment. Accordingly, for such products, MKS' success will depend in part on its ability to have semiconductor device manufacturers specify that MKS' products be used at their semiconductor fabrication facilities. In addition, MKS may encounter difficulties in changing established relationships of competitors that already have a large installed base of products within such semiconductor fabrication facilities.

IF MKS' PRODUCTS ARE NOT DESIGNED INTO SUCCESSIVE NEW GENERATIONS OF ITS CUSTOMERS' PRODUCTS, MKS WILL LOSE SIGNIFICANT NET SALES DURING THE LIFESPAN OF THOSE PRODUCTS.

New products designed by semiconductor capital equipment manufacturers typically have a lifespan of five to ten years. MKS' success depends on its products being designed into new generations of equipment for the semiconductor industry. MKS must develop products that are technologically current so that they are positioned to be chosen for use in each successive new generation of semiconductor capital equipment. If MKS products are not chosen by its customers, MKS' net sales may be reduced during the lifespan of its customers' products. In addition, MKS must make a significant capital investment to develop products for its customers well before its products are introduced and before it can be sure that it will recover its capital investment through sales to the customers in significant volume. MKS is thus also at risk during the development phase that its products may fail to meet its customers' technical or cost requirements and may be replaced by a competitive product or alternative technology solution. If that happens, MKS may be unable to recover MKS' development costs.

THE SEMICONDUCTOR INDUSTRY IS SUBJECT TO RAPID DEMAND SHIFTS WHICH ARE DIFFICULT TO PREDICT. AS A RESULT, MKS' INABILITY TO EXPAND ITS MANUFACTURING CAPACITY IN RESPONSE TO THESE RAPID SHIFTS MAY CAUSE A REDUCTION IN ITS MARKET SHARE.

MKS' ability to increase sales of certain products depends in part upon its ability to expand its manufacturing capacity for such products in a timely manner. If MKS is unable to expand its manufacturing capacity on a timely basis or to manage such expansion effectively, its customers could implement its competitors' products and, as a result, its market share could be reduced. Because the semiconductor industry is subject to rapid demand shifts which are difficult to foresee, MKS may not be able to increase capacity quickly enough to respond to a rapid increase in demand in the semiconductor industry. Additionally, capacity expansion could increase MKS' fixed operating expenses and if sales levels do not increase to offset the additional expense levels associated with any such expansion, its business, financial condition and results of operations could be materially adversely affected.

SALES TO FOREIGN MARKETS CONSTITUTE A SUBSTANTIAL PORTION OF MKS' NET SALES; THEREFORE, MKS' NET SALES AND RESULTS OF OPERATIONS COULD BE ADVERSELY AFFECTED BY DOWNTURNS IN ECONOMIC CONDITIONS IN COUNTRIES OUTSIDE OF THE UNITED STATES.

International sales include sales by MKS' foreign subsidiaries, but exclude direct export sales, which were less than 10% of MKS' total net sales for each of the years ended December 31, 2002, 2001 and 2000. International sales accounted for approximately 36% of net sales in 2002, 31% of net sales in 2001 and 23% of net sales in 2000.

MKS anticipates that international sales will continue to account for a significant portion of MKS' net sales. In addition, certain of MKS' key domestic customers derive a significant portion of their revenues from sales in international markets. Therefore, MKS' sales and results of operations could be adversely affected by economic slowdowns and other risks associated with international sales.

RISKS RELATING TO MKS' INTERNATIONAL OPERATIONS COULD ADVERSELY AFFECT MKS' OPERATING RESULTS.

MKS has substantial international sales, service and manufacturing operations in Europe and Asia, which exposes MKS to foreign operational and political risks that may harm MKS' business. MKS' international operations are subject to inherent risks, which may adversely affect MKS, including:

- political and economic instability in countries where MKS has sales, service and manufacturing operations, particularly in Asia;

- fluctuations in the value of currencies and high levels of inflation, particularly in Asia and Europe;

- changes in labor conditions and difficulties in staffing and managing foreign operations, including, but not limited to, labor unions;

- greater difficulty in collecting accounts receivable and longer payment cycles;

- burdens and costs of compliance with a variety of foreign laws;

- increases in duties and taxation;

- imposition of restrictions on currency conversion or the transfer of funds;

- changes in export duties and limitations on imports or exports;

- expropriation of private enterprises; and

- unexpected changes in foreign regulations.

If any of these risks materialize, MKS' operating results may be adversely affected.

UNFAVORABLE CURRENCY EXCHANGE RATE FLUCTUATIONS MAY LEAD TO LOWER GROSS MARGINS, OR MAY CAUSE MKS TO RAISE PRICES WHICH COULD RESULT IN REDUCED SALES.

Currency exchange rate fluctuations could have an adverse effect on MKS' net sales and results of operations and MKS could experience losses with respect to its hedging activities. Unfavorable currency fluctuations could require MKS to increase prices to foreign customers which could result in lower net sales by MKS to such customers. Alternatively, if MKS does not adjust the prices for its products in response to unfavorable currency fluctuations, its results of operations could be adversely affected. In addition, sales made by MKS' foreign subsidiaries are denominated in the currency of the country in which these products are sold and the currency it receives in payment for such sales could be less valuable at the time of receipt as a result of exchange rate fluctuations. MKS enters into forward exchange contracts and local currency purchased options to reduce currency exposure arising from intercompany sales of inventory. However, MKS cannot be certain that its efforts will be adequate to protect it against significant currency fluctuations or that such efforts will not expose it to additional exchange rate risks.

KEY PERSONNEL MAY BE DIFFICULT TO ATTRACT AND RETAIN.

MKS' success depends to a large extent upon the efforts and abilities of a number of key employees and officers, particularly those with expertise in the semiconductor manufacturing and similar industrial manufacturing industries. The loss of key employees or officers could have a material adverse effect on MKS' business, financial condition and results of operations. MKS believes that its future success will depend in part on its ability to attract and retain highly skilled technical, financial, managerial and marketing personnel. MKS cannot be certain that it will be successful in attracting and retaining such personnel.

MKS' PROPRIETARY TECHNOLOGY IS IMPORTANT TO THE CONTINUED SUCCESS OF ITS BUSINESS. MKS' FAILURE TO PROTECT THIS PROPRIETARY TECHNOLOGY MAY SIGNIFICANTLY IMPAIR MKS' COMPETITIVE POSITION.

As of December 31, 2002, MKS owned 170 U.S. patents and 128 foreign patents and had 89 pending U.S. patent applications and 286 pending foreign patent applications. Although MKS seeks to protect its intellectual property rights through patents, copyrights, trade secrets and other measures, it cannot be certain that:

- MKS will be able to protect its technology adequately;

- competitors will not be able to develop similar technology independently;

- any of MKS' pending patent applications will be issued;

- intellectual property laws will protect MKS' intellectual property rights; or

- third parties will not assert that MKS' products infringe patent, copyright or trade secrets of such parties.

PROTECTION OF MKS' INTELLECTUAL PROPERTY RIGHTS MAY RESULT IN COSTLY LITIGATION.

Litigation may be necessary in order to enforce MKS' patents, copyrights or other intellectual property rights, to protect its trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of infringement. For example, on November 3, 1999, On-Line Technologies Inc., which was acquired by MKS in April 2001, brought suit in federal district court in Connecticut against Perkin-Elmer, Inc. and certain other defendants for infringement of On-Line's patent related to its FTIR spectrometer product. Such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on MKS' business, financial condition and results of operations.

THE MARKET PRICE OF MKS' COMMON STOCK HAS FLUCTUATED AND MAY CONTINUE TO FLUCTUATE FOR REASONS OVER WHICH MKS HAS NO CONTROL.

The stock market has from time to time experienced, and is likely to continue to experience, extreme price and volume fluctuations. Recently, prices of securities of technology companies have been especially volatile and have often fluctuated for reasons that are unrelated to the operating performance of the companies. The market price of shares of MKS' common stock has fluctuated greatly since its initial public offering and could continue to fluctuate due to a variety of factors. In the past, companies that have experienced volatility in the market price of their stock have been the objects of securities class action litigation. If MKS were the object of securities class action litigation, it could result in substantial costs and a diversion of MKS' management's attention and resources.

MKS' DEPENDENCE ON SOLE, LIMITED SOURCE SUPPLIERS, AND INTERNATIONAL SUPPLIERS, COULD AFFECT ITS ABILITY TO MANUFACTURE PRODUCTS AND SYSTEMS.

MKS relies on sole, limited source suppliers, and international suppliers, for a few of its components and subassemblies that are critical to the manufacturing of MKS' products. This reliance involves several risks, including the following:

- the potential inability to obtain an adequate supply of required components;

- reduced control over pricing and timing of delivery of components; and

- the potential inability of its suppliers to develop technologically advanced products to support MKS' growth and development of new systems.

MKS believes that in time MKS could obtain and qualify alternative sources for most sole, limited source and international supplier parts. Seeking alternative sources of the parts could require MKS to redesign its systems, resulting in increased costs and likely shipping delays. MKS may be unable to redesign its systems, which could result in further costs and shipping delays. These increased costs would decrease MKS' profit margins if it could not pass the costs to its customers. Further, shipping delays could damage MKS' relationships with current and potential customers and have a material adverse effect on MKS' business and results of operations.

MKS IS SUBJECT TO GOVERNMENTAL REGULATIONS.

MKS is subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design and operation of MKS' power supply products. MKS must ensure that these systems meet certain safety standards, many of which vary across the countries in which MKS' systems are used. For example, the European Union has published directives specifically relating to power supplies. MKS must comply with these directives in order to ship MKS' systems into countries that are members of the European Union. MKS believes it is in compliance with current applicable regulations, directives and standards and has obtained all necessary permits, approvals, and authorizations to conduct MKS' business. However, compliance with future regulations, directives and standards could require it to modify or redesign certain systems, make capital expenditures or incur substantial costs. If MKS does not comply with current or future regulations, directives and standards:

- MKS could be subject to fines;

- MKS' production could be suspended; or

- MKS could be prohibited from offering particular systems in specified markets.

CERTAIN STOCKHOLDERS HAVE A SUBSTANTIAL INTEREST IN MKS AND MAY BE ABLE TO EXERT SUBSTANTIAL INFLUENCE OVER MKS' ACTIONS.

As of January 31, 2003, John R. Bertucci, president, chairman and chief executive officer of MKS, and certain members of his family, in the aggregate, beneficially owned approximately 22.7% of MKS' outstanding common stock. As a result, these stockholders, acting together, are able to exert substantial influence over the actions of MKS. Pursuant to the acquisition of the ENI Business of Emerson Electric Co. ("Emerson"), MKS issued approximately 12,000,000 shares of common stock to Emerson. As of January 31, 2003, Emerson beneficially owned approximately 23.4% of MKS' outstanding common stock, and accordingly, Emerson is able to exert substantial influence over MKS' actions.

SOME PROVISIONS OF MKS' RESTATED ARTICLES OF ORGANIZATION, AS AMENDED, MKS' AMENDED AND RESTATED BY-LAWS AND MASSACHUSETTS LAW COULD DISCOURAGE POTENTIAL ACQUISITION PROPOSALS AND COULD DELAY OR PREVENT A CHANGE IN CONTROL OF MKS.

Anti-takeover provisions could diminish the opportunities for stockholders to participate in tender offers, including tender offers at a price above the then current market value of the common stock. Such provisions may also inhibit increases in the market price of the common stock that could result from takeover attempts. For example, while MKS has no present plans to issue any preferred stock, MKS' board of directors, without further stockholder approval, may issue preferred stock that could have the effect of delaying, deterring or preventing a change in control of MKS. The issuance of preferred stock could adversely affect the voting power of the holders of MKS' common stock, including the loss of voting control to others. In addition, MKS' amended and restated by-laws provide for a classified board of directors consisting of three classes. The classified board could also have the effect of delaying, deterring or preventing a change in control of MKS.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

MARKET RISK AND SENSITIVITY ANALYSIS

FOREIGN EXCHANGE RATE RISK

MKS enters into local currency purchased options and forward exchange contracts to reduce currency exposure arising from intercompany sales of inventory. The potential fair value loss for a hypothetical 10% adverse change in currency exchange rates on MKS' local currency purchased options at December 31, 2002 would be immaterial, and would be approximately $628,000 at December 31, 2001. The potential loss in 2002 and 2001 was estimated by calculating the fair value of the local currency purchased options at December 31, 2002 and 2001 and comparing that with those calculated using the hypothetical currency exchange rates.

There were forward exchange contracts with notional amounts totaling $23,287,000 outstanding at December 31, 2002. Of such forward exchange contracts, $17,213,000 were outstanding to exchange Japanese yen for US dollars. There were no forward exchange contracts outstanding at December 31, 2001. The potential fair value loss for a hypothetical 10% adverse change in the forward currency exchange rate on MKS' forward exchange contracts at December 31, 2002 would be $2,661,000. The potential loss in 2002 was estimated by calculating the fair value of the forward exchange contracts at December 31, 2002 and comparing that with those calculated using the hypothetical forward currency exchange rates.

At December 31, 2002, MKS had $13,877,000 related to short-term borrowings denominated in Japanese yen. The carrying value of these short-term borrowings approximates fair value due to their short period to maturity. Assuming a hypothetical 10% adverse change in the Japanese yen to U.S. dollar year end exchange rate, the fair value of these short-term borrowings would increase by $1,542,000. The potential increase in fair value was estimated by calculating the fair value of the short-term borrowings at December 31, 2002 and comparing that with the fair value using the hypothetical year end exchange rate.

At December 31, 2001, MKS had $9,238,000 related to short-term borrowings denominated in Japanese yen. The carrying value of these short-term borrowings approximates fair value due to their short period to maturity. Assuming a hypothetical 10% adverse change in the Japanese yen to U.S. dollar year end exchange rate, the fair value of these short-term borrowings would increase by $1,026,000. The potential increase in fair value was estimated by calculating the fair value of the short-term borrowings at December 31, 2001 and comparing that with the fair value using the hypothetical year end exchange rate.

INTEREST RATE RISK

Due to its short-term duration, the fair value of the Company's cash and investment portfolio at December 31, 2002 and 2001 approximated its carrying value. Interest rate risk was estimated as the potential decrease in fair value resulting from a hypothetical 10% increase in interest rates for securities contained in the investment portfolio. The resulting hypothetical fair value was not materially different from the year-end carrying values.

ITEM 8. FINANCIAL STATEMENTS

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors and Stockholders of
MKS Instruments, Inc.:

In our opinion, based on our audits and the report of other auditors, the consolidated financial statements listed in the index appearing under Item 15(a)(1) present fairly, in all material respects, the financial position of MKS Instruments, Inc. and its subsidiaries at December 31, 2002 and 2001 and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2002 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, based on our audits and the report of other auditors, the financial statement schedule listed in the index appearing under Item 15(a)(2) presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. These financial statements and financial statement schedule are the responsibility of the Company's management; our responsibility is to express an opinion on these financial statements and financial statement schedule based on our audits. The consolidated financial statements give retroactive effect to the merger of Applied Science and Technology, Inc. on January 26, 2001 in a transaction accounted for as a pooling of interests, as described in Note 2 to the consolidated financial statements. We did not audit the financial statements and financial statement schedule of Applied Science and Technology, Inc., which statements reflect net sales of 30 percent of the related consolidated net sales for the year ended December 31, 2000. Those statements and schedule were audited by other auditors whose report thereon has been furnished to us, and our opinion expressed herein, insofar as it relates to the amounts included for Applied Science and Technology, Inc., is based solely on the report of the other auditors. We conducted our audits of these statements in accordance with auditing standards generally accepted in the United States of America, which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits and the report of other auditors provide a reasonable basis for our opinion.

As discussed in Note 15 to the consolidated financial statements, the Company changed its method of accounting for goodwill and other intangible assets upon adoption of Statement of Financial Accounting Standards No. 142, "Goodwill and Other Intangible Assets" on January 1, 2002.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
February 3, 2003

INDEPENDENT AUDITORS' REPORT

The Board of Directors and Stockholders
Applied Science and Technology, Inc.:

We have audited the consolidated statements of operations, stockholders' equity, and cash flows of Applied Science and Technology, Inc. and subsidiaries for the year ended July 1, 2000. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the results of operations and cash flows of Applied Science and Technology, Inc. and subsidiaries for the year ended July 1, 2000, in conformity with accounting principles generally accepted in the United States of America.

/s/ KPMG LLP

Boston, Massachusetts
July 31, 2000

MKS INSTRUMENTS, INC.

CONSOLIDATED BALANCE SHEETS

DECEMBER 31	2002	2001
(IN THOUSANDS, EXCEPT SHARE DATA)		
ASSETS		
Current assets:		
Cash and cash equivalents	$ 88,820	$120,869
Short-term investments	39,894	16,625
Trade accounts receivable, net of allowances of $3,264 and $3,282 at December 31, 2002 and 2001, respectively	45,505	35,778
Inventories	73,235	56,954
Deferred tax asset	--	16,426
Other current assets	6,098	16,353
Total current assets	253,552	263,005
Property, plant and equipment, net	82,595	69,634
Long-term investments	15,980	11,029
Goodwill, net	259,781	31,113
Acquired intangible assets, net	67,720	21,172
Long-term deferred tax asset	--	4,444
Other assets	5,995	10,792
Total assets	$685,623	$411,189
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Short-term borrowings	$ 13,877	$ 9,238
Current portion of long-term debt	4,263	5,074
Current portion of capital lease obligations	332	503
Accounts payable	15,301	9,668
Accrued compensation	6,117	6,116
Other accrued expenses	21,654	15,551
Total current liabilities	61,544	46,150
Long-term debt	11,469	10,916
Long-term portion of capital lease obligations	257	341
Other liabilities	1,663	911
Commitments and contingencies (Note 7)		
Stockholders' equity:		
Preferred Stock, $0.01 par value, 2,000,000 shares authorized; none issued and outstanding	--	--
Common Stock, no par value, 200,000,000 shares authorized; 51,359,753 and 37,998,699 shares issued and outstanding at December 31, 2002 and 2001, respectively	113	113
Additional paid-in capital	579,175	285,252
Retained earnings	28,623	68,160
Accumulated other comprehensive income (loss)	2,779	(654)
Total stockholders' equity	610,690	352,871
Total liabilities and stockholders' equity	$685,623	$411,189

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.

CONSOLIDATED STATEMENTS OF INCOME

	YEAR ENDED DECEMBER 31		
	2002	2001	2000
	(IN THOUSANDS, EXCEPT PER SHARE DATA)		
Net sales	$314,773	$286,808	$466,852
Cost of sales	208,978	201,225	261,456
Gross profit	105,795	85,583	205,396
Research and development	45,999	37,964	37,323
Selling, general and administrative	77,830	70,185	71,205
Amortization of goodwill and acquired intangible assets	13,897	11,026	5,023
Restructuring and asset impairment charges	2,726	3,720	--
Merger expenses	--	7,708	--
Purchase of in-process technology	8,390	2,340	310
Income (loss) from operations	(43,047)	(47,360)	91,535
Interest expense	1,231	1,513	1,390
Interest income	2,681	5,196	6,208
Income from litigation settlement	4,200	--	--
Other expense, net	4,121	2,379	243
Income (loss) before income taxes	(41,518)	(46,056)	96,110
Provision (benefit) for income taxes	(1,981)	(15,013)	35,850
Net income (loss)	$(39,537)	$(31,043)	$ 60,260
Net income (loss) per share:			
Basic	$ (0.79)	$ (0.83)	$ 1.74
Diluted	$ (0.79)	$ (0.83)	$ 1.67
Weighted average common shares outstanding:			
Basic	50,000	37,493	34,596
Diluted	50,000	37,493	36,170

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2002, 2001
AND 2000 ---------------------------------
---------------------- COMMON STOCK
ADDITIONAL ------------------ PAID-IN
RETAINED SHAREHOLDER SHARES AMOUNT CAPITAL
EARNINGS RECEIVABLE ---------- ------ -----
----- -------- ----------- (IN THOUSANDS,
EXCEPT SHARE DATA) BALANCE AT DECEMBER 31,
1999................. 33,388,671 $113
$154,630 $31,042 $(1,004) Adjustment to
distributions payable to
stockholders...............................
1,933 Issuance of common
stock..................... 1,917,250 73,207
Issuance of common stock from exercise of
stock options and Employee Stock Purchase
Plan.......................................
787,929 6,477 Tax benefit from exercise of
stock options... 5,273 Stock and stock
options issued in acquisition of
businesses..............................
551,815 24,136 Shareholder
receivable...................... 1,004
Comprehensive income: Net
income................................
60,260 Other comprehensive income, net of
taxes: Changes in value of financial
instruments designated as cash flow hedges
and unrealized gain (loss) on
investment...... Foreign currency
translation adjustment..... Comprehensive
income....................... ---------- -
--- -------- ------- ------- BALANCE AT
DECEMBER 31, 2000.................
36,645,665 113 263,723 93,235 -- Issuance
of common stock from exercise of stock
options and Employee Stock Purchase
Plan.......................................
693,089 6,391 Tax benefit from exercise of
stock options... 2,342 Issuance of common
stock for acquisition of
business...................................
659,945 12,110 Stock option compensation
and other.......... 686 Comprehensive loss:
Net
loss..................................
(31,043) Other comprehensive income, net of
taxes: Changes in value of financial
instruments designated as cash flow hedges
and unrealized gain (loss) on
investment...... Foreign currency
translation adjustment..... Comprehensive
loss........................ Adjustment
to conform ASTeX's year end....... 5,968 --
-------- ---- -------- ------- -------
BALANCE AT DECEMBER 31,
2001................ 37,998,699 113
285,252 68,160 -- Issuance of common stock
from exercise of stock options and Employee
Stock Purchase
Plan.......................................
661,054 8,920 Tax benefit from exercise of
stock options... 1,648 Issuance of common
stock for acquisition of
businesses................................
12,700,000 282,341 Stock option
compensation................... 1,014
Comprehensive loss: Net
loss..................................
(39,537) Other comprehensive income, net of
taxes: Changes in value of financial
instruments designated as cash flow hedges
and unrealized gain (loss) on
investment...... Foreign currency
translation adjustment..... Comprehensive
loss......................... ---------- -

--- -------- ------- ------- BALANCE AT DECEMBER 31, 2002................. 51,359,753 $113 $579,175 $28,623 -- ========== ==== ======== ======= ======= FOR THE YEARS ENDED DECEMBER 31, 2002, 2001 AND 2000 --------------------------------- ----------- ACCUMULATED OTHER TOTAL COMPREHENSIVE COMPREHENSIVE STOCKHOLDERS' INCOME (LOSS) INCOME (LOSS) EQUITY -------- ----- ------------- ------------- (IN THOUSANDS, EXCEPT SHARE DATA) BALANCE AT DECEMBER 31, 1999................. $ 904 $185,685 Adjustment to distributions payable to stockholders................................ 1,933 Issuance of common stock..................... 73,207 Issuance of common stock from exercise of stock options and Employee Stock Purchase Plan.. 6,477 Tax benefit from exercise of stock options... 5,273 Stock and stock options issued in acquisition of businesses.............................. 24,136 Shareholder receivable...................... 1,004 Comprehensive income: Net income................................ 60,260 60,260 Other comprehensive income, net of taxes: Changes in value of financial instruments designated as cash flow hedges and unrealized gain (loss) on investment...... 603 603 603 Foreign currency translation adjustment..... (1,056) (1,056) (1,056) -------- Comprehensive income....................... $ 59,807 --- ---- ======== -------- BALANCE AT DECEMBER 31, 2000................. 451 357,522 Issuance of common stock from exercise of stock options and Employee Stock Purchase Plan.. 6,391 Tax benefit from exercise of stock options... 2,342 Issuance of common stock for acquisition of business.................................. 12,110 Stock option compensation and other.......... 686 Comprehensive loss: Net loss.................................. (31,043) (31,043) Other comprehensive income, net of taxes: Changes in value of financial instruments designated as cash flow hedges and unrealized gain (loss) on investment...... 104 104 104 Foreign currency translation adjustment..... (1,209) (1,209) (1,209) -------- Comprehensive loss........................ $(32,148) ======== Adjustment to conform ASTeX's year end....... 5,968 ------- -------- BALANCE AT DECEMBER 31, 2001................. (654) 352,871 Issuance of common stock from exercise of stock options and Employee Stock Purchase Plan.. 8,920 Tax benefit from exercise of stock options... 1,648 Issuance of common stock for acquisition of businesses................................ 282,341 Stock option compensation.................. 1,014 Comprehensive loss: Net loss.................................. (39,537) (39,537) Other comprehensive income, net of taxes: Changes in value of financial instruments designated as cash flow hedges and unrealized gain (loss) on investment...... (693) (693) (693) Foreign currency translation adjustment..... 4,126 4,126 4,126 -------- Comprehensive loss........................ $(36,104) --

----- ======== -------- BALANCE AT DECEMBER
31, 2002................. $ 2,779 $610,690
======= ========

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

	YEAR ENDED DECEMBER 31		
	2002	2001	2000
	(IN THOUSANDS)		
Cash flows from operating activities:			
Net income (loss)	$(39,537)	$(31,043)	$ 60,260
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	28,727	26,705	14,875
Purchase of in-process technology	8,390	2,340	310
Asset impairment charges	4,988	--	--
Deferred taxes	250	(11,452)	(2,828)
Other	1,424	2,496	534
Changes in operating assets and liabilities, net of effects of businesses acquired:			
Trade accounts receivable	(874)	58,911	(37,593)
Inventories	6,600	16,218	(24,932)
Other current assets	12,263	(9,637)	450
Accrued expenses	(7,271)	(12,170)	10,323
Accounts payable	(1,111)	(14,293)	7,503
Income taxes payable	--	(7,967)	11,106
Net cash provided by operating activities	13,849	20,108	40,008
Cash flows from investing activities:			
Purchases of short-term and long-term available-for-sale investments	(102,283)	(22,545)	(46,598)
Maturities and sales of short-term and long-term available-for-sale investments	73,568	21,066	39,044
Purchases of property, plant and equipment	(7,948)	(14,638)	(32,168)
Proceeds from sale of assets and investment	2,500	4,726	--
Business combinations, net of cash acquired	(17,696)	(7,121)	(23,921)
Increase (decrease) in other assets	(68)	383	(1,171)
Net cash used in investing activities	(51,927)	(18,129)	(64,814)
Cash flows from financing activities:			
Proceeds from short-term borrowings	12,771	32,117	42,272
Payments on short-term borrowings	(9,905)	(36,944)	(37,226)
Proceeds from long-term debt	--	833	9,639
Payments on long-term debt	(5,846)	(2,810)	(10,800)
Proceeds from issuance of common stock, net of issuance costs	--	--	73,207
Proceeds from exercise of stock options and Employee Stock Purchase Plan	8,920	6,391	6,477
Cash distributions to stockholders	--	--	(1,417)
Principal payments under capital lease obligations	(481)	(706)	(1,064)
Net cash provided by (used in) financing activities	5,459	(1,119)	81,088
Effect of exchange rate changes on cash and cash equivalents	570	69	(689)
Increase (decrease) in cash and cash equivalents	(32,049)	929	55,593
Cash and cash equivalents at beginning of period	120,869	123,082	67,489
Effect of excluded results of ASTeX (Note 2)	--	(3,142)	--
Cash and cash equivalents at end of period	$ 88,820	$120,869	$123,082

======== ======== ======== Supplemental disclosure of cash flow information: Cash paid during the period for: Interest.. $ 1,141 $ 1,074 $ 1,416 Income taxes... $ 1,101 $ 16,032 $ 24,995 Supplemental schedule of noncash investing and financing activities: Stock and stock options issued for acquisitions......... $282,341 $ 12,110 $ 24,136 Note receivable from sale of assets.................... $ -- $ 3,928 $ --

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

1) DESCRIPTION OF BUSINESS

MKS Instruments, Inc. was founded in 1961. MKS Instruments, Inc. is a leading worldwide provider of instruments, components and subsystems that measure, control, power and monitor critical parameters of semiconductor and other advanced manufacturing process environments.

2) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

BASIS OF PRESENTATION

All significant intercompany accounts and transactions have been eliminated in consolidation. On January 26, 2001, MKS Instruments, Inc. completed its acquisition of Applied Science and Technology, Inc. ("ASTeX") in a transaction accounted for under the pooling of interests method of accounting and, accordingly, the consolidated financial statements reflect the combined financial position, results of operations and cash flows of MKS Instruments, Inc., ASTeX and their subsidiaries (together, the "Company" or "MKS"), for all periods presented. These consolidated financial statements combine the historical consolidated financial statements of the Company for all periods presented and the ASTeX share information has been converted to the MKS share equivalent.

The fiscal year of MKS ends on December 31. The fiscal year of ASTeX for the period prior to the acquisition ended on July 1, 2000.

The historical periods combined giving effect to the merger are the fiscal year ended December 31, 2000 for MKS, and the fiscal year ended July 1, 2000 for ASTeX.

As a result of conforming dissimilar fiscal year-ends, the ASTeX results of operations for the six month period ended December 31, 2000 are excluded from these consolidated financial statements. The following is information related to the ASTeX financial results for the six-month period ended December 31, 2000:

Net sales	$89,193
Net income	5,968
Decrease in cash and cash equivalents	(3,142)

The excluded net income and excluded decrease in cash and cash equivalents of $5,968,000 and $3,142,000 have been recorded as adjustments to retained earnings and statement of cash flows for the year ended December 31, 2001, respectively.

The following table shows the separate historical results of MKS and ASTeX for the period prior to the consummation of the merger of the two entities, included in the reported results for the year ended December 31, 2000.

	FISCAL YEAR ENDED 2000
Net sales:	
MKS	$326,955
ASTeX	139,897
	$466,852
Net income (loss):	
MKS	$ 46,234
ASTeX	14,026
	$ 60,260

All fees and expenses related to the merger and the integration of the combined companies were expensed as required under the pooling of interests accounting method. For the year ended December 31, 2001, the Company expensed approximately $7.7 million of merger related expenses, consisting of $6.9 million of investment banking, legal, accounting, printing and other professional fees, and $0.8 million of regulatory and other costs.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

NET INCOME PER SHARE

Basic earnings per share is based on the weighted average number of common shares outstanding, and diluted earnings per share is based on the weighted average number of common shares outstanding and all dilutive potential common equivalent shares outstanding. The dilutive effect of options is determined under the treasury stock method using the average market price for the period. Common equivalent shares are included in the per share calculations when the effect of their inclusion would be dilutive.

The following is a reconciliation of basic to diluted net income per share:

	FOR THE YEAR ENDED DECEMBER 31,		
	2002	2001	2000
Net income (loss)	$ (39,537)	$ (31,043)	$ 60,260
Shares used in net income (loss) per common shares -- basic	50,000,000	37,493,000	34,596,000
Effect of dilutive securities: Stock options	--	--	1,574,000
Shares used in net income (loss) per common share -- diluted	50,000,000	37,493,000	36,170,000
Net income (loss) per common share -- basic	$ (0.79)	$ (0.83)	$ 1.74
Net income (loss) per common share -- diluted	$ (0.79)	$ (0.83)	$ 1.67

For purposes of computing diluted earnings per share, weighted average common share equivalents do not include stock options with an exercise price greater than the average market price of the common shares during the period. Options to purchase 474,000 shares of common stock were outstanding during 2000, but were not included in the calculation of diluted net income per common share because the option price was greater than the average market price of the common shares during the period. Options outstanding during the years ended December 31, 2002 of 8,284,693 and 2001 of 5,958,735 are excluded from the calculation of diluted net loss per common share because their inclusion would be anti-dilutive.

STOCK-BASED COMPENSATION

The Company applies Accounting Principles Board Opinion (APB) No. 25, "Accounting for Stock Issued to Employees" and related interpretations in accounting for its stock-based compensation plans. Accordingly, no accounting recognition is given to stock options granted at fair market value until they are exercised. Upon exercise, net proceeds, including tax benefits realized, are credited to stockholders' equity.

In October 1995, the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards (SFAS) No. 123, "Accounting for Stock-Based Compensation," which sets forth a fair-value-based method of recognizing stock-based compensation expense. As permitted by SFAS No. 123, the Company has elected to continue to apply APB No. 25 to account for its stock-based compensation plans. Had compensation cost for awards granted after 1994 under the Company's stock-based compensation plans

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

been determined based on the fair value at the grant dates consistent with the method set forth under SFAS No. 123, the effect on certain financial information of the Company would have been as follows:

	2002	2001	2000
Net income (loss)			
Net income (loss) as reported	$(39,537)	$(31,043)	$60,260
Add: Stock-based employee compensation expense included in reported net income, net of tax	1,014	114	--
Deduct: Total stock-based employee compensation expense determined under the fair-value-based method for all awards, net of tax	(18,245)	(20,466)	(6,940)
Pro forma net income (loss)	$(56,768)	$(51,395)	$53,320
Basic net income (loss) per share:			
Net income (loss) as reported	$ (0.79)	$ (0.83)	$ 1.74
Pro forma net income (loss)	$ (1.14)	$ (1.37)	$ 1.54
Diluted net income (loss) per share:			
Net income (loss) as reported	$ (0.79)	$ (0.83)	$ 1.67
Pro forma net income (loss)	$ (1.14)	$ (1.37)	$ 1.47

There is no tax benefit included in the stock-based employee compensation expense determined under the fair-value-based method for the year ended December 31, 2002, as the Company established a full valuation allowance for its net deferred tax assets during 2002.

The weighted average fair value of options at the date of grant was estimated using the Black-Scholes model and was $14.22 with the following assumptions in 2002: expected life of 5 years, weighted average interest rate of 3.91%, expected volatility of 81%, and no dividend yield. In 2001, the weighted average fair value of options at the date of grant was $14.65, with the following assumptions: expected life of 5 years, weighted average interest rate of 4.27%, expected volatility of 83%, and no dividend yield. In 2000, the weighted average fair value of MKS options at the date of grant was $22.74, with the following assumptions: expected life of 5 years, weighted average interest rate of 6.37%, expected volatility of 88%, and no dividend yield.

The fair value of purchase rights granted in 2002, 2001 and 2000 under the Purchase Plan was $9.35, $7.19 and $7.64, respectively. The fair value of the employees' purchase rights was estimated using the Black-Scholes model with the following assumptions in 2002: expected life of 6 months, interest rate of 1.88%, expected volatility of 81%, and no dividend yield. In 2001, the following assumptions were made: expected life of 6 months, interest rate of 5.03%, expected volatility of 83%, and no dividend yield. In 2000, the following assumptions were made: expected life of 6 months, interest rate of 5.57%, expected volatility of 88%, and no dividend yield.

The weighted average fair value of ASTeX options granted during fiscal 2000 was $18.53. The fair value of each ASTeX option grant was estimated on the date of grant using the Black-Scholes option-pricing model with the following weighted average assumptions used for grants issued in fiscal 2000: no dividend yield; expected volatility of 72%; risk-free interest rate of 5.92%; and expected life of 4 years.

FOREIGN EXCHANGE

The functional currency of the majority of the Company's foreign subsidiaries is the applicable local currency. For those subsidiaries, assets and liabilities are translated to U.S. dollars at year-end exchange rates.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Income and expense accounts are translated at the average exchange rates prevailing for the year. The resulting translation adjustments are included in accumulated other comprehensive income in consolidated stockholders' equity. Foreign exchange transaction gains and losses were not material in 2002, 2001 and 2000.

REVENUE RECOGNITION

Revenue from product sales is recorded upon transfer of title and risk of loss to the customer provided that there is evidence of an arrangement, the sales price is fixed or determinable, and collection of the related receivable is reasonably assured. The Company has no obligations to customers after the date products are shipped other than pursuant to warranty obligations. The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. Shipping and handling fees, if any, billed to customers are recognized as revenue. The related shipping and handling costs are recognized in cost of sales. Accounts receivable allowances include sales returns and bad debt allowances. The Company monitors and tracks the amount of product returns and reduces revenue at the time of shipment for the estimated amount of such future returns, based on historical experience. The Company makes estimates evaluating its allowance for doubtful accounts. The Company continuously monitors collections and payments from its customers and maintains a provision for estimated credit losses based upon its historical experience and any specific customer collection issues that it has identified.

CASH AND CASH EQUIVALENTS AND INVESTMENTS

All highly liquid investments with an original maturity of three months or less at the date of purchase are considered to be cash equivalents.

Cash and cash equivalents consists of the following:

DECEMBER 31,	2002	2001
Cash and Money Market Instruments	$51,538	$101,045
Commercial Paper	31,216	8,094
Federal Government and Government Agency Obligations	6,066	11,730
	$88,820	$120,869

The fair value of short-term available-for-sale investments maturing within one year consists of the following:

DECEMBER 31,	2002	2001
Federal Government and Government Agency Obligations	$28,636	$ 5,442
State and Municipal Government Obligations	--	3,100
Corporate Obligations	858	--
Commercial Paper	10,400	8,083
	$39,894	$16,625

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

The fair value of long-term available-for-sale investments with maturities of 1 to 5 years consists of the following:

DECEMBER 31,	2002	2001
Federal Government and Government Agency Obligations........	$ 2,061	$ 1,008
State and Municipal Government Obligations.................	--	7,021
Corporate Obligations......................................	13,919	3,000
	$15,980	$11,029

The appropriate classification of investments in securities is determined at the time of purchase. Debt securities that the Company does not have the intent and ability to hold to maturity are classified as "available-for-sale" and are carried at fair value. Unrealized gains and losses on securities classified as available-for-sale are included in accumulated other comprehensive income in consolidated stockholders' equity. Gross unrealized gains and losses on available-for-sale investments were not material at December 31, 2002 and 2001. The cost of securities sold is based on the specific identification method.

The Company has held investments in companies having operations or technology in areas within or adjacent to its strategic focus, which are in non-publicly traded companies whose value is difficult to determine. These investments are accounted for under the cost and equity method of accounting. Under the equity method of accounting, which generally applies to investments that represent a 20 to 50 percent ownership of the equity securities of the investee, the Company's proportionate share of the earnings or losses of the investee is included in other income and expense. The Company records an investment impairment charge when it believes an investment has experienced a decline in value. As of December 31, 2002 there were no investments accounted for under the equity and cost method. As of December 31, 2001 there were $2,296,000 of investments accounted for under the equity method. This investment was sold during 2002. The gain on the transaction was not material.

INVENTORIES

The Company values its inventory at the lower of cost (first-in, first-out method) or market. The Company regularly reviews inventory quantities on hand and records a provision to write down excess and obsolete inventory to its estimated net realizable value, if less than cost, based primarily on its estimated forecast of product demand.

PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are stated at cost. Equipment acquired under capital leases is recorded at the present value of the minimum lease payments required during the lease period. Expenditures for major renewals and betterments that extend the useful lives of property, plant and equipment are capitalized. Expenditures for maintenance and repairs are charged to expense as incurred. When assets are sold or otherwise disposed of, the cost and related accumulated depreciation are eliminated from the accounts and any resulting gain or loss is recognized in earnings.

Depreciation is provided on the straight-line method over the estimated useful lives of twenty to thirty-one and one-half years for buildings and three to seven years for machinery and equipment and furniture and fixtures. Leasehold improvements are amortized over the shorter of the lease term or the estimated useful life of the leased asset.

INTANGIBLE ASSETS

Intangible assets resulting from the acquisitions of entities accounted for using the purchase method of accounting are estimated by management based on the fair value of assets received. These include acquired customer lists, technology, patents, trade name, and covenants not to compete. Intangible assets are amortized from three to eight years on a straight-line basis which represents the estimated periods of benefit.

GOODWILL

Goodwill is the amount by which the cost of acquired net assets exceeded the fair value of those net assets on the date of acquisition. Through December 31, 2001, the Company amortized goodwill on a straight-line basis over its expected useful life of 5 to 7 years. As of January 1, 2002, the Company ceased amortizing goodwill in compliance with Statement of Financial Accounting Standards No. 142, "Goodwill and Other Intangible Assets" ("SFAS 142").

The Company assesses goodwill for impairment at least annually, or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired. If the book value of a reporting unit exceeds its fair value, the implied fair value of goodwill is compared with the carrying amount of goodwill. If the carrying amount of goodwill exceeds the implied fair value, an impairment loss is recorded equal to that excess.

IMPAIRMENT OF LONG-LIVED ASSETS

The Company evaluates the recoverability of its long-lived assets which include acquired amortizable intangible assets, in accordance with Statement of Financial Accounting Standards No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets" ("SFAS 144"). SFAS 144 requires recognition of impairment of long-lived assets in the event the net book value of such assets exceeds the future undiscounted cash flows attributable to such assets. If an impairment is indicated, the assets are written down to their estimated fair value.

RESEARCH AND DEVELOPMENT

Research and development costs are expensed as incurred. The Company's research and development efforts include numerous projects which generally have a duration of 18 to 30 months.

IN-PROCESS RESEARCH AND DEVELOPMENT

The Company values tangible and intangible assets acquired through its business acquisitions at fair value including in-process research and development ("IPR&D"). The Company determines IPR&D through established valuation techniques for various projects for the development of new products and technologies and expenses IPR&D when technical feasibility is not reached.

ADVERTISING COSTS

Advertising costs are expensed as incurred. Advertising costs were not material in 2002, 2001, and 2000.

INCOME TAXES

The Company records income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, and operating loss and tax credit carryforwards. The Company evaluates the realizability of its net deferred tax assets and assesses the need for a valuation allowance on a quarterly basis. The future benefit to be derived from its deferred tax assets is dependent upon its ability to generate sufficient future taxable income to realize the assets. The Company records a valuation allowance to reduce its net deferred tax assets to the amount that may be more likely than not to be realized. To the extent the Company establishes a valuation allowance, an expense will be recorded within the provision for income taxes line on the statement of income. During the year ended December 31, 2002 the Company established a full valuation allowance for its net deferred tax assets. In periods subsequent to establishing a valuation allowance, if the Company were to determine that it would be able to realize its net deferred tax assets in excess of their net recorded amount, an adjustment to the valuation allowance would be recorded as a reduction to income tax expense in the period such determination was made. Also in future periods, if the Company were to determine that it would not be able to realize the recorded amount of its net deferred tax assets, an adjustment to the valuation allowance would be recorded as an increase to income tax expense in the period such determination was made.

The Company does not provide for a U.S. income tax liability on undistributed earnings of its foreign subsidiaries. The earnings of non-U.S. subsidiaries, which reflect full provision for non-U.S. income taxes, are indefinitely reinvested in non-U.S. operations or will be remitted substantially free of additional tax.

NEW ACCOUNTING PRONOUNCEMENTS

In August 2001, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards No. 143, "Accounting for Obligations Associated with the Retirement of Long-Lived Assets" ("SFAS 143"). The objective of SFAS 143 is to provide accounting guidance for legal obligations associated with the retirement of long-lived assets. The retirement obligations included within the scope of this pronouncement are those that an entity cannot avoid as a result of either the acquisition, construction or normal operation of a long-lived asset. Components of larger systems also fall under this pronouncement, as well as tangible long-lived assets with indeterminable lives. The provisions of SFAS 143 are effective for financial statements issued for fiscal years beginning after June 15, 2002. The Company is currently evaluating the expected impact of the adoption of SFAS 143 on the Company's financial condition, cash flows and results of operations. The Company will adopt the standard in the first quarter of fiscal 2003.

In June 2002, Statement of Financial Accounting Standards No. 146, "Accounting for Costs Associated with Exit or Disposal Activities" ("SFAS 146") was issued. This Statement addresses financial accounting and reporting for costs associated with exit or disposal activities and nullifies Emerging Issues Task Force (EITF) Issue No. 94-3, "Liability Recognition for Certain Employee Termination Benefits and Other Costs to Exit an Activity (including Certain Costs Incurred in a Restructuring)." The provisions of SFAS 146 are effective for exit or disposal activities that are initiated after December 31, 2002, with early application encouraged. The Company is currently reviewing the provisions of SFAS 146 to determine the standard's impact upon adoption. The Company will adopt the standard in the first quarter of fiscal 2003.

In December 2002, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 148, "Accounting for Stock-Based Compensation -- Transition and Disclosure" ("SFAS 148"). SFAS 148 provides alternative methods of transition for a voluntary change to the fair value method of accounting for stock-based employee compensation as originally provided by SFAS No. 123 "Accounting for Stock-Based Compensation". Additionally, SFAS 148 amends the disclosure requirements of SFAS 123 to require prominent disclosure in both the annual and interim financial statements about the method of accounting for stock-based compensation and the effect of the method used on reported results. The transitional requirements of SFAS 148 will be effective for all financial statements for fiscal years ending after December 15, 2002. The disclosure requirements shall be effective for financial reports containing condensed financial statements for interim periods beginning after December 15, 2002. The Company adopted the provisions of this statement as of December 31, 2002. The application of this standard did not have a material impact on the Company's consolidated financial position or results of operations.

In November 2002, the FASB issued FASB Interpretation ("FIN") No. 45, "Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others." FIN No. 45 clarifies that a guarantor is required to recognize, at the inception of a guarantee, a liability for the fair value of the obligation undertaken in issuing the guarantee. The initial recognition and initial measurement provisions of FIN No. 45 are applicable on a prospective basis to guarantees issued or modified after December 31, 2002. The disclosure requirements of FIN No. 45 are applicable for financial statements of interim or annual periods ending after December 15, 2002, and were adopted in the fourth quarter of fiscal year 2002.

In January 2003, the FASB issued FASB Interpretation No. 46, "Consolidation of Variable Interest Entities." In general, a variable interest entity is a corporation, partnership, trust or any other legal structure used for business purposes that either (a) does not have equity investors with voting rights or (b) has equity investors that do not provide sufficient financial resources for the entity to support its activities. A variable interest entity often holds financial assets, including loans or receivables, real estate or other property. Variable interest entities have been commonly referred to as special-purpose entities or off-balance sheet structures. This Interpretation requires a variable interest entity to be consolidated by a company if that company is subject to a majority of the risk of loss from the variable interest entity's activities or entitled to receive a majority of the entity's residual returns or both. The Company does not expect that this Interpretation will have a material impact on its financial position or results of operations.

In November 2002, the EITF reached a consensus on issue 00-21, "Revenue Arrangements with Multiple Deliverables." EITF 00-21 addresses revenue recognition on arrangements encompassing multiple elements that are delivered at different points in time, defining criteria that must be met for elements to be considered to be a separate unit of accounting. If an element is determined to be a separate unit of accounting, the revenue for the element is recognized at the time of delivery. EITF 00-21 is effective for revenue arrangements entered into in fiscal periods beginning after June 15, 2003. The Company does not expect that the pronouncement will have a material impact on its financial position or results of operations.

USE OF ESTIMATES

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an on-going basis, management evaluates its estimates and judgments, including those related to revenue recognition, inventory, intangible assets, goodwill, and other long-lived assets, in-process research and development, merger expenses, income taxes and investments. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

RECLASSIFICATIONS

Certain prior year amounts have been reclassified to be consistent with the current year classifications.

3) FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

FOREIGN EXCHANGE RISK MANAGEMENT

The Company hedges a portion of its forecasted foreign currency denominated intercompany sales of inventory, over a maximum period of fifteen months, using forward exchange contracts and currency options primarily related to Japanese and European currencies. These derivatives are designated as cash-flow hedges, and changes in their fair value are carried in accumulated other comprehensive income until the hedged transaction affects earnings. When the hedged transaction affects earnings, the appropriate gain or loss from the derivative designated as a hedge of the transaction is reclassified from accumulated other comprehensive income to cost of sales. As of December 31, 2002 the amount that will be reclassified from accumulated other comprehensive income to earnings over the next twelve months is an unrealized loss of $407,000, net of taxes. The ineffective portion of the derivatives is primarily related to option premiums, is recorded in cost of sales, and was immaterial in 2002, 2001, and 2000.

The Company hedges certain intercompany and other payables with foreign exchange contracts and currency options. Since these derivatives hedge existing amounts that are denominated in foreign currencies, the derivatives do not qualify for hedge accounting under SFAS No. 133. The foreign exchange gain on these derivatives was not material in 2002, 2001 and 2000.

Realized and unrealized gains and losses on forward exchange contracts and local currency purchased option contracts that do not qualify for hedge accounting are recognized immediately in earnings. The cash flows resulting from forward exchange contracts and local currency purchased options that qualify for hedge accounting are classified in the statement of cash flows as part of cash flows from operating activities. Cash flows resulting from forward exchange contracts and local currency purchased options that do not qualify for hedge accounting are classified in the statement of cash flows as investing activities. The Company does not hold or issue derivative financial instruments for trading purposes.

There were forward exchange contracts with notional amounts totaling $23,287,000 outstanding at December 31, 2002. Of such forward exchange contracts, $17,213,000 were outstanding to exchange Japanese yen for US dollars. There were no forward exchange contracts outstanding at December 31, 2001. Forward exchange contracts with notional amounts totaling $1,500,000 to exchange Japanese yen for U.S. dollars were outstanding at December 31, 2000. Local currency purchased options with notional amounts totaling $5,053,000, $11,349,000 and $25,390,000 to exchange foreign currencies for U.S. dollars were outstanding at December 2002, 2001 and 2000, respectively.

Foreign exchange gains on forward exchange contracts which did not qualify for hedge accounting were immaterial during 2002 and 2000. There were no foreign exchange gains or losses on forward exchange contracts which did not qualify for hedge accounting in 2001. Gains and losses on forward exchange contracts and local currency purchased options that qualify for hedge accounting are classified in cost of goods sold and totaled a gain of $452,000, $175,000 and $6,000 for the years ended December 31, 2002, 2001 and 2000, respectively.

The fair values of forward exchange contracts at December 31, 2002, determined by applying period end currency exchange rates to the notional contract amounts, amounted to an unrealized loss of $407,000. The fair values of local currency purchased options at December 31, 2002 and 2001, which were obtained through dealer quotes were immaterial.

CONCENTRATIONS OF CREDIT RISK

The Company's significant concentrations of credit risk consist principally of cash and cash equivalents, investments, forward exchange contracts, and trade accounts receivable. The Company maintains cash and cash equivalents with financial institutions including the bank it has borrowings with. The Company maintains investments primarily in U.S. Treasury and government agency securities and corporate debt securities, rated AA or higher. The Company places forward currency contracts with high credit-quality financial institutions in order to minimize credit risk exposure. Concentrations of credit risk with respect to accounts receivable are limited due to the large number of diverse and geographically dispersed customers. Credit is extended for all customers based on financial condition and collateral is not required.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

FAIR VALUE OF FINANCIAL INSTRUMENTS

The fair value of the term loans, including the current portion, approximates its carrying value given its variable rate interest provisions. The fair value of marketable securities is based on quoted market prices. The fair value of mortgage notes is based on borrowing rates for similar instruments and approximates its carrying value. For all other balance sheet financial instruments, the carrying amount approximates fair value because of the short period to maturity of these instruments.

4) INVENTORIES

Inventories consist of the following:

DECEMBER 31,	2002	2001
Raw material	$36,630	$21,019
Work in process	11,617	15,362
Finished goods	24,988	20,573
	$73,235	$56,954

5) PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consist of the following:

DECEMBER 31,	2002	2001
Land	$ 11,211	$ 10,499
Buildings	59,864	46,107
Machinery and equipment	68,654	53,216
Furniture and fixtures	27,139	18,984
Leasehold improvements	4,105	3,170
Construction in progress	5,626	4,626
	176,599	136,602
Less: accumulated depreciation and amortization	94,004	66,968
	$ 82,595	$ 69,634

Depreciation and amortization of property, plant and equipment totaled $14,830,000, $11,905,000 and $9,785,000 for the years ended December 31, 2002, 2001 and 2000, respectively.

6) DEBT

CREDIT AGREEMENTS AND SHORT-TERM BORROWINGS

Effective July 31, 2002, the Company entered into a loan agreement with two banks, which provides access to a revolving credit facility. The revolving credit facility provides for borrowings up to $40,000,000, and expires July 31, 2003. Interest on borrowings is payable quarterly at either the banks' base rate, or the LIBOR Rate, as defined in the agreement. At December 31, 2002, there were no borrowings outstanding under this agreement.

Additionally, certain of the Company's foreign subsidiaries have lines of credit and short-term borrowing arrangements with various financial institutions which provide for aggregate borrowings as of December 31, 2002 of up to $18,220,000, which generally expire and are renewed at six month intervals. At December 31, 2002 and 2001, total borrowings outstanding under these arrangements were $13,877,000 and $9,238,000, respectively, at interest rates ranging from 1.13% to 1.50% and 0.84% to 1.88%, respectively.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

LONG-TERM DEBT

Long-term debt consists of the following:

	DECEMBER 31,	
	2002	2001
Term loans	$ 3,974	$ 7,042
Mortgage notes	11,758	8,948
Total long-term debt	15,732	15,990
Less: current portion	4,263	5,074
Long-term debt less current portion	$11,469	$10,916

On October 31, 1995, the Company entered into a term loan agreement with a bank, which provided uncollateralized borrowings of $7,000,000. Principal payments were payable in equal monthly installments of $83,000 through June 1, 2002, when the remaining principal amount was paid. Interest was payable monthly at either the bank's base rate or at the LIBOR Rate, as defined in the agreement, at the Company's option.

In connection with the purchase of On-Line Technologies, Inc., the Company assumed term loans of $4,728,000. The principal and interest accrued are due in two installments, the first installment on April 27, 2002, and the second installment on April 27, 2003. The remaining principal amount due as of December 31, 2002 was $2,485,000. At December 31, 2002 the interest rate was 6.0%.

In connection with the purchase of Telvac Engineering, Ltd., the Company issued term loans of $752,000. Principal payments of $51,000 are due on an annual basis through December 1, 2004 with the remaining principal due on May 1, 2005. Interest is payable semi-annually at the UK base rate. The remaining principal due as of December 31, 2002 was $647,000.

The Company also has an outstanding term loan from a foreign bank, with principal due on April 2, 2004. The interest rate in effect for this term loan at December 31, 2002 was 1.19%. The remaining principal balance at December 31, 2002 was $842,000.

At December 31, 2002 and 2001, the interest rates in effect for the outstanding term loan borrowings ranged from 1.19% to 6.0%.

In connection with the acquisition of ENI, the Company assumed a long-term debt agreement with the County of Monroe Industrial Development Agency (COMIDA) for a manufacturing facility located in Rochester, New York. The terms are the same as that of the underlying Industrial Development Revenue Bond which calls for payments of interest only through July 1, 2014, at which time the Bond is repayable in a lump sum of $5,000,000. Interest is reset annually based on bond remarketing, with an option by the Company to elect a fixed rate, subject to a maximum rate of 13% per annum. At December 31, 2002 the interest rate was 2.10%. The bond is collateralized by the building. The net book value of the building at December 31, 2002 was approximately $10,900,000.

On March 6, 2000, the Company entered into a mortgage note payable with a bank to borrow $10,000,000 to finance the purchase of land and a building. Principal and interest of $119,000 is being paid in monthly installments with final payments due in March 2007. The remaining principal as of December 31, 2002 was $6,071,000. The interest rate at December 31, 2002 was 3.14%. The net book value of the land and building at December 31, 2002 was approximately $18,900,000.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

The Company has a loan outstanding from a foreign bank in the form of a mortgage note at an interest rate of 1.88%. Principal and interest are payable in monthly installments through 2005. The loans are collateralized by mortgages on certain of the Company's foreign properties. The remaining principal as of December 31, 2002 was $687,000.

The terms of the revolving credit facility contain, among other provisions, requirements for maintaining certain levels of tangible net worth and other financial ratios. The agreements also contain restrictions with respect to acquisitions. Under the most restrictive covenant, the Company's consolidated tangible net worth may not be below an amount as defined in the agreement. In the event of default of these covenants or restrictions, any obligation then outstanding under the loan agreement shall become payable upon demand by the bank. The Company was in compliance with all debt covenants as of December 31, 2002.

Aggregate maturities of long-term debt over the next five years are as follows:

YEAR ENDING DECEMBER 31,	AGGREGATE MATURITIES
2003	$ 4,263
2004	2,620
2005	2,064
2006	1,428
2007	357
Thereafter	5,000
	$15,732

7) COMMITMENTS AND CONTINGENCIES

On November 30, 2000, Applied Science and Technology, Inc. ("ASTeX"), which was acquired by MKS in January 2001, brought suit in federal district court in Delaware against Advanced Energy Industries, Inc. ("Advanced Energy") for infringement of ASTeX's patent related to its Astron product. On May 17, 2002, a jury affirmed the validity of the Company's patent and found that Advanced Energy infringed the patent. On May 31, 2002, based on the jury's findings, the Court entered a judgement on the infringement claim in favor of the Company and against Advanced Energy, and awarded $4,200,000 in damages to compensate the Company for Advanced Energy's infringing activity. Advanced Energy filed motions to overturn the verdict. During August of 2002, the Company and Advanced Energy entered into an agreement whereby Advanced Energy agreed to pay the awarded damages amount to the Company and withdraw its motions to overturn the verdict. The Company received the $4,200,000 in September 2002, and recorded the amount as Income from litigation settlement.

On November 3, 1999, On-Line Technologies, Inc., which was acquired by the Company in April 2001, brought suit in federal district court in Connecticut against Perkin-Elmer, Inc. and certain other defendants for infringement of On-Line's patent related to its FTIR spectrometer product. The suit seeks injunctive relief and damages for infringement. Perkin-Elmer, Inc. has filed a counterclaim seeking invalidity of the patent, costs, and attorneys' fees. The Company believes that the counterclaim is without merit. The Company cannot be certain of the outcome of this litigation, but does plan to assert its claims and oppose the counterclaims against it vigorously.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

The Company is subject to other legal proceedings and claims, which have arisen in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on the Company's results of operations, financial condition or cash flows.

The Company leases certain of its facilities and machinery and equipment under capital and operating leases expiring in various years through 2002 and thereafter. Generally, the facility leases require the Company to pay maintenance, insurance and real estate taxes. Rental expense under operating leases totaled $6,278,000, $5,122,000 and $4,623,000, for the years ended December 31, 2002, 2001 and 2000, respectively.

Minimum lease payments under operating and capital leases are as follows:

YEAR ENDING DECEMBER 31,	OPERATING LEASES	CAPITAL LEASES
2003	$ 5,686	$367
2004	4,900	167
2005	3,080	39
2006	1,815	39
2007	1,094	39
Thereafter	4,939	--
Total minimum lease payments	$21,514	$651
Less: amounts representing interest		62
Present value of minimum lease payments		589
Less: current portion		332
Long-term portion		$257

As of December 31, 2002, the Company has entered into non-cancelable purchase commitments for certain inventory components used in its normal operations. The purchase commitments covered by these arrangements are for periods of less than one year and aggregate approximately $27,090,000.

Prior to its initial public offering, the Company entered into a Tax Indemnification and S Corporation Distribution Agreement with its then existing stockholders (the "Pre-IPO stockholders"). The agreement includes provisions for the payment, with interest, by the Pre-IPO stockholders or MKS, as the case may be, for the difference between the $40,000,000 distributed as an estimate of the amount of the accumulated adjustments account as of April 4, 1999, which is the date the Company's S Corporation status was terminated, and the actual amount of the accumulated adjustments account on that day. The actual amount of the accumulated adjustments account was $41,416,619. Accordingly, the Company made an additional distribution of $1,416,619, plus interest of $177,524, to the Pre-IPO stockholders during the three months ended September 30, 2000. The amount of the additional distribution payable had been estimated to be $3,350,000. This estimated amount was charged directly to retained earnings during 1999 and had no impact on net income or earnings per share. The difference of $1,933,000 between the actual additional distribution and the estimated additional distribution was credited directly to retained earnings during the three months ended September 30, 2000 and had no impact on net income or earnings per share. The amount of the accumulated adjustments account can be affected by future income tax audits of MKS. If any audit increases or decreases the accumulated adjustments account, MKS or the Pre-IPO stockholders, as the case may be, will also be required to make a payment, with interest, of such difference to the other party. No shareholders, other than the Pre-IPO stockholders, are parties to the Tax Indemnification and S Corporation Distribution Agreement.

To the extent permitted by Massachusetts law, the Company's Restated Articles of Organization, as amended, requires the Company to indemnify any current or former officer or director of the Company or any person who has served or is serving in any capacity with respect to any employee benefit plan of the Company. Because no claim for indemnification has been made by any person covered by the relevant provisions of the Company's Restated Articles of Organization, the Company believes that its estimated exposure for these indemnification obligations is currently minimal. Accordingly, the Company has no liabilities recorded for these requirements as of December 31, 2002.

The Company enters into standard indemnification agreements in the ordinary course of business. Pursuant to these agreements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally the Company's customers, in connection with any patent, or any other intellectual property infringement claim by any third party with respect to the Company's products. The term of these indemnification agreements is generally perpetual any time after execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, the Company believes the estimated fair value of these agreements is minimal. Accordingly, the Company has no liabilities recorded for these agreements as of December 31, 2002.

When as part of an acquisition, the Company acquires all of the stock or all of the assets and liabilities of another company, the Company assumes liability for certain events or occurrences that took place prior to the date of acquisition. The maximum potential amount of future payments the Company could be required to make for such obligations is undeterminable at this time. Other than obligations recorded as liabilities at the time of the acquisition, historically the Company has not made significant payments for these indemnifications. Accordingly, no liabilities have been recorded for these obligations.

In conjunction with certain asset sales, the Company may provide routine indemnifications whose terms range in duration and often are not explicitly defined. Where appropriate, an obligation for such indemnifications is recorded as a liability. Because the amount of liability under these types of indemnifications are not explicitly stated, the overall maximum amount of the obligation under such indemnifications cannot be reasonably estimated. Other than obligations recorded as liabilities at the time of the asset sale, historically the Company has not made significant payments for these indemnifications.

8) STOCKHOLDERS' EQUITY

COMMON STOCK

In May 2002, the Company amended its Restated Articles of Organization to increase the authorized number of shares of Common Stock to 200,000,000 shares from 75,000,000 shares.

On March 30, 2000, ASTeX completed the registration and sale of 1,917,250 shares of common stock at $40.42 per share. The net proceeds from the offering were approximately $73,200,000.

On April 5, 1999, the Company closed the initial public offering of its Common Stock. In connection with this offering and the exercise of an over-allotment option by the underwriters, the Company sold 6,375,000 shares of Common Stock at a price of $14.00 per share. The net proceeds to the Company were approximately $82,000,000. Underwriting discounts and commissions were approximately $6,200,000 and other offering costs were approximately $1,000,000.

On April 5, 1999 the Company distributed $40,000,000, which was the estimated amount of the Company's undistributed S corporation earnings as of the day prior to the closing of the offering.

On March 5, 1999, ASTeX completed the registration and sale of 1,533,800 shares of common stock at $14.34 per share. On April 6, 1999, the underwriters exercised their over-allotment option to purchase an additional 230,070 shares of common stock. The net proceeds from the offering were approximately $23,800,000.

STOCK PURCHASE PLANS

The Company's 1999 Second Restated Employee Stock Purchase Plan (the "Purchase Plan") authorizes the issuance of up to an aggregate of 700,000 shares of Common Stock to participating employees. Offerings under the Purchase Plan commence on June 1 and December 1 and terminate, respectively, on November 30 and May 31. Under the Purchase Plan, eligible employees may purchase shares of Common Stock through payroll deductions of up to 10% of their compensation. The price at which an employee's option is exercised is the lower of (1) 85% of the closing price of the Common Stock on the NASDAQ National Market on the day that each offering commences or (2) 85% of the closing price on the day that each offering terminates. During 2002 and 2001 the Company issued 110,947 and 111,835 shares, respectively, of Common Stock to employees who participated in the Purchase Plan at exercise prices of $18.33 and $16.18 in 2002, and $13.12 and $19.06 in 2001. As of December 31, 2002 there were 357,581 shares reserved for issuance.

The Company's Second Restated International Employee Stock Purchase Plan (the "Foreign Purchase Plan") authorizes the issuance of up to an aggregate of 75,000 shares of Common Stock to participating employees. Offerings under the Foreign Purchase Plan commence on June 1 and December 1 and terminate, respectively, on November 30 and May 31. Under the Foreign Purchase Plan, eligible employees may purchase shares of Common Stock through payroll deductions of up to 10% of their compensation. The price at which an employee's option is exercised is the lower of (1) 85% of the closing price of the Common Stock on the NASDAQ National Market on the day that each offering commences or (2) 85% of the closing price on the day that each offering terminates. During 2002 and 2001, the Company issued 18,435 and 13,333 shares of Common Stock to employees who participated in the Foreign Purchase Plan at exercise prices of $18.33 and $16.18, and $13.12 and $19.06 per share, respectively. As of December 31, 2002 there were 35,984 shares reserved for issuance.

STOCK OPTION PLANS

In April 2001, the Company's Board of Directors approved an annual increase in the number of shares that may be granted under the Second Restated 1995 Stock Incentive Plan of 5% of the total shares of the Company's stock on July 1 of each year. In March 2002, the Board of Directors approved, and in May 2002, the stockholders of the Company approved an increase in the number of shares that may be granted under the Second Restated 1995 Stock Incentive Plan to 15,000,000 shares. The annual increase will occur until such time as the aggregate number of shares which may be issued under the Plan is 15,000,000 shares, subject to adjustment for certain changes in MKS' capitalization.

The Company has granted options to employees under the 1995 Stock Incentive Plan and the 1993 Stock Option Plan and to directors under the 1996 Director Stock Option Plan and the 1997 Director Stock Option Plan (the "Plans"). The Plans are administered by the Company's board of directors.

At December 31, 2002, 471,439 options to purchase shares of the Company's common stock were reserved for issuance under the Plans. Stock options are granted at 100% of the fair value of the Company's common stock. Generally, stock options granted to employees under the Plans in 2002, 2001 and 2000 vest 25% after one year and 6.25% per quarter thereafter and expire 10 years after the grant date. Generally, stock options granted under the Plans prior to 2000 vest 20% after one year and 5% per quarter thereafter, and expire 10 years after the grant date. Generally, options granted to Directors vest at the earlier of (1) the next annual meeting, (2) 13 months from date of grant, or (3) the effective date of an acquisition.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

The following table presents the activity for options under the Plans:

	2002 OPTIONS	2002 WEIGHTED AVERAGE EXERCISE PRICE	2001 OPTIONS	2001 WEIGHTED AVERAGE EXERCISE PRICE	2000 OPTIONS	2000 WEIGHTED AVERAGE EXERCISE PRICE
Outstanding -- beginning of period	5,958,735	$18.11	4,023,374	$14.65	3,703,499	$ 8.62
Granted	3,815,042	$21.37	3,111,119	$21.05	1,158,384	$29.98
Exercised	(531,672)	$12.68	(567,921)	$ 8.86	(697,564)	$ 8.04
Forfeited or Expired	(957,412)	$23.49	(607,837)	$18.87	(140,945)	$14.86
Outstanding -- end of period	8,284,693	$19.33	5,958,735	$18.11	4,023,374	$14.65
Exercisable at end of period	3,774,382	$17.90	3,400,592	$16.90	1,927,644	$ 8.65

The following table summarizes information with respect to options outstanding and exercisable under the Plans at December 31, 2002:

	OPTIONS OUTSTANDING: NUMBER OF SHARES	OPTIONS OUTSTANDING: WEIGHTED AVERAGE REMAINING CONTRACTUAL LIFE (IN YEARS)	OPTIONS OUTSTANDING: WEIGHTED AVERAGE EXERCISE PRICE	OPTIONS EXERCISABLE: NUMBER OF SHARES	OPTIONS EXERCISABLE: WEIGHTED AVERAGE EXERCISE PRICE
$4.43 --					

$9.46................
1,278,664 $ 5.59 4.5
1,199,878 $ 5.52
$10.86 --
$19.00..............
3,030,354 $16.57 8.3
773,280 $16.21
$19.24 --
$29.50..............
3,216,305 $24.04 8.5
1,371,668 $24.61
$30.02 --
$61.50..............
759,370 $33.53 7.0
429,556 $34.08 -----
---- ---------
8,284,693 $19.33 7.7
3,774,382 $17.90
========= =========

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

ACCUMULATED OTHER COMPREHENSIVE INCOME

The balance of accumulated other comprehensive income (loss) was comprised of the following:

	CUMULATIVE TRANSLATION ADJUSTMENTS	FINANCIAL INSTRUMENTS DESIGNATED AS CASH FLOW HEDGES AND UNREALIZED GAIN (LOSS) ON INVESTMENT	ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)
Balance at December 31, 2000	$ 76	$ 375	$ 451
Foreign currency translation adjustment, net of taxes of $854	(1,209)		(1,209)
Changes in value of financial instruments designated as cash flow hedges and unrealized gain (loss) on investments, net of taxes of $38		104	104
Balance at December 31, 2001	$(1,133)	$ 479	$ (654)
Foreign currency translation adjustment, net of taxes of $0	4,126		4,126
Changes in value of financial instruments designated as cash flow hedges, and unrealized gain (loss) on investments, net of taxes of $0		(693)	(693)
Balance at December 31, 2002	$ 2,993	$(214)	$ 2,779

9) INCOME TAXES

A reconciliation of the Company's 2002, 2001 and 2000 effective tax rate to the U.S. federal statutory rate follows:

	2002	2001	2000
U.S. Federal income tax statutory rate	(35.0)%	(35.0)%	35.0%
Nondeductible goodwill, merger expenses, and in-process technology	7.1	7.6	0.7
State income taxes, net of federal benefit	(1.9)	(3.2)	3.3
Effect of foreign operations taxed at various rates	(4.6)	(0.6)	0.7
Foreign sales corporation tax benefit	(0.2)	(1.1)	(1.2)
Deferred tax asset valuation allowance	32.2	--	--
Other	(2.4)	(0.3)	(1.2)
	(4.8)%	(32.6)%	37.3%

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

The components of income before income taxes and the related provision (benefit) for income taxes consist of the following:

	YEAR ENDED DECEMBER 31,		
	2002	2001	2000
Income (loss) before income taxes:			
United States	$(47,045)	$(52,571)	$87,654
Foreign	5,527	6,515	8,456
	(41,518)	(46,056)	96,110
Current taxes:			
United States Federal	(3,806)	(5,892)	29,778
State	237	337	5,203
Foreign	1,338	1,994	3,697
	(2,231)	(3,561)	38,678
Deferred taxes:			
United States Federal	(150)	(8,842)	(2,593)
State and Foreign	400	(2,610)	(235)
	250	(11,452)	(2,828)
Provision (benefit) for income taxes	$ (1,981)	$(15,013)	$35,850

At December 31, 2002 and 2001 the components of the deferred tax asset and deferred tax liability were as follows:

	2002	2001
Deferred tax assets:		
Net operating losses and credits	$ 13,685	$ 4,046
Inventory and warranty reserves	11,216	11,345
Accounts receivable and other reserves	5,235	1,682
Depreciation and amortization	3,966	1,395
Intercompany profits	2,484	3,094
Other	326	1,431
Total deferred tax assets	36,912	22,993
Deferred tax liabilities:		
Acquired intangible assets	(23,182)	(1,238)
Other	(1,140)	(885)
Total deferred tax liabilities	(24,322)	(2,123)
Valuation allowance	(12,590)	--
Net deferred tax asset	$ --	$20,870

During 2002 the Company recorded a valuation allowance of $12,590,000 against all of its United States and foreign net deferred tax assets. A valuation allowance has been recorded against deferred tax assets because the Company has determined that it is more likely than not that all of the deferred tax assets may not be realized. The Company incurred significant operating losses in 2002 and 2001 and the current outlook indicates that significant uncertainty will continue into 2003. These cumulative factors resulted in the Company's decision that it is more likely than not that all of its deferred tax assets may not be realized. If the Company generates sustained future taxable income against which these tax attributes may be applied, some portion or all of the valuation allowance would be reversed and a corresponding reduction in income tax expense would be reported in future periods.

At December 31, 2002, MKS had approximately $25,700,000 of federal net operating losses including approximately $6,800,000 the utilization of which may be limited by the change in ownership rules under Section 382 of the Internal Revenue Code. In addition, at December 31, 2002, MKS also had approximately $41,400,000 of state net operating losses. The federal and state net operating losses begin to expire in 2009 and 2006, respectively.

The Company does not provide for a U.S. income tax liability on undistributed earnings of its foreign subsidiaries. The earnings of non-U.S. subsidiaries, which reflect full provision for non-U.S. incomes taxes, are indefinitely reinvested in non-U.S. operations or will be remitted substantially free of additional tax. As of December 31, 2002, the unrecognized deferred tax liability associated with these unremitted earnings was approximately $2,500,000.

10) EMPLOYEE BENEFIT PLANS

The Company has a 401(k) profit-sharing plan for U.S. employees meeting certain requirements in which eligible employees may contribute from 1% up to 12% of their compensation. The Company, at its discretion, may provide a matching contribution which will generally match up to the first 2% of each participant's compensation, plus 25% of the next 4% of compensation. At the discretion of the Board of Directors, the Company may also make additional contributions for the benefit of all eligible employees. The Company's contributions were $1,938,000, $1,419,000 and $2,960,000 for 2002, 2001 and 2000, respectively.

The Company maintains a bonus plan which provides cash awards to key employees, at the discretion of the Compensation Committee of the Board of Directors, based upon operating results and employee performance. There was no bonus expense in the years ended December 31, 2002 and 2001. Bonus expense to key employees was $7,579,000 for the year ended December 31, 2000.

11) SEGMENT AND GEOGRAPHICAL INFORMATION AND SIGNIFICANT CUSTOMER

See Note 1 for a brief description of the Company's business. During 2002, the Company consolidated its product groups to accelerate product development, rationalize manufacturing operations, and reduce operating costs. This realignment of operations has organized the Company into three product groups: Instruments and Control Systems: Power and Reactive Gas Products; and Vacuum Products. The Company's products are derived from MKS' core competencies in pressure measurement and control; materials delivery; gas and thin-film composition analysis; control and information management; power and reactive gas generation; and vacuum technology. The Company's operating segments qualify for aggregation as the products are manufactured and distributed in a similar manner, have similar long-term margins and are sold to a similar customer base. Therefore, the Company has one reportable segment and all financial segment and product line information can be found in the consolidated financial statements. The segment information for the years ended December 31, 2001 and 2000 has been reclassified to conform with these internal organizational changes.

The Company had one customer comprising 23%, 18% and 30% of net sales for the years ended December 31, 2002, 2001 and 2000, respectively.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Net sales to unaffiliated customers are based on the location in which the sale originated. Transfers between geographic areas are at negotiated transfer prices and have been eliminated from consolidated net sales. Net sales to unaffiliated customers and long-lived assets by geographic area were as follows:

YEAR ENDED DECEMBER 31, 2002 --	UNITED STATES	FAR EAST	EUROPE	TOTAL
Net sales to unaffiliated customers........	$200,181	$75,825	$38,767	$314,773
Long-lived assets..........................	351,063	56,294	8,734	416,091

YEAR ENDED DECEMBER 31, 2001 --	UNITED STATES	FAR EAST	EUROPE	TOTAL
Net sales to unaffiliated customers........	$196,768	$49,964	$40,076	$286,808
Long-lived assets..........................	122,445	5,543	5,284	133,272

YEAR ENDED DECEMBER 31, 2000 --	UNITED STATES	FAR EAST	EUROPE	TOTAL
Net sales to unaffiliated customers........	$358,777	$67,015	$41,060	$466,852
Long-lived assets..........................	106,738	5,703	4,494	116,935

Included in the Far East are Japan, Korea, Singapore, Taiwan, China and Hong Kong. Included in Europe are Germany, France and the United Kingdom. Net sales to unaffiliated customers from Japan were $43,335,000, $34,816,000 and $50,187,000 for the years ended December 31, 2002, 2001 and 2000, respectively. Long-lived assets within Japan amounted to $10,875,000, $4,618,000 and $5,460,000 at December 31, 2002, 2001 and 2000, respectively.

12) ACQUISITIONS

On January 31, 2002, MKS completed its acquisition of the ENI Business of Emerson Electric Co. ("ENI"), a supplier of solid-state RF and DC plasma power supplies, matching networks and instrumentation to the semiconductor and thin-film processing industries. The reasons for the acquisition of ENI were based upon the ability to offer higher value and more integrated application solutions by combining ENI's solid-state power conversion technology with the Company's core competency in plasma and reactive gas solutions. The acquisition has been accounted for under the purchase method of accounting. The purchase price was approximately $266,530,000 and consisted of approximately 12,000,000 shares of MKS common stock valued at approximately $261,264,000 and transaction expenses of approximately $5,266,000. The value of MKS common stock was approximately $21.7720 per share based on the average closing price of MKS' common stock for the five-day period including the date of the announcement of the signing of the merger agreement and the two days preceding and succeeding such date.

The purchase price was allocated to the assets acquired based upon their estimated fair values and resulted in an allocation of approximately $197,123,000 to goodwill. The results of operations are included in the Company's consolidated statement of income as of and since the date of the purchase. The allocation of the purchase price is as follows:

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Current assets	$ 31,038
Other assets	2,123
Fixed assets	18,882
Completed technology	39,600
Patents	6,500
Customer relationships	2,600
In-process research and development	7,500
Goodwill	197,123
Other current liabilities	(13,883)
Deferred tax liabilities	(19,480)
Other long term liabilities	(5,473)
	$266,530

The amounts allocated to acquired intangible assets are being amortized using the straight-line method over their respective estimated useful lives: 6 years for completed technology, 8 years for patents, and 8 years for customer relationships. The total weighted average amortizable life of the acquired intangible assets is 6 years. Approximately $9,700,000 of the goodwill is tax deductible.

In connection with the acquisition of ENI, the Company obtained an appraisal from an independent appraiser of the fair value of its intangible assets. This appraisal valued purchased in-process research and development ("IPR&D") of various projects for the development of new products and technologies at approximately $7,500,000. Because the technological feasibility of products under development had not been established and no future alternative uses existed, the purchased IPR&D was expensed during the six months ended June 30, 2002. The value of the purchased IPR&D was determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. Each project was analyzed to determine the technological innovations included; the utilization of core technology; the complexity, cost and time to complete development; any alternative future use or current technological feasibility; and the stage of completion. The cash flows derived from the IPR&D projects were discounted at rates ranging from 25% to 30%. The Company believes these rates were appropriate given the risks associated with the technologies for which commercial feasibility had not been established. The percentage of completion for each in-process project was determined by identifying the cost incurred to date of the project as a ratio of the total estimated cost required to bring the project to technical and commercial feasibility. The percentage of completion for in-process projects acquired ranged from 65% to 80%, based on management's estimates of tasks completed and the tasks to be completed to bring the projects to technological and commercial feasibility. The projects were generally expected to have durations of up to 12 months.

On March 13, 2002, MKS acquired Tenta Technology, Ltd. ("Tenta"), a company that designs and supplies modular, computer-based process control systems for 300mm semiconductor process tool applications. The reasons for the acquisition were based upon the ability to offer higher value and more integrated application solutions by integrating Tenta's process controllers with MKS digital network products to provide a more complete process control solution. The acquisition has been accounted for under the purchase method of accounting. The purchase price was approximately $26,400,000 and consisted of 700,000 shares of MKS common stock valued at approximately $21,100,000, cash of $5,000,000 and transaction expenses of approximately $300,000. The value of MKS common stock was based on the average closing price of MKS' common stock for the five-day period including the date of the announcement of the signing of the merger agreement and the two days preceding and succeeding such date. The purchase price was allocated to the assets acquired based upon their estimated fair values. The results of operations are included in the Company's consolidated statement of income as of and since the date of the purchase. The allocation of the purchase price was as follows:

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Current assets	$ 5,051
Completed technology	10,400
Other acquired intangibles	540
In-process research and development	180
Goodwill	18,899
Other net liabilities assumed	(8,670)
	$26,400

Completed technology and other acquired intangibles are being amortized on a straight-line basis over 6 to 8 years. None of the goodwill is tax deductible.

In 2002, the Company acquired two other businesses for a total purchase price of $12,200,000, including IPC Fab Automation GmbH, a developer and provider of web-based hardware and software that enable e-diagnostics and advanced process control for advanced manufacturing applications. There were no shares of MKS common stock issued for these acquisitions. Goodwill recognized in these transactions was approximately $11,000,000 and acquired intangible assets were approximately $2,800,000.

On April 27, 2001, MKS completed its acquisition of On-Line Technologies, Inc. ("On-Line"), a company that designs and manufactures products used for gas analysis, wafer metrology and complementary analysis and control software. The reasons for the acquisition of On-Line were to expand our range of products for monitoring the composition of process gases and thin-films, and to provide our customers with integrated products that help them to increase their manufacturing yield. The acquisition has been accounted for under the purchase method of accounting. The purchase price was approximately $23,829,000 and consisted of approximately 660,000 shares of MKS common stock valued at approximately $12,110,000, cash payments of $6,295,000, assumption of On-Line debt of approximately $4,728,000 and transaction expenses of approximately $696,000. The value of MKS common stock was based on the average closing price of MKS' common stock for the five-day period including the date of the announcement of the signing of the merger agreement and the two days preceding and succeeding such date. The purchase price was allocated to the assets acquired based upon their estimated fair values and resulted in an allocation of approximately $16,050,000 to goodwill. The results of operations are included in the Company's consolidated statement of income (loss) as of and since the effective date of the purchase. The allocation of the purchase price was as follows:

Net tangible assets acquired	$ (971)
In-process research and development	2,340
Completed technology	4,710
Other acquired intangibles	1,700
Goodwill	16,050
	$23,829

The completed technology and other intangibles are being amortized on a straight-line basis over 5 to 7 years. None of the goodwill is tax deductible.

In connection with the acquisition of On-Line, the Company obtained an appraisal from an independent appraiser of the fair value of its intangible assets. This appraisal valued purchased IPR&D of various projects for the development of new products and technologies at approximately $2,340,000. The projects were generally expected to have durations of 24 to 48 months. Because the technological feasibility of products under development had not been established and no future alternative uses existed, the purchased IPR&D was expensed during the quarter ended June 30, 2001. The value of the purchased IPR&D was determined using the income approach, which discounts expected future cash flows from projects under development to their net present value.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Each project was analyzed to determine the technological innovations included; the utilization of core technology; the complexity, cost and time to complete development; any alternative future use or current technological feasibility; and the stage of completion. The cash flows derived from the in-process technology projects were discounted at a rate of 25%. The Company believes this rate was appropriate given the risks associated with the technologies for which commercial feasibility had not been established. The percentage of completion for each in-process project was determined by identifying the elapsed time invested in the project as a ratio of the total time required to bring the project to technical and commercial feasibility. The percentage of completion for in-process projects acquired ranged from 55% to 65%, based on management's estimates of tasks completed and the tasks to be completed to bring the projects to technological and commercial feasibility.

On September 6, 2000 the Company acquired D.I.P., Inc., a company with products and technology in digital process control. The reasons for the acquisition of D.I.P. were to provide higher value products by incorporating D.I.P.'s digital network technology into our existing range of instruments and to provide our customers with a complete digital network solution as they migrated from traditional analog to digital control. The purchase price was $14,000,000 and consisted of $6,900,000 cash; 231,392 shares of MKS common stock valued at $6,800,000; and $300,000 in acquisition costs. The value of MKS common stock was based on the average closing price of MKS' common stock for the five-day period including the date of the announcement of the signing of the merger agreement and the two days preceding and succeeding such date. The purchase price was allocated to the assets acquired based on their estimated fair values. Acquired technology and other intangibles are being amortized on a straight-line basis over 3 to 5 years. Approximately $4,100,000 of the goodwill is tax deductible. The allocation of the purchase is as follows:

Current assets	$ 3,000
Completed technology	7,200
Other acquired intangibles	1,700
Goodwill	4,300
Other assets	200
Liabilities assumed	(2,400)
	$14,000

On July 21, 2000 the Company acquired Spectra International, LLC, a privately held company with products and technology in process monitoring. MKS acquired Spectra to expand its range of process monitoring products, particularly in the area of PVD cluster tool monitoring, and to address the increased needs of our semiconductor device manufacturing customers as they look to maximize yields in increasingly complex processes. The purchase price consisted of $9,700,000 cash; 183,293 shares of MKS common stock valued at $6,500,000; fully vested options to purchase 83,675 shares of MKS common stock valued at $2,400,000 using the Black-Scholes option pricing model, calculated at an exchange ratio of 0.4768 shares of MKS common stock per share of Spectra common stock; and $400,000 in acquisition costs. The value of MKS common stock was based on the average closing price of MKS' common stock for the five-day period including the date of the announcement of the signing of the merger agreement and the two days preceding and succeeding such date. The transaction also includes contingent earnout payments of up to an aggregate of $12,000,000 over 5 years, which will be treated as compensation expense as it is earned. The purchase price was allocated to the assets acquired based on their estimated fair values. Acquired technology and other intangible assets are being amortized on a straight-line basis over 5 to 7 years. Approximately $6,000,000 of the goodwill is tax deductible. The allocation of the purchase price is as follows:

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Current assets	$ 5,400
Customer relationships	3,700
Other acquired intangibles	4,200
Completed technology	3,700
Goodwill	6,100
Other assets	400
Liabilities and debt assumed	(4,500)
	$19,000

The intangible assets include approximately $0.3 million for acquired in-process technology for projects that did not have future alternative uses. The value of the purchased IPR&D was determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. At the date of the acquisition, the development of these projects had not yet reached technological feasibility, and the technology in progress had no alternative future uses. Accordingly, these costs were expensed in the three months ended September 30, 2000.

Development of in-process technology remains a substantial risk to the Company due to a variety of factors including the remaining effort to achieve technical feasibility, rapidly changing customer requirements and competitive threats from other companies and technologies.

In 2000, the Company acquired three other businesses for a total purchase price of $16,700,000, including approximately 137,000 shares of MKS common stock valued at $8,400,000. The acquisitions included a manufacturer of high performance sputtering equipment for the semiconductor and magnetic storage industries, a manufacturer of vacuum subsystems, and a company with products and technology in process monitoring. Goodwill recognized in those transactions was approximately $12,900,000 and acquired intangible assets were approximately $1,600,000.

The following unaudited pro forma results of operations of the Company for 2002 and 2001 give effect to the acquisitions made in 2002 and 2001 as if the acquisitions had occurred at the beginning of 2001. The following unaudited pro forma results of operations for 2000 give effect to the acquisitions made in 2001 and 2000 as if the acquisitions had occurred at the beginning of 2000.

	YEAR ENDED DECEMBER 31,		
	2002	2001	2000
Net sales	$318,913	$379,601	$485,842
Net income (loss)	$(34,067)	$(39,751)	$ 57,267
Net income (loss) per share:			
Basic	$ (0.67)	$ (0.79)	$ 1.61
Diluted	$ (0.67)	$ (0.79)	$ 1.54

These unaudited pro forma results have been prepared for comparative purposes only and do not purport to be indicative of the results of operations which actually would have resulted had the acquisitions occurred at the beginning of the period, or which may result in the future. Additionally, the charges for purchased IPR&D were not included in the unaudited pro forma results, because they were non-recurring and directly related to the transactions.

POOLING OF INTEREST COMBINATIONS

On January 26, 2001, MKS acquired ASTeX. Each outstanding share of ASTeX common stock was exchanged for 0.7669 newly issued shares of common stock of MKS, resulting in the issuance of approximately 11,200,000 shares of common stock of MKS. The acquisition was accounted for under the pooling of interests method of accounting, and accordingly, the consolidated financial statements reflect the combined financial position and results of operations and cash flows of MKS Instruments, Inc. and ASTeX, for all periods presented.

13) SALE OF ASSETS

During 2002, the Company sold an investment in a company for approximately $2,500,000. The gain on the transaction was not material.

In August 2001, the Company sold certain assets for proceeds of approximately $9,000,000, consisting of approximately $4,700,000 in cash, $3,900,000 in a note receivable, and $200,000 of warrants. The note receivable matures August 7, 2004, and bears an annual interest rate of 9.0%. The loss on the transaction was $1,246,000 before taxes. During 2002, due to the downturn in the semiconductor industry and its result on the acquirer's operations, and the acquirer's inability to raise financing, the Company considered the value of the note and warrants to be impaired. Accordingly, during 2002, MKS recorded a charge of $4,121,000 to other expense for the Company's estimate of the impairment on the note receivable and warrants.

In December 2001, the Company sold an investment in a company for approximately $367,000. The loss on the transaction was $1,133,000 before taxes.

14) RESTRUCTURING AND ASSET IMPAIRMENT CHARGES

During 2002 the Company implemented a consolidation of recent acquisitions to accelerate product development, rationalize manufacturing operations, and reduce operating costs. As a result of these actions, the Company recorded restructuring and asset impairment charges of $2,726,000 in 2002. The charges consisted of $631,000 of severance costs related to a workforce reduction, $1,228,000 related to consolidation of leased facilities, and an asset impairment charge of $867,000 primarily related to the impairment of an intangible asset from the discontinuance of certain product development activities. The fair value of the impaired intangible asset was determined using the expected present value of future cash flows. The workforce reduction was across all functional groups and consisted of 225 employees, with 179 terminated during 2002. Severance costs of approximately $300,000 were paid in 2002. The remaining severance costs of $331,000 are expected to be paid by the end of the first quarter of 2004. The facilities consolidation charges will be paid over the respective lease terms, the latest of which ends in 2007. The accrual for severance costs and lease payments is recorded in Other accrued expenses and Other liabilities.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

A summary of the restructuring charges and related asset impairments during 2002 is outlined as follows:

	INITIAL CHARGE	CASH PAYMENTS	NON-CASH CHARGES	ENDING ACCRUAL BALANCE
Workforce reductions	$ 631	$(300)	$ --	$ 331
Facility consolidations	1,228	(69)	--	1,159
Asset impairments	867	--	(867)	--
	$2,726	$(369)	$(867)	$1,490

During the second quarter and fourth quarter of 2001, the Company recorded significant charges to reserve for excess and obsolete inventory. The following is a summary of the changes in these inventory reserves during 2001 and 2002:

	BENEFIT IN COST OF SALES	BALANCE
Initial charges		$16,608
Inventory scrapped and charged against the reserve during 2001		(978)
Balance at December 31, 2001		$15,630
Inventory scrapped and charged against the reserve during 2002		(4,868)
Inventory sold during 2002	$(1,413)	(1,413)
	$(1,413)	(6,281)
Balance at December 31, 2002		$ 9,349

When the Company acquired the Shamrock product line, it was expected that sales of the existing system design and development of new system designs would generate future revenues. Since the acquisition, the Company has provided potential customers with purchase quotations for Shamrock systems, including a significant quotation to a potential customer in January 2001 for the sale of several systems. The potential customer did not purchase the systems, and the quotation expired in March 2001. The Company has been unsuccessful in selling any systems of the product line since the acquisition and, with the expiration of the significant quote in March 2001, the Company evaluated the recoverability of the long-lived assets, primarily goodwill. As a result, based on discounted cash flow analysis, the Company recorded an impairment charge for the carrying value of the related goodwill of approximately $3,720,000 in the quarter ended March 31, 2001.

15) GOODWILL AND INTANGIBLE ASSETS

SFAS 142 requires, among other things, the discontinuance of goodwill amortization. In addition, the standard includes provisions upon adoption for the reclassification of certain existing recognized intangibles such as goodwill, reassessment of the useful lives of existing recognized intangible assets, and reclassification of certain intangibles out of previously reported goodwill. The Company adopted SFAS 142 on January 1, 2002.

In accordance with SFAS 142, the Company reassessed the classification of its goodwill and intangible assets. This analysis, which was completed during the quarter ended March 31, 2002, resulted in the reclassification of workforce related intangible assets of $2,023,000 to goodwill. Also, in accordance with this statement, the Company reassessed the useful lives of its amortizable intangible assets and determined that the lives were appropriate.

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

Acquired amortizable intangible assets consisted of the following as of December 31, 2002:

	GROSS CARRYING AMOUNT	ACCUMULATED AMORTIZATION	NET CARRYING AMOUNT	WEIGHTED AVERAGE USEFUL LIFE
Completed technology	$69,394	$(15,629)	$53,765	6 years
Customer relationships	6,640	(1,743)	4,897	7 years
Patents, trademarks, tradenames and other	12,394	(3,336)	9,058	7 years
	$88,428	$(20,708)	$67,720	6 years

Acquired amortizable intangible assets consisted of the following as of December 31, 2001:

	GROSS CARRYING AMOUNT	ACCUMULATED AMORTIZATION	NET CARRYING AMOUNT
Completed technology	$16,564	$(4,402)	$12,162
Customer relationships	4,040	(851)	3,189
Patents, trademarks, tradenames and other	8,132	(2,311)	5,821
	$28,736	$(7,564)	$21,172

Aggregate amortization expense related to acquired intangibles for the year ended December 31, 2002 was $13,900,000 and was $5,200,000 for the year ended December 31, 2001, respectively. Estimated amortization expense related to acquired intangibles for each of the five succeeding fiscal years is as follows:

YEAR	AMOUNT
2003	$14,575
2004	14,250
2005	13,349
2006	11,248
2007	10,641

GOODWILL

SFAS 142 requires the Company to complete a transitional goodwill impairment test six months from the date of adoption and perform annual impairment tests thereafter. During the second quarter of 2002, the Company completed the transitional goodwill impairment test as of January 1, 2002. The Company completed the annual impairment test in the fourth quarter of 2002. No adjustment to goodwill was necessary. The changes in the carrying amount of goodwill during the years ended December 31, 2002 and 2001 were as follows:

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

	YEAR ENDED DECEMBER 31, 2002	YEAR ENDED DECEMBER 31, 2001
Balance, beginning of year	$ 31,113	$24,555
Workforce reclassification	2,023	--
Goodwill acquired during the year	227,022	16,050
Finalization of purchase price allocation	(895)	--
Goodwill impairment charge	--	(3,720)
Amortization	--	(5,772)
Foreign currency translation	518	--
Balance, end of year	$259,781	$31,113

The following is the pro forma effect on net income and net income per share had SFAS No. 142 been in effect for the following periods:

	YEAR ENDED DECEMBER 31, 2001	YEAR ENDED DECEMBER 31, 2000
Reported net loss	$(31,043)	$60,260
Add back: impact of goodwill amortization, net of taxes	5,145	2,555
Adjusted net loss	$(25,898)	$62,815
Reported basic net income (loss) per share	$ (0.83)	$ 1.74
Add back: impact of goodwill amortization, net of taxes	$ 0.14	$ 0.08
Adjusted basic net income (loss) per share	$ (0.69)	$ 1.82
Reported diluted net income (loss) per share	$ (0.83)	$ 1.67
Add back impact of goodwill amortization, net of taxes	$ 0.14	$ 0.07
Adjusted diluted net income (loss) per share	$ (0.69)	$ 1.74

16) PRODUCT WARRANTIES

The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. While the Company engages in extensive product quality programs and processes, including actively monitoring and evaluating the quality of its component suppliers, the Company's warranty obligation is affected by product failure rates, utilization levels, material usage, and supplier warranties on parts delivered to the Company. Should actual product failure rates, utilization levels, material usage, or supplier warranties on parts differ from the Company's estimates, revisions to the estimated warranty liability would be required.

Product warranty activity for the year ended December 31, 2002 was as follows:

Balance as of December 31, 2001	$ 3,630
Fair value of warranty liabilities acquired	3,813
Provisions for product warranties	2,974
Direct charges to the warranty liability	(3,496)
Balance as of December 31, 2002	$ 6,921

(TABLES IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

17) OTHER ACCRUED EXPENSES

Other accrued expenses consist of:

	DECEMBER 31, 2002	DECEMBER 31, 2001
Product warranties	$ 6,921	$ 3,630
Accrued purchase commitments	1,387	2,810
Other	13,346	9,111
	$21,654	$15,551

MKS INSTRUMENTS, INC.
SUPPLEMENTAL FINANCIAL DATA
(IN THOUSANDS)

	QUARTER ENDED			
	MAR 31	JUN 30	SEP 30	DEC 31
	(UNAUDITED)			
2002				
STATEMENT OF INCOME (LOSS) DATA				
Net sales	$ 59,067	$85,932	$ 92,216	$ 77,558
Gross profit	19,220	29,715	31,825	25,035
Income (loss) from operations(1)	(15,275)	(9,486)	(7,466)	(10,820)
Net income (loss) (2)	(11,787)	(4,694)	(3,825)	(19,231)
Net income (loss) per share				
Basic	$ (0.25)	$ (0.09)	$ (0.07)	$ (0.37)
Diluted	$ (0.25)	$ (0.09)	$ (0.07)	$ (0.37)
2001				
STATEMENT OF INCOME (LOSS) DATA				
Net sales	$110,888	$72,656	$ 53,201	$ 50,063
Gross profit(3)	43,195	25,818	16,096	474
Income (loss) from operations	(681)	(6,296)	(13,701)	(26,682)
Net income (loss)	(2,105)	(4,182)	(9,071)	(15,685)
Net income (loss) per share				
Basic	$ (0.06)	$ (0.11)	$ (0.24)	$ (0.41)
Diluted	$ (0.06)	$ (0.11)	$ (0.24)	$ (0.41)

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(1) Income (loss) from operations for the quarter ended September 30, 2002 includes restructuring and asset impairment charges of $2.4 million.

(2) Net income (loss) for the quarter ended December 31, 2002 includes a deferred tax charge of $13.4 million to establish a valuation allowance for the Company's net deferred tax assets. These assets remain available for use as deductions against future taxable income.

(3) Gross profit for the year ended December 31, 2001 includes significant charges for excess and obsolete inventory of $14.0 million in the fourth quarter of 2001 and $2.6 million in the second quarter of 2001. These charges were primarily caused by a significant reduction in demand, including reduced demand for older technology products.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The information required by this item is set forth under the captions "Election of Directors" and "Executive Officers" in our definitive proxy statement for the 2003 Annual Meeting of Stockholders, is incorporated herein by reference.

We are also required under Item 405 of Regulation S-K to provide information concerning delinquent filers of reports under Section 16 of the Securities and Exchange Act of 1934, as amended. This information is listed under the caption "Section 16(a) Beneficial Ownership Reporting Compliance" in our definitive proxy statement for the 2003 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year. This information is incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is set forth under the caption "Executive Compensation" in our definitive proxy statement for the 2003 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission not later than 120 days after the end of our fiscal year. This information is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by Item 403 of Regulation S-K is set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" in our definitive proxy statement for the 2003 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission not later than 120 days after the end of our fiscal year. This information is incorporated herein by reference.

The information required by Item 201(d) of Regulation S-K is set forth under the caption "Equity Compensation Plan Information" in our definitive proxy statement for the 2003 Annual Meeting of Stockholders, to be filed with the Securities and Exchange Commission not later than 120 days after the end of our fiscal year. This information is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The information required by this item is set forth under the caption "Certain Relationships and Related Transactions" in our definitive proxy statement for the 2003 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission not later than 120 days after the end of our fiscal year. This information is incorporated herein by reference.

ITEM 14. CONTROLS AND PROCEDURES

1) EVALUATION OF DISCLOSURE CONTROLS AND PROCEDURES

Based on their evaluation of the Company's disclosure controls and procedures (as defined in Rules 13a-14(c) and 15d-14(c) under the Securities Exchange Act of 1934) as of a date within 90 days of the filing date of this Annual Report on Form 10-K, the Company's chief executive officer and chief financial officer have concluded that the Company's disclosure controls and procedures are designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and are operating in an effective manner.

2) CHANGES IN INTERNAL CONTROLS

There were no significant changes in the Company's internal controls or in other factors that could significantly affect these controls subsequent to the date of their most recent evaluation.

As a result of its recent acquisitions, the Company has added several different decentralized accounting systems, resulting in a complex reporting environment. The Company expects that it will need to continue to modify its accounting policies, internal controls, procedures and compliance programs to provide consistency across all its operations.

PART IV

ITEM 15. EXHIBITS, FINANCIAL SCHEDULES AND REPORTS ON FORM 8-K

(a) The following documents are filed as a part of this Report:

(1) Financial Statements. See below for index to Consolidated Financial Statements under Item 8.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

(a) 2 Financial Statement Schedule:

The following consolidated financial statement schedule is included in Item 15(d):

Schedule II -- Valuation and Qualifying Accounts

Schedules other than those listed above have been omitted since they are either not required or information is otherwise included.

(3) Exhibits.

(a) The Exhibits listed in Exhibit Index immediately preceding such Exhibits are filed as part of this Annual Report on Form 10-K.

EXHIBIT NO.
TITLE - ----
------- ----
- +3.2(1)
Restated
Articles of
Organization
+3.3(2)
Articles of
Amendment,
as filed
with the
Secretary of
State of
Massachusetts
on May 18,
2001 +3.4(3)
Articles of
Amendment,
as filed
with the
Secretary of
State of
Massachusetts
on May 16,
2002 +3.5(4)
Amended and
Restated By-
Laws +4.1(4)
Specimen
certificate
representing
the common
stock
+10.1(5)*
Applied
Science and
Technology,

Inc. 1993 Stock Option Plan, as amended

+10.2(6)* Applied Science and Technology, Inc. 1994 Formula Stock Option Plan, as amended

+10.3(4)* 1996 Amended and Restated Director Stock Option Plan

+10.4(4)* 1997 Director Stock Option Plan

+10.5(7)* Second Restated 1995 Stock Incentive Plan

+10.6(3)* Second Restated 1999 Employee Stock Purchase Plan

+10.7(3)* Restated International Employee Stock Purchase Plan

+10.8(4)* Amended and Restated Employment Agreement dated as of December 15, 1995 between Leo Berlinghieri and the Registrant

+10.9(4)* Amended and Restated Employment Agreement dated as of December 15, 1995 between Ronald C. Weigner and the Registrant

+10.10(4)* Amended and Restated Employment Agreement dated as of December 15, 1995 between William D. Stewart and the Registrant

EXHIBIT NO. TITLE - - ---------- ----- +10.11(8)* Employment Agreement dated as of December 6, 1999 between Robert Klimm and the Registrant +10.12(9)* Employment Agreement dated as of March 10, 2000 between the Registrant and Donald Smith +10.13(4) Lease Agreement dated as of October 12, 1989, as extended November 1, 1998, by and between Aspen Industrial Park Partnership and the Registrant +10.14(4) Lease dated as of September 21, 1995 by and between General American Life Insurance Company and the Registrant +10.15(4) Lease dated as of January 1, 1996 between MiFuji Kanzai Co. Ltd. and the Registrant (covering Floor 5) +10.16(4) Lease dated as of April 21, 1997 between MiFuji Kanzai Co. Ltd. and the Registrant (covering Floors 1 and 2) +10.17(1) Lease dated as of August 9, 2000 between Aspen Industrial Partnership, LLP and the Registrant +10.18(3) First Amended and Restated Credit Agreement dated as of July 31, 2002 between Fleet National Bank as Agent and Lender, JP Morgan Chase Bank as Lender, and Registrant as Borrower +10.19(10) Loan Agreement between ASTeX Realty Corp. and Citizens Bank of Massachusetts, dated March 6, 2000 (the "Citizens Loan Agreement") +10.20(10) Exhibit A to the Citizens Loan Agreement +10.21(4) Split-Dollar Agreement dated as of September 12, 1991 between the Registrant, John R. Bertucci and Claire R. Bertucci and Richard S. Chute, Trustees of the John R. Bertucci Insurance Trust of January 10, 1986 +10.22(4) Split-

Dollar Agreement dated as of September 12, 1991 between the Registrant, John R. Bertucci and John R. Bertucci and Thomas H. Belknap, Trustees of the Claire R. Bertucci Insurance Trust of January 10, 1986 +10.23(4) Form of Tax Indemnification and S Corporation Distribution Agreement +10.24(11) Agreement and Plan of Merger with respect to the Acquisition of the ENI Business dated October 30, 2001 between the Registrant and Emerson Electric Co. +10.25(12) Shareholder Agreement dated as of January 31, 2002 among the Registrant and Emerson Electric Co. 10.26* Employment Agreement dated as of September 14, 1992 between John Smith and the Registrant 21.1 Subsidiaries of the Registrant 23.1 Consent of PricewaterhouseCoopers LLP 23.2 Consent of KPMG LLP 99.1 Statement of Chief Executive Officer Pursuant to 18 U.S.C. [sec] 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 99.2 Statement of Chief Financial Officer Pursuant to 18 U.S.C. [sec] 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

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+ Previously filed.

* Management contract or compensatory plan arrangement filed as an Exhibit to this Form 10-K pursuant to Item 15(c) of this report.

(1) Incorporated by reference to the Registration Statement on Form S-4 (File No. 333-49738) filed with the Securities and Exchange Commission on November 13, 2000.

(2) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-23621) for the quarter ended June 30, 2001.

(3) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-23621) for the quarter ended June 30, 2002.

(4) Incorporated by reference to the Registration Statement on Form S-1 (File No. 333-71363) filed with the Securities and Exchange Commission on January 28, 1999, as amended.

(5) Incorporated by reference to the Registration Statement on Form S-8 (File No. 333-54486) filed with the Securities and Exchange Commission on January 29, 2001.

(6) Incorporated by reference to the Registration Statement on Form S-8 (File No. 333-54488) filed with the Securities and Exchange Commission on January 29, 2001.

(7) Incorporate by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-23621) for the quarter ended September 30, 2002.

(8) Incorporated by reference to the Registrant's Annual Report on Form 10-K (File No. 000-23621) for the fiscal year ended December 31, 1999.

(9) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-23621) for the quarter ended March 31, 2000.

(10) Incorporated by reference to the Applied Science and Technology, Inc.'s Quarterly Report on Form 10-Q (File No. 333-71467) for the quarter ended March 25, 2000.

(11) Incorporated by reference to the Registrant's Definitive Proxy Statement on Schedule 14A (Commission File No. 000-23621) filed with the Securities and Exchange Commission on December 4, 2001.

(12) Incorporated by reference to the Registrant's report on Form 8-K (File No. 000-23621) filed with the Securities and Exchange Commission on February 12, 2002.

(b) Reports on Form 8-K.

No reports filed on Form 8-K were filed during the last quarter of the year ended December 31, 2002.

(c) Exhibits.

The Company hereby files as exhibits to our Annual Report on Form 10-K those exhibits listed in Item 14(a)(2) above.

(d) Financial Statement Schedules.

MKS INSTRUMENTS, INC.

SCHEDULE II -- VALUATION AND QUALIFYING ACCOUNTS
(DOLLARS IN THOUSANDS)

		ADDITIONS			
DESCRIPTION	BALANCE AT BEGINNING OF YEAR	CHARGED TO COSTS AND EXPENSES	CHARGED TO OTHER ACCOUNTS	DEDUCTIONS & WRITE-OFFS	BALANCE AT END OF YEAR
	(DOLLARS IN THOUSANDS)				
Accounts receivable allowance					
Year ended December 31,					
2002...........................	$3,282	$ 2,064	$ --	$2,082	$ 3,264
2001...........................	$1,954	$ 1,711	$ --	$ 383	$ 3,282
2000...........................	$1,669	$ 979	$ --	$ 694	$ 1,954
Deferred tax asset valuation allowance					
Year ended December 31,					
2002...........................	$ --	$13,378	$(788)	$ --	$12,590
2001...........................	$ --	$ --	$ --	$ --	$ --
2000...........................	$ --	$ --	$ --	$ --	$ --

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MKS INSTRUMENTS, INC.

By: /s/ JOHN R. BERTUCCI

John R. Bertucci
President, Chairman of the Board of
Directors and Chief Executive
Officer
(Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the date indicated.

SIGNATURE
TITLE DATE

----- ----
/s/ JOHN
R.
BERTUCCI
President,
Chairman
of the
Board
March 31,
2003 - ---

----- of
Directors
and Chief
Executive
John R.
Bertucci
Officer
(Principal
Executive
Officer)
/s/ RONALD
C. WEIGNER
Vice
President
and Chief
Financial
March 31,
2003 - ---

Officer
(Principal
Financial
and Ronald
C. Weigner
Accounting
Officer)
/s/ ROBERT
R.
ANDERSON
Director
March 31,
2003 - ---

Robert R.
Anderson
/s/ JAMES
G. BERGES
Director
March 31,
2003 - ---

James G.
Berges /s/
RICHARD S.
CHUTE
Director
March 31,
2003 - ---

Richard S.
Chute /s/
HANS-
JOCHEN
KAHL
Director
March 31,
2003 - ---

Hans-
Jochen
Kahl /s/
OWEN W.
ROBBINS
Director
March 31,
2003 - ---

----- Owen
W. Robbins
/s/ LOUIS
P. VALENTE
Director
March 31,
2003 - ---

Louis P.
Valente

CERTIFICATIONS

I, John R. Bertucci, certify that:

1. I have reviewed this annual report on Form 10-K of MKS Instruments, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

   a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

   b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

   c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

   a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

   b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officer and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Dated: March 31, 2003

/s/ JOHN R. BERTUCCI

John R. Bertucci
Chairman, Chief Executive Officer and President
(Principal Executive Officer)

I, Ronald C. Weigner, certify that:

1. I have reviewed this annual report on Form 10-K of MKS Instruments, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

   a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

   b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

   c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

   a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

   b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officer and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Dated: March 31, 2003

/s/ RONALD C. WEIGNER

Ronald C. Weigner
Vice President and Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 10.26

EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated 14 Sept 92 (Employment Agreement") by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and John Smith of Cheshire, UK. (the "Employee").

WHEREAS, the Corporation and the Employee desire to provide for the employment of the Employee by the Corporation:

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment. The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of 14 SEPT 92 and continuing from month to month thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employee Agreement at any time after 14 SEPT 92 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement thirty (30) days after the date of receipt by the other party of such notice and the employment of the Employee under this Employment Agreement shall terminate ninety (90) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5).

(2) Capacity. The Employee shall serve in such capacity as may be assigned to him consistent with his training and experience for the term of employment under this Employment Agreement and shall have such authority as is delegated to him by the President of NGS or his designee.

(3) Extent of Services. During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity, which interferes in any way with the Employee performance of his duties to the Corporation, whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation. In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of ninety five thousand dollars ($95,000.00) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal weekly installments subject to usual withholding requirements. No overtime pay will be paid to the Employee by the Corporation.

(b) Profit Sharing Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the Profit Sharing Plan of the Corporation. This section shall be amended by the provision set forth in attachment A.

(c) Vacation: The Employee shall be entitled to an annual vacation leave of 15 days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business.

(d) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(e) Health Insurance: The Corporation shall provide group medical insurance for the Employee under the Medical Reimbursement Plan of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination. The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall fail, or refuse, to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) for "cause", which term shall mean acts or actions detrimental to the best interests of the Corporation.

(6) Payment Upon Termination.

(a) If the employment of the Employee is terminated on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the Employee any compensation, except as is provided in this Employment Agreement.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise by payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier.

(7) Trade Secrets. The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents.

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including and Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the

Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation. All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation.

(10) Non-Competition.

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of nine (9) months after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation. For purposes of this Agreement, any business or activity involving or relating to quadrupole residual gas analyzers similar in concept to the "PPT" ("Competitive Business") shall be deemed to be business or activity which is competitive with the business conducted by the Corporation.; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any financial interest, or participate as a director, officer, stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Notice. Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(12) Assignment. The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(13) Entire Agreement and Severability.

(a) This Employment Agreement, and Attachment A, supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contains all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement shall be valid and binding. Any modification of this Employment Agreement will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(14) Governing Law. This Employment Agreement shall be governed by, and construed in accordance with, the laws of The Commonwealth of Massachusetts applicable to contracts made and to be performed entirely within The Commonwealth of Massachusetts.

IN WITNESS WHEREOF, the parties hereto have executed, in the Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ John R. Bertucci

President

6 Shattuck Road
Andover, MA 01810

/s/ John Smith   LS

Address:
101 North St.

Medfield, MA

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EXHIBIT 21.1

SUBSIDIARIES OF THE REGISTRANT

SUBSIDIARY	JURISDICTION OF INCORPORATION
MKS International, Inc.	Massachusetts
MKS Instruments France S.A.	France
MKS Instruments Canada Ltd.	Canada
MKS Instruments, U.K. Limited	United Kingdom
MKS East, Inc.	Massachusetts
MKS Japan, Inc.	Japan
MKS Korea Co., Ltd.	Korea
MKS FSC, Inc.	Barbados
Telvac Engineering Limited	United Kingdom
Spectra Sensortech, Ltd.	United Kingdom
Applied Science and Technology, Inc.	Delaware
MKS MSC, Inc.	Massachusetts
ASTeX Realty Corporation	Massachusetts
MKS (Bermuda) Ltd.	Bermuda
MKS Luxembourg S.A.R.L.	Luxembourg
MKS Germany Holding GmbH	Germany
MKS Instruments Deutschland GmbH	Germany
ASTeX GmbH	Germany
ENI Technology, Inc.	Delaware
MKS (Asia) Ltd.	Bermuda
MKS Hong Kong	Hong Kong
MKS China	China
MKS Taiwan Ltd.	Taiwan
M.K.S. Tenta Products Ltd.	Israel
Tega Systems Ltd.	Israel
IPC Products GmbH	Germany

EXHIBIT 23.1

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-78069, 333-78071, 333-78073, 333-31224, 333-54486, 333-54488, 333-54490, 333-90498, 333-90500 and 333-90502) and Form S-3 (No. 333-34450) of MKS Instruments, Inc. of our report dated February 3, 2003 relating to the financial statements and the financial statement schedule, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
March 28, 2003

EXHIBIT 23.2

CONSENT OF INDEPENDENT ACCOUNTANTS

THE BOARD OF DIRECTORS
APPLIED SCIENCE AND TECHNOLOGY, INC. AND SUBSIDIARIES:

We consent to the incorporation by reference in the registration statements (No. 333-78069, 333-78071, 333-78073, 333-31224, 333-54486, 333-54488, 333-54490, 333-90498, 333-90500 and 333-90502) on Form S-8 and No. 333-34450 on Form S-3 of MKS Instruments, Inc. of our report dated July 31, 2000, with respect to the consolidated statements of operations, stockholders' equity, and cash flows of Applied Science and Technology, Inc., and subsidiaries for the year ended July 1, 2000, which report appears in the December 31, 2002 annual report on Form 10-K of MKS Instruments, Inc.

/s/ KMPG LLP
Boston, Massachusetts
March 28, 2003

EXHIBIT 99.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER

PURSUANT TO 18 U.S.C. SECTION 1350,

AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of MKS Instruments, Inc. (the "Company") for the period ended December 31, 2002 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, John R. Bertucci, Chairman, Chief Executive Officer and President of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 31, 2003

/s/ John R. Bertucci

John R. Bertucci
Chairman, Chief Executive Officer and President

A signed original of this written statement required by Section 906 has been provided to MKS Instruments, Inc. and will be retained by MKS Instruments, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

EXHIBIT 99.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER

PURSUANT TO 18 U.S.C. SECTION 1350,

AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of MKS Instruments, Inc. (the "Company") for the period ended December 31, 2002 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Ronald C. Weigner, Vice President and Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 31, 2003

/s/ Ronald C. Weigner

Ronald C. Weigner
Vice President and Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to MKS Instruments, Inc. and will be retained by MKS Instruments, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.