MKS INSTRUMENTS INC
Form 10-K405
April 02, 2001

1

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, 2000

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	04-2277512
(State or other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)
Six Shattuck Road, Andover, MA	01810
(Address of Principal Executive Offices)	(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
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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. [X]

Aggregate market value of the voting and non-voting common equity held by nonaffiliates of the registrant as of January 31, 2001: $481,200,688; Number of shares outstanding of the issuer's Common Stock, no par value, as of January 31, 2001: 36,771,583

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the MKS 2000 Annual Report for the year ended December 31, 2000 are incorporated by reference into Parts I, II and IV of this Form 10-K.

Portions of the definitive Proxy Statement for MKS's Annual Meeting of Stockholders to be held on May 16, 2001 are incorporated by reference into Part III of this Form 10-K.

PART I

ITEM 1. BUSINESS.

MKS Instruments, Inc., or MKS, is a leading worldwide developer, manufacturer and supplier of instruments, components and integrated subsystems used to measure, control and analyze gases in semiconductor manufacturing and similar industrial manufacturing processes.

MKS completed several acquisitions in fiscal 2000 all of which have been accounted for under the purchase method of accounting. On March 10, 2000 MKS acquired Compact Instrument Technology, LLC, or Compact Instrument, a start-up company with proprietary technology in process monitoring for semiconductor manufacturing and other manufacturing processes. The purchase price was $8,700,000 and consisted of $8,400,000 in MKS common stock and $300,000 in assumed net liabilities. On May 5, 2000 MKS acquired Telvac Engineering, Ltd., or Telvac, a UK-based, privately held manufacturer of vacuum subsystems. The purchase price was $1,600,000, and consisted of $750,000 in cash, $750,000 in debt and $100,000 in other acquisition expenses. On July 21, 2000 MKS acquired Spectra International, LLC, or Spectra, a privately held company with products and technology in process monitoring. 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; and $400,000 in acquisition costs. On September 6, 2000 MKS acquired D.I.P., Inc., or D.I.P., a privately held company with products and technology in digital process control. The purchase price was $6,900,000 cash; 231,392 shares of MKS common stock valued at $6,800,000; and $300,000 in acquisition costs. See Note 12 of "Notes to Consolidated Financial Statements" on page 47 of our 2000 Annual Report which is incorporated herein by reference and is filed herewith as Exhibit 13.1.

On January 26, 2001, MKS acquired Applied Science and Technology, Inc., commonly known as ASTeX, a Wilmington, Massachusetts based company with products and technology in reactive gas generation and power delivery. Under the terms of the agreement, 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 11.2 million shares of common stock of MKS, representing 30% of MKS's then outstanding shares. This acquisition will be accounted for under the pooling of interests method of accounting. See "Management's Discussion and Analysis of Financial Condition and Results of Operations -- Recent Developments" on page 20 of our 2000 Annual Report which is incorporated herein by reference and is filed herewith as Exhibit 13.1. The discussion of MKS's business to follow, unless otherwise noted, is as of December 31, 2000 prior to the closing of the acquisition of ASTeX.

PRODUCTS

MKS offers a comprehensive line of products which are used to manufacture, among other things:

* semiconductors
* optical filters and fiber optic cables for data and telecommunications
* flat panel displays
* magnetic and optical storage devices and media, including:
  - compact disks
  - hard disk storage devices
  - magnetic devices for reading disk data
  - digital video disks
  - optical storage disks or laser readable disks
* solar panels
* gas lasers
* eyeglasses
* architectural glass
* cutting tools
* freeze-dried pharmaceuticals

MKS supplies products in three principal product areas. We also provide value-added integrated subsystems combining these products. Our products include:

- Pressure Measurement and Control Products
- Materials Delivery and Analysis Products
- Vacuum Products

PRESSURE MEASUREMENT AND CONTROL PRODUCTS. MKS designs and manufactures a wide range of gas pressure measurement and control instrumentation. Each product line consists of products which are designed for a variety of pressure ranges and accuracies.

Baratron Pressure Measurement Products. MKS's Baratron pressure measurement 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.

A key feature of Baratron instruments is the ability to measure pressure independent of gas composition, which is critical for precise pressure control of semiconductor processes that involve gas mixtures. In these processes, there is a need to control both pressure and gas mixture, but the pressure measurement instrument must measure only the pressure of the sum of the gases in the chamber, independent of gas composition. The Baratron instruments enable users to achieve a highly precise, accurate and repeatable measurement of gas pressure. Pressure measurement, independent of gas composition, is also useful during process steps used to remove atmospheric gases as well as those used to introduce specific amounts of various types of gases. Such processes are used to manufacture fluorescent bulbs and to fabricate gas lasers.

Automatic Pressure and Vacuum Control Products. MKS's 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 which 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, MKS's Baratron pressure measurement instruments provide the pressure input to the automatic pressure control device. Together, these components create an integrated automatic pressure control system. MKS's 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.

MKS has recently introduced a line of integrated pressure controllers that combine the functions of its Baratron pressure measurement instrument, flow measurement instrument, control electronics and valve into a four-inch long instrument which can be placed directly on a gas line to control pressure downstream of the instrument while indicating the gas flow rate. This addresses the need for smaller components, saving valuable clean room space.

MATERIALS DELIVERY AND ANALYSIS PRODUCTS. MKS designs and manufactures a wide range of flow and composition analysis measurement and control instrumentation. Each product line consists of products which are designed for a variety of flow and composition ranges and accuracies.

Flow Measurement and Control Products. MKS's 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 measuring 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's broad product lines include products that allow the precise, automatic flow control of inert or corrosive gases, the automatic control of low vapor pressure gases and heated liquid source

materials, and the automatic control of delicate, advanced technology liquid

sources and vaporized solid sources for next generation devices.

MKS's 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, and 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 use flow restrictors in the gas line to transform pressure control into mass flow control.

Certain new materials required for the next generation of semiconductor devices are difficult to control using traditional thermal mass flow technology. To control these new materials, MKS has designed a direct liquid injection subsystem which pumps a precise volume of liquid into a vaporizer, which in turn supplies a controlled flow of vapor into the process chamber. The direct liquid injection subsystem pump and vaporizer are presently used principally for research and development applications for next generation semiconductor device conductors, diffusion barriers and insulators, such as copper, titanium nitride and dielectric materials.

MKS's 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 Composition Analysis Instruments. MKS's gas analysis instruments are sold primarily to the semiconductor industry. The residual gas analysis product lines include a quadrapole mass spectrometer sensor, which is a device that separates gases based on molecular weight. MKS's quadrapole mass spectrometer sensors include built-in electronics to analyze the composition of background and process gases in the process chamber. MKS's Spectra process monitoring system is a sophisticated quadrapole mass spectrometer process analyzer for statistical process monitoring of manufacturing processes operating from very low pressures to atmospheric pressure. These instruments are provided both as portable laboratory systems and as process gas monitoring systems used in the diagnosis of semiconductor manufacturing process systems. The gas monitoring systems can indicate out-of-bounds conditions, such as the presence of undesirable atmospheric gases, water vapor or out-of-tolerance amounts of specific gases in the process chamber, enabling operators to diagnose and repair faulty equipment. MKS's gas sampling systems provide a turn-key solution for withdrawing gases from chambers at relatively high pressures for introduction into the low pressure gas analyzers. Next generation semiconductor manufacturing processes, with smaller circuit patterns and larger wafer sizes, are expected to require sophisticated gas analysis instruments and/or monitoring equipment to ensure tighter process control and earlier diagnosis of equipment malfunction. MKS's acquisition of Compact Instrument enhances its core capabilities in gas composition analysis and provides additional capabilities to reduce the size and costs of monitors for advanced processes.

Optical Monitoring Instruments. MKS's acquisition of Spectra, in addition to augmenting the residual gas analysis products mentioned above, added a range of optical monitoring instruments. These are sold primarily to the thin film coating industry in 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.

VACUUM PRODUCTS. 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. Unlike Baratron pressure measurement instruments, vacuum gauges do not measure pressure directly. These gauges are used to measure vacuum at pressures lower than those measurable with a Baratron pressure measurement instrument or to measure vacuum in the Baratron pressure measurement instrument range where less accuracy is required. MKS's indirect pressure gauges use thermal conductivity and

5

ionization gauge technologies to measure pressure from atmospheric pressure to one trillionth of atmospheric pressure. MKS's Baratron pressure measurement instruments, together with its vacuum gauges, are capable of measuring the full range of pressures used in semiconductor and other thin-film manufacturing processes from two hundred times atmospheric pressure to one trillionth of atmospheric pressure.

MKS also manufactures a wide range of vacuum gauge instruments in which the associated electronics are packaged with the vacuum sensor, reducing panel space and installation cost. MKS offers both analog and digital versions of these vacuum gauge transducers.

Vacuum Valves and Components. MKS's vacuum valves are used on the gas lines between the process chamber and the pump downstream of the process chamber. MKS's 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 small circuit patterns cannot tolerate contamination from atmospheric leaks or particles. MKS's vacuum components are designed to minimize such contamination and thus increase yields and uptimes.

MARKETS AND APPLICATIONS

MKS estimates that approximately 76% of its sales in 2000 were made to the semiconductor industry. MKS's products are also used in other markets and applications including the manufacture of, among other things:

- optical filters and fiber optic cables for data and telecommunications
- flat panel displays
- magnetic and optical storage media
- solar panels
- gas lasers
- eyeglasses
- architectural glass
- cutting tools
- freeze-dried pharmaceuticals

As of December 31, 2000, MKS's products were sold primarily through its

direct sales force in 34 offices in France, Germany, Japan, Korea, The Netherlands, Singapore, Taiwan, the United Kingdom and the United States. This direct sales force is supplemented by sales representatives and agents in countries including Canada, China, India, Israel, and Italy and in selected U.S. cities. The major markets for MKS's products include:

Semiconductor Manufacturing

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

- depositing materials onto substrates
- etching circuit patterns
- implanting positively charged atoms into a substrate to alter electrical characteristics

MKS's 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. 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, the major semiconductor capital equipment manufacturers are concentrated in the United States, Japan and Europe.

Optical Filters, Optical Fibers and Other Coating

MKS's products are used in optical filter, optical fiber and other optical thin-film coating processes. MKS's 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 greater data transmission 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.

Flat Panel Display Manufacturing

MKS's products are used in the manufacture of flat panel displays, which require the same or similar fabrication processes as semiconductor manufacturing. MKS sells its products both to flat panel original 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 defect reduction which requires tighter process controls. 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's products are used in the manufacture of:

- 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
- digital video or versatile disks

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.

Other Coating Markets

MKS's 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 Markets

MKS's 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's products are also incorporated into some end-market products such as industrial vehicles, and analytical instruments. MKS's 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.

CUSTOMERS

MKS's largest customers are leading semiconductor capital equipment manufacturers such as Applied Materials, Lam Research, Novellus and Tokyo Electron, semiconductor device manufacturers such as Motorola, and specialty gas providers such as Air Products and Chemicals. Sales to MKS's top ten customers accounted for approximately 29% of its net sales in 1998, 39% in 1999 and 47% in 2000. International sales represented approximately 32% of its net sales in 1998, 31% in 1999 and 29% in 2000. During 2000, Applied Materials accounted for approximately 25% of MKS's net sales. Sales to Applied Materials and to a major supplier to Applied Materials, who is also a customer of MKS, accounted for approximately 30% of MKS's 2000 sales. Applied Materials purchases products from MKS under the terms of an agreement, with no minimum purchase requirements, that expires in April 2001. MKS and Applied Materials are currently negotiating a new contract.

SALES, MARKETING AND SUPPORT

MKS's 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, 2000, MKS had 154 sales employees in 34 offices in France, Germany, Japan, Korea, The

Netherlands, Singapore, Taiwan, the United Kingdom and the United States. This direct sales force is supplemented by sales representatives and agents in countries including Canada, China, India, Israel, and Italy and in selected U.S. cities. MKS maintains a marketing staff to identify customer requirements, assist in product planning and specifications and to focus 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 34 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 17 service depots located worldwide. MKS provides warranties from one to three years, depending upon the type of product. In addition, MKS offers training programs for its customers in a wide range of vacuum and gas processing technologies.

RESEARCH AND DEVELOPMENT

MKS's research and development efforts are directed toward developing and improving MKS's process control instruments and components for semiconductor and advanced thin-film processing applications and identifying and developing products for new applications for 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's employees also work closely with its customers' development personnel. These relationships help MKS identify and define future technical needs on which to focus its research and development efforts. In addition, MKS participates in S.I.S.A. (Semiconductor Industry Suppliers Association), a consortium of semiconductor equipment suppliers, to assist in product development and standardization of product technology, and it supports research at academic institutions targeted at advances in materials science and semiconductor process development.

COMPETITION

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

- historical customer relationships
- product quality, performance and price
- breadth of product line

8

- 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 each of its product lines from a number of competitors, although no one competitor competes with MKS across all product lines. Certain of MKS's competitors have greater financial and other

resources than MKS. In some cases, the competitors are smaller than MKS, but well-established in specific product niches. Millipore Corporation offers products that compete with MKS's pressure and flow products. Aera Corporation, STEC, and Unit Instruments, each offer products that compete with MKS's mass flow control products. Nor-Cal Products, Inc. and MDC Vacuum Products, Inc., each offer products that compete with MKS's vacuum components. Leybold-Inficon, Inc., offers products that compete with MKS's vacuum measuring and gas analysis products. Helix Technology Corporation offers products that compete with MKS's vacuum gauging 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's success depends in part on its ability to have semiconductor device manufacturers specify that its products be used at their fabrication facilities and 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's 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's 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, 2000, MKS held 55 U.S. patents and had 27 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 depends more 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's proprietary information and to assign to MKS all inventions while they are employed by MKS.

On November 30, 2000, ASTeX brought suit in federal district court in Delaware against Advanced Energy Industries, Inc. for infringement of ASTeX's patent related to its Astron product. MKS is unclear as to the outcome of this suit at this time. MKS is not involved in any further material disputes with other parties with respect to the ownership or use of its proprietary technology. However, there can be no assurance that other parties will not assert technology infringement claims or other claims against MKS in the future. The litigation of such a claim may involve significant expense and management time. In addition, if any such claim were successful, MKS could be required to pay monetary damages and may also be required to either refrain from distributing the infringing product or obtain a license from the party asserting the claim (which license may not be available on commercially reasonable terms).

EMPLOYEES

As of December 31, 2000, MKS employed 1,471 persons. Management believes that MKS's ongoing success depends upon its continued ability to attract and retain highly skilled employees. None of MKS's employees is represented by a labor union or party to a collective bargaining agreement. MKS believes that its employee relations are good.

FACTORS THAT MAY AFFECT FUTURE RESULTS

MKS believes that this document contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are subject to risks and uncertainties and are based on the beliefs and assumptions of management of MKS, based on information currently available to MKS's management. Use of words such as "believes," "expects," "anticipates," "intends," "plans," "estimates," "should," "likely" or similar expressions, indicate a forward-looking statement. Forward-looking statements involve risks, uncertainties and assumptions. Certain of the information contained in this Annual Report on Form 10-K consists of forward-looking statements. Important factors that could cause actual results to differ materially from the forward-looking statements include the following:

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 66% of its sales during 1999 and 76% of its sales in 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. The downturn in capital spending by semiconductor manufacturers also reduced ASTeX's sales during portions of 1998 and 1999, resulting in significant losses. More recently, in the first quarter of 2001, MKS has announced that there has been a reduction in demand from OEM customers, and that it expects lower gross margins due to reduced absorption of manufacturing overhead at the lower revenue levels and a higher proportion of lower margin 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.

10

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. 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' five largest customers accounted for approximately 42% of its net sales in 2000, 33% of its net sales in 1999 and 24% of its net sales in 1998. 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 2000 and 1999, one customer, Applied Materials, accounted for approximately 25% and 22%, respectively, of MKS' net sales. In addition, Applied Materials accounted for approximately 50% of the revenues of ASTeX in its fiscal year 2000. MKS' purchase contract with Applied Materials expires in April 2001. While MKS and Applied Materials are currently negotiating a new agreement, there can be no assurance that negotiations will be successful. 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 in March 2000, Telvac in May 2000, Spectra in July 2000, D.I.P in September 2000 and ASTeX in January 2001. 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.

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. and ASTeX 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 product 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, which include sales by MKS' foreign subsidiaries, but exclude direct export sales (which were less than 10% of MKS' total net sales), accounted for approximately 29% of net sales in 2000, 31% of net sales in 1999 and 32% of net sales in 1998. In addition, international sales accounted for 20% of revenues in ASTeX's fiscal year 2000, 20% of revenues in its fiscal year 1999, and 23% of revenues in its fiscal year 1998. 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.

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.

COMPETITION FOR PERSONNEL IN THE SEMICONDUCTOR AND INDUSTRIAL MANUFACTURING INDUSTRIES IS INTENSE.

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. Competition for such personnel is intense, and 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, 2000, MKS owned 55 U.S. patents and 56 foreign patents and had 27 pending U.S. patent applications and 90 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 30, 2000, ASTeX brought suit in federal district court in Delaware against Advanced Energy Industries, Inc. for infringement of ASTeX's patent related to its Astron 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 AND LIMITED SOURCE SUPPLIERS COULD AFFECT ITS ABILITY TO MANUFACTURE PRODUCTS AND SYSTEMS.

MKS relies on sole and limited source 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 and limited source 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.

ONE STOCKHOLDER, ALONG WITH MEMBERS OF HIS FAMILY, CONTINUES TO HAVE A SUBSTANTIAL INTEREST IN MKS.

As of January 31, 2001, John R. Bertucci, chairman and chief executive officer of MKS, and members of his family, in the aggregate, beneficially owned approximately 41.4% of MKS' outstanding common stock. As a result, these stockholders, acting together, are able to exert substantial influence over actions of MKS.

SOME PROVISIONS OF MKS' RESTATED ARTICLES OF ORGANIZATION, MKS' 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' 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.

MARKET RISK AND SENSITIVITY ANALYSIS

FOREIGN EXCHANGE RATE RISK

MKS enters into forward exchange contracts and local currency purchased options to reduce currency exposure arising from intercompany sales of inventory. The potential fair value loss for a hypothetical 10% adverse change in forward currency exchange rates on MKS' forward exchange contracts at December 31, 2000 and 1999 would be $146,000 and $502,000, respectively. The potential loss in each year was estimated by calculating the fair value of the forward exchange contracts at December 31, and comparing that with those calculated using the hypothetical forward currency exchange rates.

The value of the local currency purchased options at December 31, 2000 and 1999 was immaterial.

At December 31, 2000, MKS had $15,719,000 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 $1,746,000. The potential increase in fair value was estimated by calculating the fair value of the short-term borrowings at December 31, 2000 and comparing that with the fair value using the hypothetical year end exchange rate.

At December 31, 1999, MKS had $12,423,000 related to short-term borrowings denominated in Japanese yen. The carrying value of these short-term borrowings approximated fair market 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 in 1999, the fair value of these short-term borrowings would have increased by $1,381,000. The potential increase in fair value was estimated by calculating the fair value of the short-term borrowings at December 31, 1999 and comparing that with the fair value using the hypothetical year end exchange rate.

INTEREST RATE RISK

MKS is exposed to fluctuations in interest rates in connection with its variable rate term loans. In order to minimize the effect of changes in interest rates on earnings, MKS entered into an interest rate swap that fixed the interest rate on its variable rate term loans. Under the swap agreement, MKS pays a fixed rate of 5.85% on the notional amount and receives LIBOR. At December 31, 2000 and 1999, the notional amount of the interest rate swap was

equal to the principal amount of the variable rate term loans. The potential increase in the fair value of term loans resulting from a hypothetical 10% decrease in interest rates, after adjusting for the interest rate swap, was not material.

Due to its short-term duration, the fair value of the Company's cash and investment portfolio at December 31, 2000 and 1999 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 2. PROPERTIES

As of December 31, 2000, the following table provides information concerning MKS' principal and certain other owned and leased facilities:

LOCATION	SQ. FT.	ACTIVITY	PRODUCTS MANUFAC
Andover, Massachusetts	82,000	Headquarters, Manufacturing, Customer Support and Research & Development	Pressure Measure Control Products

Austin, Texas	8,000	Sales, Customer Support and Service	Not applicable
Boulder, Colorado	119,000	Manufacturing, Customer Support, Service and Research & Development	Vacuum Products
Cheshire, U.K	13,000	Manufacturing, Sales, Customer Support and Service	Materials Delive Analysis Product
Lawrence, Massachusetts	40,000	Manufacturing	Pressure Measure Control Products
Le Bourget, France	14,000	Sales, Customer Support and Service	Not applicable
Methuen, Massachusetts	85,000	Manufacturing, Customer Support, Service and Research & Development	Pressure Measure Control Products Delivery and Ana
Morgan Hill, California	17,000	Manufacturing, Customer Support, Service and Research & Development	Materials Delive Analysis Product
Munich, Germany	14,000	Manufacturing, Sales, Customer Support, Service and Research & Development	Pressure Measure Control Products Delivery and Ana
Richardson, Texas	15,000	Manufacturing, Sales, Customer Support and Service	Pressure Measure Control Products Delivery and Ana
Riverside, California	9,800	Manufacturing, Service	Pressure Measure

			Control Products
Santa Clara, California	13,000	Sales, Customer Support and Service	Not applicable
Seoul, Korea	5,000	Manufacturing, Sales, Customer Support and Service	Materials Delive Analysis Product
Shropshire, UK	25,000	Manufacturing	Vacuum Products
Singapore	4,000	Sales, Customer Support and Service	Not applicable
Taiwan	2,000	Sales, Customer Support and Service	Not applicable
Tokyo, Japan	21,000	Manufacturing, Sales, Customer Support, Service and Research & Development	Materials Delive Analysis Product
Woburn, Massachusetts	3,000	Research and Development	Not applicable

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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 10/31/01 and the other has 33,000 square feet with a lease term which expires 8/15/05. MKS also owns a third and fourth facility with 28,000 and 19,000 square feet of space, respectively.
(3) MKS leases two facilities, one has 2,000 square feet of space and a lease term which expires 10/05/09 and the second has 11,000 square feet of space and a lease term which expires 11/30/09.
(4) MKS leases two facilities, one has 4,000 square feet of space and a lease term which expires 2/28/03 and the second has 3,800 square feet and a lease term which expires 4/30/02. MKS owns another facility with 6,700 square feet of space.
(5) MKS leases one facility with 4,000 square feet of space on a month-to-month basis, a second facility of 4,000 square feet with a lease term which expires on 1/30/03. MKS owns a third facility of 5,000 square feet.

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

None.

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 fiscal 2000 through the solicitation of proxies or otherwise.

PART II

ITEM 5. MARKETS FOR COMMON EQUITY AND RELATED STOCKHOLDERS MATTERS

The information required by this item is set forth under the caption "Supplemental Stockholder Information" on page 27 of our 2000 Annual Report and is incorporated herein by reference and is filed herewith as Exhibit 13.1.

ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA

The information required by this item is set forth under the caption "Selected Consolidated Financial Data" on page 14 of our 2000 Annual Report and is incorporated herein by reference and is filed herewith as Exhibit 13.1.

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

The information required by this item is set forth under the caption "Management's Discussion and Analysis of Financial Condition and Results of Operation" on pages 15 through 20 of our 2000 Annual Report and is incorporated herein by reference and is filed herewith as Exhibit 13.1.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The information required by this item is set forth under the caption "Market Risk and Sensitivity Analysis" on page 26 of our 2000 Annual Report and is incorporated herein by reference and is filed herewith as Exhibit 13.1.

ITEM 8. FINANCIAL STATEMENTS

The consolidated financial statements, together with the report thereon of PricewaterhouseCoopers LLP, Independent Accountants, dated January 26, 2001, and appearing on pages 28 through 48 of our 2000 Annual Report is incorporated herein by reference and is filed herewith as Exhibit 13.1.

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

None.

PART III

ITEM 10. DIRECTORS AND OFFICERS OF THE REGISTRANT

The information required by this item is set forth under the captions "Election of Directors" and "Executive Officers" in our Proxy Statement for the 2001 Annual Meeting of Stockholders and 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 Proxy Statement for the 2001 Annual Meeting of Stockholders and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The information required by this item is set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" in our Proxy Statement for the 2001 Annual Meeting of Stockholders and 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 Proxy Statement for the 2001 Annual Meeting of Stockholders and is incorporated herein by reference.

PART IV

ITEM 14. EXHIBITS, FINANCIAL STATEMENT SCHEDULES, AND REPORTS ON FORM 8-K

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

(1) Financial Statements:

MKS INSTRUMENTS, INC.

INDEX TO FINANCIAL STATEMENTS

The consolidated financial statements, together with the report thereon of PricewaterhouseCoopers LLP dated January 26, 2001, appearing on pages 28 to 48 of the accompanying 2000 Annual Report to Shareholders are incorporated by reference in this Form 10-K Annual Report. With the exception of the aforementioned information and the information incorporated in Items 5, 6, 7, 7A and 8, the 2000 Annual Report to Shareholders is not to be deemed filed as part of this Form 10-K Annual Report.

(2) Financial Statement Schedule:

The following financial statement schedule of MKS Instruments, Inc. for the years ended December 31, 2000, 1999 and 1998 is filed as part of this Form 10-K and should be read in conjunction with our Consolidated Financial Statements included in Item 8 of this Report on Form 10-K.

18

Schedule II - Valuation And Qualifying Accounts

	COLUMN A	COLUMN B	COLUMN C	COLUMN D
DESCRIPTION	BALANCE AT BEGINNING OF YEAR	CHARGED TO COSTS AND EXPENSES	CHARGED TO OTHER ACCOUNTS	DEDUCTIONS

Year ended December 31, 1998:				
Allowance for doubtful accounts	$ 610,000	$253,000	$ ---	$207,000
Year Ended December 31, 1999:				
Allowance for doubtful accounts	$656,000	$257,000	$ ---	$(21,000)
Year Ended December 31, 2000:				
Allowance for doubtful accounts	$934,000	$ 231,000	$ ---	$(32,000)

Report of Independent Accountants on
Financial Statement Schedule

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

Our audits of the consolidated financial statements referred to in our report dated January 26, 2001 appearing in the 2000 Annual Report to Shareholders of MKS Instruments, Inc. (which report and consolidated financial statements are incorporated by reference in this Annual Report on Form 10-K) also included an audit of the financial statement schedule listed in Item 14(a)(2) of this Form 10-K. In our opinion, this financial statement schedule presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements.

PricewaterhouseCoopers LLP

Boston, Massachusetts
January 26, 2001

All other financial statement schedules have been omitted because they are inapplicable, not required, or the information is included elsewhere in the Consolidated Financial Statements or Notes thereto.

(3) Exhibits:

(a) The Exhibits listed in the 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
+3.4(2)	Amended and Restated By-Laws
+4.1(2)	Specimen certificate representing the common stock
+10.1(3)	Amended and Restated 1995 Stock Incentive Plan
+10.2(2)	1996 Amended and Restated Director Stock Option Plan
+10.3(2)	1997 Director Stock Option Plan
+10.4(2)	1999 Employee Stock Purchase Plan
+10.5(4)	MKS Instruments, Inc. International Employee Stock Purchase Plan
+10.6(2)	Amended and Restated Employment Agreement dated as of December 15, 1995 between Leo Berlinghieri and the Registrant
+10.7(2)	Amended and Restated Employment Agreement dated as of December 15, 1995 between Ronald C. Weigner and the Registrant
+10.8(2)	Amended and Restated Employment Agreement dated as of December 15, 1995 between William D. Stewart and the Registrant
+10.9(5)	Employment Agreement dated as of May 17, 1999 between Peter Younger and the Registrant
+10.10(5)	Employment Agreement dated as of December 6, 1999 between

Robert Klimm and the Registrant

19

+10.11(1)	Employment Agreement dated as of March 10, 2000 between the Registrant and Donald Smith
+10.12(1)	Employment Agreement dated as of October 18, 2000 between the Registrant and F. Thomas McNabb
+10.13(2)	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(2)	Lease dated as of September 21, 1995 by and between General American Life Insurance Company and the Registrant
+10.15(2)	Lease dated as of January 1, 1996 between MiFuji Kanzai Co. Ltd. and the Registrant (covering Floor 5)
+10.16(2)	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(2)	Loan Agreement dated as of November 1, 1993, as last amended January 1, 2001, between Fleet National Bank (f/k/a The First National Bank of Boston) and the Registrant
+10.19(5)	Loan Agreement dated as of January 1, 2000 between Fleet National Bank (f/k/a BankBoston, N.A.), The Chase Manhattan Bank, and the Registrant
10.20	Second Amendment dated as of January 1, 2001 to First Amended and Restated Loan Agreement dated as of January 1, 2000 among Fleet National Bank (f/k/a BankBoston, N.A.), The Chase Manhattan Bank and the Registrant
10.21	Seventh Amendment dated as of the January 1, 2001 to Loan Agreement dated as of October 31, 1995 between Fleet National Bank (f/k/a The First National Bank of Boston) and the Registrant
+10.22(2)	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
+10.23(2)	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
+10.24(2)	Form of Tax Indemnification and S Corporation Distribution Agreement
10.25(6)	Amended and Restated Comprehensive Supplier Agreement dated March 13, 2001 by and between Applied Materials, Inc. and the Registrant
13.1	2000 Annual Report to Stockholders (which shall be deemed filed only with respect to those portions specifically incorporated by reference herein)
21.1	Subsidiaries of the Registrant
23.2	Consent of PricewaterhouseCoopers LLP

\+ Previously filed

(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, as amended.

(2) 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.

(3) Incorporated by reference to the Registration Statement on Form S-8 (File No. 333-54490) filed with the Securities and Exchange Commission on January 29, 2001, as amended.
(4) Incorporated by reference to the Registration Statement on Form S-8 (File No. 333-31224) filed with the Securities and Exchange Commission on February 28, 2000.
(5) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1999.
(6) Confidential Materials omitted and filed separately with the Securities and Exchange Commission.

(b) Reports on Form 8-K.

The Company filed a report on Form 8-K with the Securities and Exchange Commission on October 11, 2000 announcing the execution of the Agreement and Plan of Merger, dated October 2, 2000, by and between the Company, Mango Subsidiary Corp. and Applied Science and Technology, Inc.

(c) Exhibits.

The Company hereby files as exhibits to our Annual Report on Form 10-K those exhibits listed in Item 14(a)(3) above.

(d) Financial Statement Schedules.

Not Applicable.

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
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.

SIGNATURES	TITLE

/s/ John R. Bertucci John R. Bertucci	Chairman of the Board of Directors and Chief Executive Officer (Principal Executive Officer)
/s/ Ronald C. Weigner Ronald C. Weigner	Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)
/s/ Richard S. Chute Richard S. Chute	Director
/s/ Owen W. Robbins Owen W. Robbins	Director
/s/ Robert J. Therrien Robert J. Therrien	Director
/s/ Louis P. Valente Louis P. Valente	Director
/s/ Robert R. Anderson Robert R. Anderson	Director
/s/ Hans-Jochen Kahl Hans-Jochen Kahl	Director