

MKS INSTRUMENTS INC

Form 10-K

February 28, 2008

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**UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

Form 10-K

**ANNUAL REPORT PURSUANT
TO SECTIONS 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934**

(Mark One)

- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES
EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2007
- 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)*

2 Tech Drive, Suite 201, Andover, Massachusetts

(Address of Principal Executive Offices)

04-2277512

*(IRS Employer
Identification No.)*

01810

(Zip Code)

**Registrant's Telephone Number, including area code
(978) 645-5500**

Securities registered pursuant to Section 12(b) of the Act:

Title of Class

Name of Each Exchange on Which Registered

Common Stock, no par value

NASDAQ Global Market

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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 No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements 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 a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definitions of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

Aggregate market value of the voting and non-voting common equity held by nonaffiliates of the registrant as of June 30, 2007 based on the closing price of the registrant's Common Stock on such date as reported by the Nasdaq Global Market: \$1,252,682,585.

Number of shares outstanding of the issuer's Common Stock, no par value, as of February 15, 2008: 52,062,503

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement for MKS Annual Meeting of Stockholders to be held on May 5, 2008 are incorporated by reference into Part III of this Form 10-K.

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EX-10.14 Form of Restricted Stock Unit Agreement under the 2004 Plan

EX-10.21 Employment Agreement dated July 1, 2005 between Leo Berlinghieri and the Registrant, as amended on November 13, 2007

EX-10.27 Summary of 2008 Compensatory Arrangements with Executive Officers

EX-10.31 Third Amendment, dated July 31, 2007

EX-21.1 Subsidiaries of the Registrant

EX-23.1 Consent of PricewaterhouseCoopers LLP

EX-31.1 Section 302 Certification of CEO

EX-31.2 Section 302 Certification of CFO

EX-32.1 Section 906 Certification of CEO & CFO

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

MKS management 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, Section 27A of the Securities Act and Section 21E of the Securities Exchange Act. When used herein, the words believe, anticipate, plan, expect, estimate, intend, see, will, would 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 Risk Factors.

PART I

Item 1. *Business*

MKS Instruments, Inc. (the Company or MKS) was founded in 1961 as a Massachusetts corporation. We are a leading worldwide provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters to improve process performance and productivity of advanced manufacturing processes.

We are managed as one operating segment. We group our products into three product groups: Instruments and Control Systems, Power and Reactive Gas Products and Vacuum Products. Our products are derived from our core competencies in pressure measurement and control, materials delivery, gas composition analysis, electrostatic charge management, control and information technology, power and reactive gas generation and vacuum technology.

Our products are used in diverse markets, applications and processes. Our primary served markets are manufacturers of capital equipment for semiconductor devices and for other thin film applications including flat panel displays, solar cells, data storage media and other advanced coatings. We also leverage our technology in other markets with advanced manufacturing applications including medical equipment, pharmaceutical manufacturing and energy generation and environmental monitoring.

For over 45 years, we have focused on satisfying the needs of our customers by establishing long-term, collaborative relationships. We have a diverse base of customers that includes manufacturers of semiconductor capital equipment and semiconductor devices, thin film capital equipment used in the manufacture of flat panel displays, solar cells, data storage media and other coating applications; and other industrial, medical and manufacturing companies, and university, government and industrial research laboratories. Our top 10 customers for the year ended December 31, 2007 were Applied Materials, Hitachi, Lam Research, Novellus Systems, Oviso Manufacturing, Philips, PSK Tech, Samsung, Tokyo Electronics and Ultra Clean Technology.

We file reports, proxy statements and other documents with the Securities and Exchange Commission. You may read and copy any document we file at the SEC Headquarters at Office of Investor Education and Assistance, 100 F Street, NE, Washington, D.C. 20549. You should call 1-800-SEC-0330 for more information on the public reference room. Our SEC filings are also available to you on the SEC's Internet site at <http://www.sec.gov>.

Our internet address is www.mksinstruments.com. We are not including the information contained in our website as part of, or incorporating it by reference into, this annual report on Form 10-K. We make available free of charge through our web site our 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 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, as soon as reasonably practicable after we electronically file such materials with the Securities and Exchange Commission.

Markets and Applications

We are focused on improving process performance and productivity by measuring, controlling, powering, monitoring and analyzing advanced manufacturing processes in semiconductor, thin film and other market sectors.

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We estimate that approximately 68%, 70% and 71% of our net sales for the years ended December 31, 2007, 2006 and 2005, respectively, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers. Approximately 8%, 8% and 8% of our net sales in the years ended December 31, 2007, 2006 and 2005, respectively, were for other thin-film processing equipment applications, including flat panel displays; solar cells, data storage media, and other thin film coatings. Approximately 24%, 22% and 21% of our net sales in the years ended December 31, 2007, 2006 and 2005, respectively, were for other manufacturing applications. These include, but are not limited to, medical equipment; energy generation and environmental monitoring processes; pharmaceutical and other industrial manufacturing; and university, government and industrial research laboratories.

We estimate that approximately 39%, 34% and 37% of our net sales for the years ended December 31, 2007, 2006 and 2005, respectively, were to customers located in international markets. International sales include sales by our foreign subsidiaries, but exclude direct export sales. Please refer to Note 11 in the Notes to Consolidated Financial Statements for further geographical sales information.

Semiconductor Manufacturing Applications

The majority of our sales are derived from products sold to semiconductor capital equipment manufacturers and semiconductor device manufacturers. Our products are used in the major semiconductor processing steps such as depositing thin films of material onto silicon wafer substrates and etching and cleaning circuit patterns. In addition, we provide specialized instruments and software to monitor and analyze process performance.

We anticipate that the semiconductor manufacturing market will continue to account for a substantial portion of our sales. While the semiconductor device manufacturing market is global, major semiconductor capital equipment manufacturers are concentrated in Japan and the United States.

Other Thin Film Manufacturing Applications

Our products are used in the manufacture of flat panel displays, data storage media, solar cells and other coatings including architectural glass that require the same or similar thin film deposition processes as semiconductor manufacturing.

Flat Panel Display Manufacturing

Flat panel displays are used in electronic hand-held devices, laptop computers, desktop computer monitors, and television sets. We sell products to flat panel display equipment manufacturers and to end-users in the flat panel display market. Major manufacturers of flat panel displays are concentrated in Japan, Korea and Taiwan, and major manufacturers of flat panel display equipment are concentrated in Japan and the United States. The transition to larger panel sizes and higher display resolution is driving the need for improved process control to reduce defects.

Solar Cells

Our products are used in crystalline silicon and emerging thin film processes to manufacture photovoltaic (PV) cells. Crystalline silicon technology requires wafer based deposition systems and is currently the dominant manufacturing technology. Thin film deposition on a non-silicon substrate, such as glass, is the emerging technology.

Data Storage Media

Our products are used to manufacture storage media which store and read data magnetically; optical storage media which store and read data using laser technology; hard disks; data storage devices; and digital video discs.

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

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Other Advanced Coatings

Thin film coatings for diverse applications such as architectural glass and packaging are deposited using processes similar to those used in semiconductor manufacturing. Thin film processing manufacturers are concentrated in Europe, Japan and the United States.

Other Advanced Applications

Our products are used in other energy generation and environmental monitoring processes such as nuclear fuel processing, fuel cell research, greenhouse gas monitoring and chemical agent detection; medical instrument sterilization; consumable medical supply manufacturing and pharmaceutical manufacturing. Our power delivery products are also incorporated into other end-market products such as medical imaging equipment. In addition, our products are sold to government, university and industrial laboratories for vacuum applications involving research and development in materials science, physical chemistry and electronics materials. Major equipment and process providers and research laboratories are concentrated in Europe, Japan and the United States.

Acquisitions

We completed three acquisitions in 2006. On January 3, 2006, we completed our acquisition of Ion Systems, Inc. (Ion), a leading provider of electrostatic management solutions located in Alameda, California. Ion's ionization technology monitors electrostatic charges to reduce process contamination and improve yields, which complements our process monitoring and control technologies. Additionally, on January 3, 2006, we completed our acquisition of Umetrics, AB (Umetrics), a leader in multivariate data analysis and modeling software located in Umea, Sweden. Umetrics' multivariate data analysis and modeling software converts process data into useable information for yield improvement, when linked with our open and modular platform of process sensors and data collection, integration, data storage and visualization capabilities. On October 11, 2006, we completed our acquisition of Novx Corp. (Novx), a provider of electrostatic charge monitoring technology for semiconductor, data storage, telecommunication, medical device and other markets. Novx's technology expands our capability to monitor, detect and control electrostatic charge in advanced process environments, such as semiconductor and hard disk drive manufacturing.

We completed one acquisition in 2007. On November 7, 2007, we acquired Yield Dynamics, Inc. (YDI), a provider of yield management technology located in Sunnyvale, California. YDI's data and yield management software, along with MKS' portfolio of sensors that control critical processes, data collection and integration hardware, and real-time fault detection and classification software, provides a comprehensive offering for generating, collecting and analyzing process sensor data and correlating the data to wafers, chambers and tools across the semiconductor fab as well as other thin film manufacturing processes.

Product Groups

We group our products into three product groups: Instruments and Control Systems, Power and Reactive Gas Products and Vacuum Products. Also, please refer to Note 11 in the Notes to Consolidated Financial Statements for further information.

1. Instruments and Control Systems

This product group includes pressure measurement and control, materials delivery, gas composition analysis, electrostatic charge management and control and information technology products.

Pressure Measurement and Control Products. Each of our pressure measurement and control product lines consists of products that are designed for a variety of pressure ranges and accuracies.

Baratron® Pressure Measurement Products. 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. We believe we offer the widest range of gas pressure measurement instruments in the semiconductor and advanced thin-film materials processing industries.

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Automatic Pressure and Vacuum Control Products. 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.

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. Our 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 our 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 and vapor 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. These products measure and automatically control the mass flow rate of gases and vapors into the process chamber.

Gas Composition Analysis Products. Gas 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 quadrupole 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 Composition Analysis Products. FTIR-based products provide information about the composition of gases 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. 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. We believe that our products are the smallest mass spectrometer-based helium leak detectors currently available.

Electrostatic Charge Management Products. Semiconductor, flat panel display and data storage industries are vulnerable to electrostatic charge-related contamination and yield problems. We design and manufacture products to control electrostatic attraction, electrostatic discharge and electromagnetic interference. In high throughput industrial applications such as plastics manufacture and printing, ionization is used to improve process control and productivity.

Control and Information Technology Products. We design and manufacture a suite of products that allow semiconductor and other manufacturing customers to better control their processes through computer-controlled automation. These products include digital control network products, process chamber and system controllers, connectivity products and data analysis/information products.

Control 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 as well

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as conventional discrete digital and analog signals. Chamber and system control computers process these signals in real time and allow customers to precisely manage the process conditions.

Connecting sensors, chambers and tools to the factory network is essential for improving quality and productivity. Our 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, we believe that we help customers optimize their processes through Advanced Process Control (APC), and diagnose equipment problems from a remote location (e-diagnostics).

Information Technology Products: We design on-line and off-line software products to analyze data to improve the quality and yield of semiconductor, thin film, biopharmaceutical, injection molding and other manufacturing processes.

2. Power and Reactive Gas Products

This product group includes power delivery products and reactive gas generation products used in semiconductor and other thin film applications and in medical imaging equipment applications.

Power Delivery Products. We design and manufacture microwave, DC and RF power delivery systems as well as RF matching networks and metrology products. In the semiconductor and thin film markets, our power supplies are used to provide energy to various etching, stripping and deposition processes. Our power amplifiers are also used in medical imaging equipment.

Reactive Gas Generation Products. Reactive gases are used to process and clean substrates 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. When the resulting dissociated gas comes into contact with other matter it produces rapid chemical reactions which result in processing of thin films (deposition of films, etching and cleaning of films and surface modifications) or equipment cleaning.

Processing Thin Films: Our reactive gas products include ozone generators and subsystems used for deposition of insulators onto semiconductor devices, ozonated water delivery systems for advanced semiconductor wafer and flat panel display cleaning, microwave plasma based products for photo resist removal and a new line of remote plasma generators which provide reactive gases for a wide range of semiconductor, flat panel and other thin film process applications.

Equipment Cleaning: As materials are deposited on wafers, films, or solar cells, the deposited material also accumulates on the walls of the vacuum process chamber. Our atomic fluorine generators are used to clean the process chambers between deposition steps to reduce particulates and contamination caused by accumulated build up on the chamber walls.

3. Vacuum Products

This product group consists of vacuum technology products, including vacuum gauges, effluent management subsystems, valves and components.

Vacuum Gauging Products. We offer 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 complement our Baratron capacitance manometers for lower pressure ranges and where less

accuracy is required. Our 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 Process Solutions. Our vacuum valves are used on the gas lines between the process chamber and the pump downstream of the process chamber. Our vacuum process solutions consist of flanges, fittings, traps and heated lines that are used downstream from the process chamber to control process effluent gasses by preventing condensable materials from depositing particles near or back into the chamber.

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Customers

Our largest customers include leading semiconductor capital equipment manufacturers such as Applied Materials, Lam Research, Novellus Systems, and Tokyo Electronics. Sales to our top ten customers accounted for approximately 46%, 49% and 48% of net sales for the years ended December 31, 2007, 2006 and 2005, respectively. Applied Materials accounted for approximately 20%, 21% and 18% of our net sales for the years ended December 31, 2007, 2006 and 2005, respectively.

Sales, Marketing and Support

Our worldwide sales, marketing and support organization is critical to our strategy of maintaining close relationships with semiconductor capital equipment manufacturers and semiconductor device manufacturers. We sell our products primarily through our direct sales force. As of December 31, 2007, we had 203 sales employees worldwide, located in China, France, Germany, Japan, Korea, the Netherlands, Singapore, Sweden, Taiwan, the United Kingdom and the United States. We also maintain sales representatives and agents in a number of countries, which supplement this direct sales force. We maintain a marketing staff that identifies customer requirements, assists in product planning and specifications, and focuses on future trends in 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, we maintain a worldwide sales and support organization in 17 countries. Technical support is provided from offices in China, France, Germany, Japan, Korea, the Netherlands, Singapore, Taiwan, the United Kingdom and the United States. Repair and calibration services are provided at 30 service depots located worldwide. We typically provide warranties from one to three years, depending upon the type of product.

Research and Development

Our products incorporate sophisticated technologies to power, measure, control and monitor increasingly complex gas-related semiconductor manufacturing processes, thereby enhancing uptime, yield and throughput for our semiconductor device manufacturing customers. Our products have continuously advanced as we strive to meet our customers' evolving needs. We have developed, and continue to develop, new products to address industry trends, such as the shrinking of integrated circuit critical dimensions to 65 nanometers and below. In addition, we have developed, and continue to develop, products that support the migration to new classes of materials and ultra-thin layers, such as copper for low resistance conductors, high-k dielectric materials for capacitors and gates and low-k dielectric materials for low loss insulators that are used in small geometry manufacturing. We have undertaken an initiative to involve our marketing, engineering, manufacturing and sales personnel in the concurrent development of new products in order to reduce the time to market for new products. Our employees also work closely with our customers' development personnel helping us to identify and define future technical needs on which to focus research and development efforts. We support research at academic institutions targeted at advances in materials science and semiconductor process development. As of December 31, 2007, we had 486 research and development employees, primarily located in the United States. Our research and development expenses were \$72.2 million, \$69.7 million and \$55.9 million for the years ended December 31, 2007, 2006 and 2005, respectively. Our research and development efforts include numerous projects, none of which are individually material, and generally have a duration of 12 to 30 months.

Manufacturing

Our manufacturing facilities are located in China, Germany, Israel, Japan, Mexico, the United Kingdom and the United States. Manufacturing activities include the assembly and testing of components and subassemblies, which are integrated into products. We outsource some of our subassembly work. We purchase a wide range of electronic, mechanical and electrical components, some of which are designed to our specifications. We consider our lean manufacturing techniques and responsiveness to customers significantly fluctuating product demands to be a competitive advantage.

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Competition

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

- historical customer relationships;
- product quality, performance and price;
- breadth of product line;
- manufacturing capabilities; and
- customer service and support.

Although we believe that we compete favorably with respect to these factors, there can be no assurance that we will continue to do so.

We encounter substantial competition in most of our product lines, although no single competitor competes with us across all product lines. Certain of our competitors may have greater financial and other resources than us. In some cases, competitors are smaller than we are, but well established in specific product niches. Celerity offers products that compete with our pressure and materials delivery products. Advanced Energy and Horiba offer materials delivery products that compete with our product line of mass flow controllers. Nor-Cal Products and VAT offer products that compete with our vacuum components. Inficon offers products that compete with our vacuum measurement and gas analysis products. Brooks Automation and Inficon offer products that compete with our vacuum gauging products. Advanced Energy offers products that compete with our power delivery and reactive gas generator products.

Patents and Other Intellectual Property Rights

We rely on a combination of patent, copyright, trademark and trade secret laws and license agreements to establish and protect our proprietary rights. As of December 31, 2007, we owned 327 U.S. patents, 237 foreign patents and had 126 pending U.S. patent applications. Foreign counterparts of certain of these applications have been filed or may be filed at the appropriate time.

We require each of our employees, including our executive officers, to enter into standard agreements pursuant to which the employee agrees to keep confidential all of our proprietary information and to assign to us all inventions while they are employed by us.

For a discussion of litigation relating to our intellectual property, see Item 3. Legal Proceedings.

Employees

As of December 31, 2007, we employed 2,924 persons. We believe that our ongoing success depends upon our continued ability to attract and retain highly skilled employees for whom competition is intense. None of our employees are represented by a labor union or are party to a collective bargaining agreement. We believe that our employee relations are good.

Item 1A. Risk Factors

Our business depends substantially on capital spending in the semiconductor industry which is characterized by periodic fluctuations that may cause a reduction in demand for our products.

We estimate that approximately 68%, 70% and 71% of our net sales for the years ended December 31, 2007, 2006 and 2005, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers, and we expect that sales to such customers will continue to account for a substantial majority of our sales. Our 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 our business, financial condition and results of operations.

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Historically, the semiconductor market has been highly cyclical and has experienced periods of overcapacity, resulting in significantly reduced demand for capital equipment which may result in lower gross margins due to reduced absorption of manufacturing overhead. In addition, many semiconductor manufacturers have operations and customers in Asia, a region that in past years has experienced serious economic problems including currency devaluations, debt defaults, lack of liquidity and recessions. We cannot be certain of the timing or magnitude of future semiconductor industry downturns. A decline in the level of orders as a result of any downturn or slowdown in the semiconductor capital equipment industry could have a material adverse effect on our business, financial condition and results of operations.

Our quarterly operating results have fluctuated, and are likely to continue to vary significantly, which may result in volatility in the market price of our common stock.

A substantial portion of our shipments occurs shortly after an order is received and therefore we operate with a low level of backlog. As a result, a decrease in demand for our products from one or more customers could occur with limited advance notice and could have a material adverse effect on our results of operations in any particular period. A significant percentage of our expenses is 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 our results of operations. Factors that could cause fluctuations in our net sales include:

the timing of the receipt of orders from major customers;

shipment delays;

disruption in sources of supply;

seasonal variations in capital spending by customers;

production capacity constraints; and

specific features requested by customers.

In addition, our quarterly operating results may be adversely affected due to charges incurred in a particular quarter, for example, relating to inventory obsolescence, warranty or asset impairments.

As a result of the factors discussed above, it is likely that we may in the future experience quarterly or annual fluctuations and that, in one or more future quarters, our operating results may fall below the expectations of public market analysts or investors. In any such event, the price of our common stock could decline significantly.

The loss of net sales to any one of our major customers would likely have a material adverse effect on us.

Our top ten customers accounted for approximately 46%, 49% and 48% of our net sales for the years ended December 31, 2007, 2006 and 2005, respectively. 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 our business, financial condition and results of operations. During the years ended December 31, 2007, 2006 and 2005, one customer, Applied Materials, accounted for approximately 20%, 21% and 18%, respectively, of our net sales. None of our significant customers, including Applied Materials, has entered into an agreement requiring it to purchase any minimum quantity of our products. The demand for our products from our 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 of net sales 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. Our future success will continue to depend upon:

our ability to maintain relationships with existing key customers;

our ability to attract new customers;

our ability to introduce new products in a timely manner for existing and new customers; and

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the successes of our customers in creating demand for their capital equipment products that incorporate our products.

As part of our business strategy, we have entered into and may enter into or seek to enter into business combinations and acquisitions that may be difficult and costly to integrate, may be disruptive to our business, may dilute stockholder value or may divert management attention.

We made several acquisitions in the years 2000 through 2002 and, more recently in 2006 and 2007. As a part of our business strategy, we may enter into additional business combinations and acquisitions. Acquisitions are typically accompanied by a number of risks, including the difficulty of integrating the operations, technology and personnel of the acquired companies, the potential disruption of our ongoing business and distraction of management, possible internal control weaknesses of the acquired companies, expenses related to the acquisition and potential unknown liabilities associated with acquired businesses. If we are not successful in completing acquisitions that we may pursue in the future, we may be required to reevaluate our growth strategy, and we may incur substantial expenses and devote significant management time and resources in seeking to complete proposed acquisitions that will not generate benefits for us.

In addition, with future acquisitions, we could use substantial portions of our available cash as all or a portion of the purchase price. We could also issue additional securities as consideration for these acquisitions, which could cause significant stockholder dilution. Further, our prior acquisitions and any future acquisitions may not ultimately help us achieve our strategic goals and may pose other risks to us.

As a result of our previous acquisitions, we have added several different decentralized operating and accounting systems, resulting in a complex reporting environment. We will need to continue to modify our accounting policies, internal controls, procedures and compliance programs to provide consistency across all our operations. In order to increase efficiency and operating effectiveness and improve corporate visibility into our decentralized operations, we are currently implementing a worldwide Enterprise Resource Planning (ERP) system. We expect to continue to implement the ERP system in phases over the next few years. Although we have a plan to accomplish the ERP implementation, we may risk potential disruption of our operations during the conversion periods and the implementation could require significantly more management time and higher implementation costs than currently estimated.

An inability to convince semiconductor device manufacturers to specify the use of our products to our customers that are semiconductor capital equipment manufacturers would weaken our competitive position.

The markets for our products are highly competitive. Our competitive success often depends upon factors outside of our 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, our success will depend in part on our ability to have semiconductor device manufacturers specify that our products be used at their semiconductor fabrication facilities. In addition, we may encounter difficulties in changing established relationships of competitors that already have a large installed base of products within such semiconductor fabrication facilities.

If our products are not designed into successive generations of our customers' products, we 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. Our success depends on our products being designed into new generations of equipment for the semiconductor

industry. We must develop products that are technologically advanced so that they are positioned to be chosen for use in each successive generation of semiconductor capital equipment. If customers do not choose our products, our net sales may be reduced during the lifespan of our customers' products. In addition, we must make a significant capital investment to develop products for our customers well before our products are introduced and before we can be sure that we will recover our capital investment through sales to the customers in significant volume. We are thus also at risk during the development phase that our products may fail to meet our customers

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technical or cost requirements and may be replaced by a competitive product or alternative technology solution. If that happens, we may be unable to recover our development costs.

The semiconductor industry is subject to rapid demand shifts which are difficult to predict. As a result, our inability to expand our manufacturing capacity in response to these rapid shifts may cause a reduction in our market share.

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

We operate in a highly competitive industry.

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

- historical customer relationships;
- product quality, performance and price;
- breadth of product line;
- manufacturing capabilities; and
- customer service and support.

Although we believe that we compete favorably with respect to these factors, we may not be able to continue to do so. We encounter substantial competition in most of our product lines. Certain of our competitors may have greater financial and other resources than we have. In some cases, competitors are smaller than we are, but well established in specific product niches. We may encounter difficulties in changing established relationships of competitors with a large installed base of products at such customers' fabrication facilities. In addition, our competitors can be expected to continue to improve the design and performance of their products. Competitors may develop products that offer price or performance features superior to those of our products. If our competitors develop superior products, we may lose existing customer and market share.

Sales to foreign markets constitute a substantial portion of our net sales; therefore, our 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 our foreign subsidiaries, but exclude direct export sales. International sales accounted for approximately 39%, 34% and 37%, of net sales for the years ended December 31, 2007, 2006 and 2005, respectively, a significant portion of which were sales to Japan.

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

risks associated with international sales.

We have significant foreign operations, and outsource certain operations offshore, which pose significant risks.

We have significant international sales, service, engineering and manufacturing operations in Europe, Israel and Asia, and have outsourced a portion of our manufacturing to Mexico. We may expand the level of manufacturing and certain other operations that we do offshore in order to take advantage of cost efficiencies available to

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us in those countries. However, we may not achieve the significant cost savings or other benefits that we anticipate from this program. These foreign operations expose us to operational and political risks that may harm our business, including:

political and economic instability;

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;

reduced or less certain protection for intellectual property rights;

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;

costs associated with compliance programs for import and export regulations;

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, our operating results may be adversely affected.

Unfavorable currency exchange rate fluctuations may lead to lower operating margins or may cause us to raise prices, which could result in reduced sales.

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

Key personnel may be difficult to attract and retain.

Our 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 our business, financial condition and results of operations. We believe that our future success will depend in part on our ability to attract and retain highly skilled technical, financial, managerial and marketing personnel. We cannot be certain that we will be successful in attracting and retaining such personnel.

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Our proprietary technology is important to the continued success of our business. Our failure to protect this proprietary technology may significantly impair our competitive position.

As of December 31, 2007, we owned 327 U.S. patents, 237 foreign patents and had 126 pending U.S. patent applications. Although we seek to protect our intellectual property rights through patents, copyrights, trade secrets and other measures, we cannot be certain that:

- we will be able to protect our technology adequately;
- competitors will not be able to develop similar technology independently;
- any of our pending patent applications will be issued;
- domestic and international intellectual property laws will protect our intellectual property rights; or
- third parties will not assert that our products infringe patent, copyright or trade secrets of such parties.

Protection of our intellectual property rights may result in costly litigation.

Litigation may be necessary in order to enforce our patents, copyrights or other intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of infringement. We are, from time to time, involved in lawsuits enforcing or defending our intellectual property rights and may be involved in such litigation in the future. Such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on our business, financial condition and results of operations.

We may need to expend significant time and expense to protect our intellectual property regardless of the validity or successful outcome of such intellectual property claims. If we lose any litigation, we may be required to seek licenses from others or change, stop manufacturing or stop selling some of our products.

The market price of our common stock has fluctuated and may continue to fluctuate for reasons over which we have no control.

The stock market has from time to time experienced, and is likely to continue to experience, extreme price and volume fluctuations. 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 our common stock has fluctuated greatly since our 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 we were the object of securities class action litigation, it could result in substantial costs and a diversion of our management's attention and resources.

Our dependence on sole, limited source suppliers, and international suppliers, could affect our ability to manufacture products and systems.

We rely on sole, limited source suppliers and international suppliers for a few of our components and subassemblies that are critical to the manufacturing of our 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 our suppliers to develop technologically advanced products to support our growth and development of new systems.

We believe that in time we could obtain and qualify alternative sources for most sole, limited source and international supplier parts. Seeking alternative sources of the parts could require us to redesign our systems, resulting in increased costs and likely shipping delays. We may be unable to redesign our systems, which could result in further costs and shipping delays. These increased costs would decrease our profit margins if we could not

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pass the costs to our customers. Further, shipping delays could damage our relationships with current and potential customers and have a material adverse effect on our business and results of operations.

We are subject to governmental regulations. If we fail to comply with these regulations, our business could be harmed.

We are subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design and operation of our products. We must ensure that the affected products meet a variety of standards, many of which vary across the countries in which our systems are used. For example, the European Union has published directives specifically relating to power supplies. In addition, the European Union has issued directives relating to regulation of recycling and hazardous substances, which may be applicable to our products, or to which some customers may voluntarily elect to adhere to. In addition, China has adopted, and certain other Asian countries have indicated an intention to adopt, similar regulations. We must comply with any applicable regulation adopted in connection with these types of directives in order to ship affected products into countries that adopt these types of regulations. We believe we are in compliance with current applicable regulations, directives and standards and have obtained all necessary permits, approvals, and authorizations to conduct our business. However, compliance with future regulations, directives and standards, or customer demands beyond such requirements, could require us to modify or redesign certain systems, make capital expenditures or incur substantial costs. If we do not comply with current or future regulations, directives and standards:

we could be subject to fines;

our production could be suspended; or

we could be prohibited from offering particular systems in specified markets.

Certain stockholders have a substantial interest in us and may be able to exert substantial influence over our actions.

As of December 31, 2007, John R. Bertucci, our Chairman, and certain members of his family, in the aggregate, beneficially owned approximately 8% of our outstanding common stock. As a result, these stockholders, acting together, may be able to exert substantial influence over our actions.

Some provisions of our restated articles of organization, as amended, our amended and restated by-laws and Massachusetts law could discourage potential acquisition proposals and could delay or prevent a change in control of us.

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 price 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 we have no present plans to issue any preferred stock, our 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 us. The issuance of preferred stock could adversely affect the voting power of the holders of our common stock, including the loss of voting control to others. In addition, our 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 us.

Changes in financial accounting standards may adversely affect our reported results of operations.

A change in accounting standards or practices could have a significant effect on our reported results and may even affect our reporting of transactions completed before the change was effective. New accounting pronouncements and varying interpretations of existing accounting pronouncements have occurred and may occur in the future. Such changes may adversely affect our reported financial results or may impact our related business practice.

For example, Statement on Financial Accounting Standards No. 123R Share-Based Payment (SFAS 123R), which requires us to measure all employee stock-based compensation awards using a fair value method and record such expense in our consolidated financial statements, was adopted in the first quarter of 2006, and had a material adverse impact on our consolidated financial statements as reported under generally accepted accounting principles in the United States for the first quarter of 2006 and adversely impacted our consolidated financial statements for fiscal 2006.

Table of Contents**Item 1B. Unresolved Staff Comments**

None.

Item 2. Properties

The following table provides information concerning MKS principal and certain other owned and leased facilities as of December 31, 2007:

| Location | Sq. Ft. | Activity | Products Manufactured | Lease Expires |
|----------------------------|----------------|--|---|----------------------|
| Alameda, California | | Manufacturing and Research & Development | Electrostatic Management Programs and Systems | March 31, 2011 |
| Andover, Massachusetts | 48,300 | Manufacturing and Research & Development | Pressure Measurement and Control Products | (1) |
| Andover, Massachusetts | 82,000 | Corporate Headquarters | Not applicable | May 31, 2018 |
| Austin, Texas | 36,270 | Manufacturing, Sales, Customer Support, Service and Research & Development | Control & Information Management Products | May 31, 2012 |
| Berlin, Germany | 20,880 | Manufacturing, Customer Support, Service and Research & Development | Reactive Gas Generation Products | March 31, 2009 |
| Boulder, Colorado | 20,750 | Manufacturing, Customer Support, Service and Research & Development | Vacuum Products | (2) |
| Carmiel, Israel | 124,000 | Manufacturing and Research & Development | Control & Information Management Products | December 31, 2007 |
| Cheshire, United Kingdom | 7,000 | Manufacturing, Sales, Customer Support and Service | Materials Delivery Products | (3) |
| Colorado Springs, Colorado | 13,000 | Customer Support, Service and Research & Development | Power Delivery Products | (1) |
| Fukuoka, Japan | 24,000 | Customer Support and Service | Pressure Measurement and Control Products | October 18, 2008 |
| Lawrence, Massachusetts | 14,700 | Manufacturing | Pressure Measurement and | (1) |

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| | | | | |
|------------------------|---------|---|---|-------------------|
| Methuen, Massachusetts | | | Control Products Pressure | |
| | 85,000 | Manufacturing, Customer Support, Service and Research & Development | Measurement and Control Products; Materials Delivery Products | (1) |
| Munich, Germany | | | Pressure | |
| | 14,000 | Manufacturing, Sales, Customer Support, Service and Research & Development | Measurement and Control Products; Materials Delivery Products | (1) |
| Nogales, Mexico | | | Pressure | |
| | 36,700 | Manufacturing | Measurement and Control Products; Reactive Gas Generation Products | March 31, 2009 |
| Richardson, Texas | 8,800 | Sales, Customer Support and Service | Not applicable | November 30, 2012 |
| Rochester, New York | | | | |
| | 156,000 | Manufacturing, Sales, Customer Support, Service and Research & Development | Power Delivery Products | (4) |
| San Jose, California | 32,000 | Sales, Customer Support and Service | Not applicable | April 30, 2009 |
| Seoul, Korea | 10,300 | Sales, Customer Support and Service | Not applicable | May 31, 2008 |
| Shenzhen, China | 130,000 | Manufacturing | Power Delivery Products | December 31, 2007 |
| Shenzhen, China | 242,000 | Manufacturing | Power Delivery Products | May 31, 2017 |
| Umea, Sweden | | | Control & Information Management | |
| | 7,000 | Sales, Customer Support and Research & Development | Products | August 31, 2009 |

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| Location | Sq. Ft. | Activity | Products Manufactured | Lease Expires |
|----------------------------|----------------|--|---|----------------------|
| Sunnyvale, California | | Sales, Customer Support and Research & Development | Control & Information Management Products | July 7, 2010 |
| Shropshire, United Kingdom | 10,000 | Manufacturing | Vacuum Products | October 18, 2010 |
| Hsinchu, Taiwan | 19,300 | Sales, Customer Support and Service | Not applicable | August 25, 2008 |
| Tokyo, Japan | | Manufacturing, Sales, Customer Support, Service and Research & Development | Materials Delivery Products | (5) |
| Wilmington, Massachusetts | 48,230 | Manufacturing, Sales, Customer Support, Service and Research & Development | Reactive Gas Generation Products; Power Delivery Products | (1) |

(1) This facility is owned by MKS.

(2) MKS leases two facilities, one has 39,000 square feet of space and the other has 38,000 square feet of space. Both leases expire on May 31, 2015. 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 owns this facility and has an Industrial Development Revenue Bond of \$5.0 million, due in 2014, that is collateralized by the building.

(5) MKS leases two facilities, one has 20,600 square feet of space with a lease term that expires April 30, 2008 and the second has 10,500 square feet of space and a lease term that expires on September 30, 2011. MKS owns a third facility of 6,600 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

We are 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 our 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 2007 through the solicitation of proxies or otherwise.

Table of Contents**PART II****Item 5. *Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities*****Price Range of Common Stock**

Our common stock is traded on the NASDAQ Global Market under the symbol MKSI. On February 15, 2008, the closing price of our common stock, as reported on the NASDAQ Global Market, was \$20.15 per share. The following table sets forth for the periods indicated the high and low bid prices per share of our common stock as reported by the NASDAQ Global Market.

| Price Range of Common Stock | 2007 | | 2006 | |
|------------------------------------|-------------|------------|-------------|------------|
| | High | Low | High | Low |
| First Quarter | \$ 26.00 | \$ 21.11 | \$ 23.75 | \$ 17.05 |
| Second Quarter | 28.47 | 25.46 | 24.97 | 18.66 |
| Third Quarter | 28.15 | 18.91 | 23.60 | 17.84 |
| Fourth Quarter | 21.71 | 16.94 | 23.36 | 19.54 |

On February 15, 2008, we had approximately 196 stockholders of record.

Dividend Policy

We have never declared or paid any cash dividends on our common stock. We currently intend to retain earnings, if any, to support our growth strategy and do not anticipate paying cash dividends in the foreseeable future. Payment of future dividends, if any, will be at the discretion of our board of directors after taking into account various factors, including our financial condition, operating results and current and anticipated cash needs.

Table of Contents**Comparative Stock Performance**

The following graph compares the cumulative total shareholder return (assuming reinvestment of dividends) from investing \$100 on December 31, 2002, and plotted at the last trading day of each of the fiscal years ended December 31, 2003, 2004, 2005, 2006 and 2007, in each of (i) the Company's Common Stock; (ii) an industry group index of semiconductor equipment/material manufacturers (the Hemsco Group Index), compiled by Hemsco, Inc. (Hemsco); and (iii) the NASDAQ Market Index of companies (the NASDAQ Market Index). The graph was compiled by Hemsco. The stock price performance on the graph below is not necessarily indicative of future price performance. The Company's Common Stock is listed on the NASDAQ Global Market under the ticker symbol MKSI.

Performance Graph

**COMPARISON OF CUMULATIVE TOTAL RETURN OF
ONE OR MORE COMPANIES, PEER GROUPS,
INDUSTRY INDEXES AND/OR BROAD MARKETS**

**Assumes \$100 invested on December 31, 2002
Assumes dividends reinvested
Fiscal Year Ending December 31, 2007**

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| MKS Instruments, Inc. | \$ 100.00 | \$ 176.51 | \$ 112.90 | \$ 108.89 | \$ 137.43 | \$ 116.49 |
| Hemsco Group Index | \$ 100.00 | \$ 181.44 | \$ 142.39 | \$ 149.72 | \$ 168.58 | \$ 160.31 |
| NASDAQ Market Index | \$ 100.00 | \$ 150.36 | \$ 163.00 | \$ 166.58 | \$ 183.68 | \$ 201.91 |

The information included under the heading Performance Graph in Item 5 of this Annual Report on Form 10-K is furnished and not filed and shall not be deemed to be soliciting material or subject to Regulation 14A, shall not be deemed filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the Exchange Act), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act.

Table of Contents**Purchases of Equity Securities**

On February 12, 2007, our Board of Directors approved a share repurchase program (the Program) for the repurchase of up to \$300 million of our outstanding stock over the next two years. The repurchases may be made from time to time on the open market or through privately negotiated transactions. The timing and amount of any shares repurchased under the Program will depend on a variety of factors, including price, corporate and regulatory requirements, capital availability, and other market conditions. The Program may be discontinued at any time at our discretion and the discretion of our Board of Directors. During the year ended December 31, 2007, we repurchased 4,779,000 shares of common stock for \$101.2 million for an average price of \$21.17 per share. The following table provides information about purchases by the Company during the quarter ended December 31, 2007 of equity securities that are registered by the Company pursuant to Section 12 of the Exchange Act:

PURCHASES OF EQUITY SECURITIES

| Period | Total Number of Shares Purchased during Period(1) | Average Price Paid per Share | Total Number of Shares Purchased since Adoption of Program as Part of Publicly Announced Plans or Programs(2) | Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs |
|-------------------|--|-------------------------------------|--|---|
| 10/01/07-10/31/07 | 330,455 | \$ 20.09 | 2,279,220 | \$ 244,393,000 |
| 11/01/07-11/30/07 | 1,138,121 | \$ 17.94 | 3,417,341 | \$ 223,978,000 |
| 12/01/07-12/31/07 | 1,361,291 | \$ 18.46 | 4,778,632 | \$ 198,843,000 |

- (1) We repurchased an aggregate of 4,778,632 shares of our common stock pursuant to the repurchase program that we publicly announced on February 12, 2007 (the Program). During the three months ended December 31, 2007, we repurchased a total of 2,829,867 shares of our common stock pursuant to the Program.
- (2) Our Board of Directors approved the repurchase by us of up to an aggregate of \$300 million of our common stock pursuant to the Program. The expiration date of this Program is February 11, 2009, unless terminated earlier by resolution of our board of directors.

Table of Contents**Item 6. Selected Financial Data****Selected Consolidated Financial Data**

| | Year Ended December 31, | | | | |
|---|--|-------------|-------------|-------------|-------------|
| | 2007 | 2006 | 2005 | 2004 | 2003 |
| | (In thousands, except per share data) | | | | |
| Statement of Operations Data | | | | | |
| Net sales | \$ 780,487 | \$ 782,801 | \$ 509,294 | \$ 555,080 | \$ 337,291 |
| Gross profit | 331,487 | 338,122 | 200,434 | 219,371 | 118,109 |
| Income (loss) from operations(1) | 106,985 | 122,541 | 40,548 | 59,913 | (15,717) |
| Net income (loss)(2) | \$ 86,360 | \$ 94,235 | \$ 34,565 | \$ 69,839 | \$ (16,385) |
| Net income (loss) per share: | | | | | |
| Basic | \$ 1.53 | \$ 1.70 | \$ 0.64 | \$ 1.30 | \$ (0.32) |
| Diluted | \$ 1.51 | \$ 1.68 | \$ 0.63 | \$ 1.28 | \$ (0.32) |
| Balance Sheet Data | | | | | |
| Cash and cash equivalents | \$ 223,968 | \$ 215,208 | \$ 220,573 | \$ 138,389 | \$ 74,660 |
| Short-term investments | 99,797 | 74,749 | 72,046 | 97,511 | 54,518 |
| Working capital | 514,235 | 461,541 | 410,060 | 347,700 | 210,468 |
| Long-term investments | | 2,816 | 857 | 4,775 | 13,625 |
| Total assets | 1,076,260 | 1,043,720 | 863,740 | 828,677 | 692,032 |
| Short-term obligations | 20,203 | 23,021 | 18,886 | 24,509 | 20,196 |
| Long-term obligations, less current portion | 5,871 | 6,113 | 6,152 | 6,747 | 8,810 |
| Stockholders' equity | 954,009 | 901,219 | 762,843 | 726,634 | 608,310 |

- (1) Income from operations for the years ended December 31, 2007 and 2006 includes stock-based compensation of \$12.9 million and \$13.1 million, respectively, as a result of adopting SFAS 123R in 2006. Income from operations for the year ended December 31, 2005 includes income from a litigation settlement of \$3.0 million.
- (2) Net income for the years ended December 31, 2007 and 2006 includes stock-based compensation of \$8.4 million and \$8.7 million, net of tax, respectively. Net income for the year ended December 31, 2004 includes a gain from the collection of a note receivable of \$5.0 million which had been written off in 2002. During the year ended December 31, 2003, a valuation allowance against net deferred tax assets was maintained. Net loss for the year ended December 31, 2003 includes tax expense which is comprised primarily of state and foreign taxes. During 2004, the valuation allowance was reduced against the net deferred tax assets and net income for the year ended December 31, 2004 includes a deferred tax benefit of \$10.2 million. See Note 9 of the Notes to the Consolidated Financial Statements.

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Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

Overview

We are a leading worldwide provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters to improve process performance and productivity of advanced manufacturing processes.

We are managed as one operating segment. We group our products into three product groups: Instruments and Control Systems, Power and Reactive Gas Products and Vacuum Products. Our products are derived from our core competencies in pressure measurement and control, materials delivery, gas composition analysis, electrostatic charge management, control and information technology, power and reactive gas generation and vacuum technology. Our products are used in diverse markets, applications and processes. Our primary served markets are manufacturers of capital equipment for semiconductor devices, and for other thin film applications including flat panel displays, solar cells, data storage media and other advanced coatings. We also leverage our technology in other markets with advanced manufacturing applications including medical equipment, pharmaceutical manufacturing, and energy generation and environmental monitoring.

We have a diverse base of customers that includes manufacturers of semiconductor capital equipment and semiconductor devices, thin film capital equipment used in the manufacture of flat panel displays, solar cells, data storage media, and other coating applications; and other industrial, medical and manufacturing companies, and university, government and industrial research laboratories. During the years ended December 31, 2007, 2006 and 2005, we estimate that approximately 68%, 70% and 71% of our net sales, respectively, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers. We expect that sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers will continue to account for a substantial majority of our sales.

Revenues for the full year 2007 were comparable with 2006, however quarterly revenues in both years fluctuated significantly as we experienced significant changes in customer orders. We currently expect that our first quarter 2008 net sales could be approximately the same as our fourth quarter 2007 net sales. However, the semiconductor capital equipment industry is subject to rapid demand shifts, which are difficult to predict, and we are uncertain how long these sales levels may be maintained or the timing or extent of any future downturn or upturn in the semiconductor capital equipment industry.

A significant portion of our net sales is to operations in international markets. International net sales include sales by our foreign subsidiaries, but exclude direct export sales. International net sales accounted for approximately 39%, 34% and 37% of net sales for the years ended December 31, 2007, 2006 and 2005, respectively, a significant portion of which were sales in Japan. We expect that international net sales will continue to represent a significant percentage of our total net sales.

Recent Acquisitions

On November 7, 2007, we acquired Yield Dynamics, Inc. (YDI), a provider of yield management technology located in Sunnyvale, California. YDI's data and yield management software, along with MKS' portfolio of sensors that control critical processes, data collection and integration hardware, and real-time fault detection and classification software, provides a comprehensive offering for generating, collecting and analyzing process sensor data and correlating the data to wafers, chambers and tools across the semiconductor fab as well as other thin film manufacturing processes. The purchase price consisted of \$23.7 million in cash, net of \$0.7 million in cash acquired, and \$0.4 million in acquisition related costs. The purchase agreement includes contingent payments of up to \$10.0 million based upon

achieving specific annual and cumulative revenue targets between 2008 and 2010.

On October 11, 2006, we completed our acquisition of Novx Corp. (Novx), a provider of electrostatic charge monitoring technology for semiconductor, data storage, telecommunication, medical device and other markets. Novx s technology expands our capability to monitor, detect and control electrostatic charge in advanced process environments, such as semiconductor and hard disk drive manufacturing. The total purchase price was \$2.6 million.

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On January 3, 2006, we completed our acquisition of Ion Systems, Inc. (Ion), a leading provider of electrostatic management solutions located in Alameda, California, pursuant to an Agreement and Plan of Merger dated November 25, 2005. Ion s ionization technology monitors electrostatic charges to reduce process contamination and improve yields, which complements our process monitoring and control technologies. The aggregate purchase price consisted of \$68.1 million in cash, net of \$5.1 million in cash acquired, and \$0.8 million in acquisition related costs.

Additionally, on January 3, 2006, we completed our acquisition of Umetrics, AB (Umetrics), a leader in multivariate data analysis and modeling software located in Umea, Sweden, pursuant to a Sale and Purchase Agreement dated December 15, 2005. Umetrics multivariate data analysis and modeling software converts process data into useable information for yield improvement, when linked with our open and modular platform of process sensors and data collection, integration, data storage, and visualization capabilities. The purchase price consisted of \$27.4 million in cash, net of \$2.6 million in cash acquired, and \$0.4 million in acquisition related costs.

Critical Accounting Policies and Estimates

Management s Discussion and Analysis of Financial Condition and Results of Operations discusses our 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, we evaluate our estimates and judgments, including those related to revenue recognition and allowance for doubtful accounts, inventory, warranty costs, stock-based compensation expense, intangible assets, goodwill and other long-lived assets, in-process research and development and income taxes. We base our 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.

We believe the following critical accounting policies affect the most significant judgments, assumptions and estimates we use in preparing our consolidated financial statements:

Revenue recognition and Accounts Receivable Allowances. 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. In most transactions, we have no obligations to our customers after the date products are shipped other than pursuant to warranty obligations. In some instances, we provide installation, training, support and services to customers after the product has been shipped. We defer the fair value of any undelivered elements until the undelivered element is delivered. Fair value is the price charged when the element is sold separately. Shipping and handling fees billed to customers, if any, are recognized as revenue. The related shipping and handling costs are recognized in cost of sales.

We monitor and track the amount of product returns, provide for accounts receivable allowances and reduce revenue at the time of shipment for the estimated amount of such future returns, based on historical experience. While product returns have historically been within our expectations and the provisions established, there is no assurance that we will continue to experience the same return rates that we have in the past. Any significant increase in product return rates could have a material adverse impact on our operating results for the period or periods in which such returns materialize.

While we maintain a credit approval process, significant judgments are made by management in connection with assessing our customers ability to pay at the time of shipment. Despite this assessment, from time to time, our

customers are unable to meet their payment obligations. We continuously monitor our customers' credit worthiness, and use our judgment in establishing a provision for estimated credit losses based upon our historical experience and any specific customer collection issues that we have identified. While such credit losses have historically been within our expectations and the provisions established, there is no assurance that we will continue to experience the same credit loss rates that we have in the past. A significant change in the liquidity or financial position of our

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customers could have a material adverse impact on the collectability of accounts receivable and our future operating results.

Inventory. We value our inventory at the lower of cost (first-in, first-out method) or market. We regularly review inventory quantities on hand and record a provision to write down excess and obsolete inventory to our estimated net realizable value, if less than cost, based primarily on our estimated forecast of product demand. Demand for our products can fluctuate significantly. A significant increase in the demand for our products could result in a short-term increase in the cost of inventory purchases as a result of supply shortages or a decrease in the cost of inventory purchases as a result of volume discounts, while a significant decrease in demand could result in an increase in the charges for excess inventory quantities on hand. In addition, our 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 our inventory and our reported operating results.

Warranty costs. We provide for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. We provide warranty coverage for our products ranging from 12 to 36 months, with the majority of our products ranging from 12 to 24 months. We estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the repairs and any known specific product issues. The assumptions we use to estimate warranty accruals are reevaluated periodically in light of actual experience and, when appropriate, the accruals are adjusted. Our determination of the appropriate level of warranty accrual is based upon estimates. Should product failure rates differ from our estimates, actual costs could vary significantly from our expectations.

Stock-Based Compensation Expense. Effective January 1, 2006, we adopted the fair value recognition provisions of SFAS 123R, using the modified prospective transition method, and therefore have not restated prior periods' results. Under this method we recognize compensation expense for all equity-based awards granted after January 1, 2006 as well as awards granted prior to but not yet vested as of January 1, 2006, in accordance with SFAS 123R. Under the fair value recognition provisions of SFAS 123R, we recognize stock-based compensation net of an estimated forfeiture rate and only recognize compensation cost for those shares expected to vest on a straight-line basis over the requisite service period of the award. The adoption of this standard reduced our net income by \$7.2 million and \$8.5 million, for the years ended December 31, 2007 and 2006, respectively. Prior to SFAS 123R adoption, we accounted for share-based payments under Accounting Principles Board Opinion No. 25, Accounting for Stock Issued to Employees (APB 25) and accordingly, generally recognized compensation expense only when we granted options with a discounted exercise price.

Determining the appropriate fair value model and calculating the fair value of share-based payment awards require the input of highly subjective assumptions, including the expected life of the share-based payment awards and stock price volatility. Management determined that blended volatility, a combination of historical and implied volatility, is more reflective of market conditions and a better indicator of expected volatility than historical or implied volatility. Therefore, expected volatility for the years ended December 31, 2007 and 2006 were based on a blended volatility. The assumptions used in calculating the fair value of share-based payment awards represent management's best estimates, but these estimates involve inherent uncertainties and the application of management judgment. As a result, if factors change and we use different assumptions, our stock-based compensation expense could be materially different in the future. In addition, we are required to estimate the expected forfeiture rate and only recognize expense for those shares expected to vest. If our actual forfeiture rate is materially different from our estimate, the stock-based compensation expense could be significantly different from what we have recorded in the current period. See Note 2 to the consolidated financial statements for a further discussion on stock-based compensation.

Intangible assets, goodwill and other long-lived assets. We review 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 we 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 our use of the asset or the strategy for our overall business and significant and negative industry or

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economic trends. When we determine 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, we compare the undiscounted cash flows to the carrying value of the asset. If impairment is possible and 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 fair value initially 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, we may be required to record an impairment charge to write down the asset to its estimated fair value.

We assess goodwill for impairment at least annually, or more frequently when events and circumstances occur indicating that the recorded goodwill at the reporting unit level may be impaired. Reporting units are defined as operating segments or one level below an operating segment, referred to as a component. We have determined that our reporting units are components of our one operating segment. We allocate goodwill to reporting units at the time of acquisition and base that allocation on which reporting units will benefit from the acquired assets and liabilities. 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. If actual cash flows differ significantly from the estimates used by management, we may be required to record an impairment charge to write down the goodwill to its estimated fair value.

In-process research and development. We value tangible and intangible assets acquired through our business acquisitions, including in-process research and development (IPR&D), at fair value. We determine IPR&D through established valuation techniques for various projects for the development of new products and technologies and expense 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 in 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. If we acquire other companies with IPR&D in the future, we will value the IPR&D through established valuation techniques and will incur future IPR&D charges if those products under development have not reached technical feasibility.

Income taxes. We evaluate the realizability of our net deferred tax assets and assess the need for a valuation allowance on a quarterly basis. The future benefit to be derived from our deferred tax assets is dependent upon our ability to generate sufficient future taxable income to realize the assets. We record a valuation allowance to reduce our net deferred tax assets to the amount that may be more likely than not to be realized. To the extent we established a valuation allowance, an expense is recorded within the provision for income taxes line in the statement of operations. As of December 31, 2005, the Company had a valuation allowance of \$3.5 million for its state tax credit carryforwards. During the fourth quarter of 2006, the Company determined that it would begin utilizing these aforementioned state tax credits and reduced the valuation allowance to reflect the amount of the state tax credits that are more likely than not expected to be utilized. The remaining valuation allowance at December 31, 2006 is \$0.3 million, relating to the remaining state tax credits acquired with the purchase of Ion. During 2007, the Company increased the valuation allowance for the state tax loss carryforwards and state credits acquired in the purchase of YDI. The valuation allowance is \$0.5 million at December 31, 2007. In future periods, if we were to determine that it was more likely than not that we would not be able to realize the recorded amount of our 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.

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The following table sets forth, for the periods indicated, the percentage of total net sales of certain line items included in our consolidated statement of operations data:

| | Year Ended December 31, | | |
|--|--------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Net sales | 100.0% | 100.0% | 100.0% |
| Cost of sales | 57.5 | 56.8 | 60.6 |
| Gross profit | 42.5 | 43.2 | 39.4 |
| Research and development | 9.3 | 8.9 | 11.0 |
| Selling, general and administrative | 17.3 | 16.3 | 18.3 |
| Amortization of acquired intangible assets | 2.1 | 2.2 | 2.7 |
| Purchase of in-process technology | 0.1 | 0.1 | |
| Income from litigation settlement | | | 0.6 |
| Income from operations | 13.7 | 15.7 | 8.0 |
| Interest income, net | 1.9 | 1.0 | 1.2 |
| Impairment of investments | (0.2) | | |
| Income before income taxes | 15.4 | 16.7 | 9.2 |
| Provision for income taxes | 4.3 | 4.7 | 2.4 |
| Net income | 11.1% | 12.0% | 6.8% |

Year Ended 2007 Compared to 2006 and 2005*Net Sales*

| | Year Ended December 31, | | | % | % |
|-----------|--------------------------------|-------------|-------------|---------------------------|---------------------------|
| | 2007 | 2006 | 2005 | Change in 2007 | Change in 2006 |
| Net sales | \$ 780.5 | \$ 782.8 | \$ 509.3 | (0.3) | 53.7 |

Net sales decreased \$2.3 million during the year ended December 31, 2007 mainly due to a decrease in worldwide demand from our semiconductor capital equipment manufacturer customers compared to the same period for the prior year. International net sales were \$302.7 million for the year ended December 31, 2007 or 38.8% of net sales compared to \$266.9 million for the same period of 2006 or 34.1% of net sales.

Net sales increased \$273.5 million during the year ended December 31, 2006 mainly due to an increase in worldwide demand from our semiconductor capital equipment manufacturer and semiconductor device manufacturer customers, which increased \$188.6 million or 52.3% compared to the same period for the prior year. Additionally, net sales for thin-film and other non-semiconductor manufacturing applications increased \$84.9 million or 57.1% compared to the

same period for the prior year. During 2006, we acquired three companies. These acquisitions increased our total net sales by approximately \$38.5 million for the year ended December 31, 2006 compared to the same period for the prior year. International net sales were \$266.9 million for the year ended December 31, 2006 or 34.1% of net sales compared to \$188.5 million for the same period of 2005 or 37.0% of net sales.

Gross Profit

| | Year Ended December 31, | | | % Points | % Points |
|---------------------------------------|--------------------------------|-------------|-------------|------------------|------------------|
| | 2007 | 2006 | 2005 | Change in | Change in |
| | | | | 2007 | 2006 |
| Gross profit as a percentage of sales | 42.5% | 43.2% | 39.4% | (0.7) | 3.8 |

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Gross profit decreased slightly during the year ended December 31, 2007 mainly due to unfavorable product mix and other costs, including higher charges for excess inventory as a result of flattened sales and slightly higher overhead cost, offset by lower warranty cost in 2007.

Gross profit increased during the year ended December 31, 2006 mainly due to higher production volumes, which reduced overhead costs as a percentage of sales by 3.0 percentage points. In addition, the positive impact of gross profit margins from our three acquisitions in 2006, favorable product mix and other reduced manufacturing costs increased our overall margin by approximately 0.8 percentage points during the year ended December 31, 2006.

Research and Development

| | Year Ended December 31, | | | % | % |
|-----------------------------------|--------------------------------|-------------|-------------|---------------------------|---------------------------|
| | 2007 | 2006 | 2005 | Change in 2007 | Change in 2006 |
| Research and development expenses | \$ 72.2 | \$ 69.7 | \$ 55.9 | 3.5 | 24.7 |

Our research and development is primarily focused on developing and improving our instruments, components, subsystems and process control solutions to improve process performance and productivity.

We have hundreds of products and our research and development efforts primarily consist of a large number of projects related to these products, none of which is individually material to us. Current projects typically have a duration of 12 to 30 months depending upon whether the product is an enhancement of existing technology or a new product. Our current initiatives include projects to enhance the performance characteristics of older products, to develop new products and to integrate various technologies into subsystems. These projects support in large part the transition in the semiconductor industry to larger wafer sizes and smaller integrated circuit geometries, which require more advanced process control technology. Research and development expenses consist primarily of salaries and related expenses for personnel engaged in research and development, fees paid to consultants, material costs for prototypes and other expenses related to the design, development, testing and enhancement of our products.

Research and development expense increased \$2.5 million during the year ended December 31, 2007 mainly due to \$1.9 million in increased compensation, resulting from increased headcount, and \$1.8 million in consulting expenses, primarily offset by \$0.8 million in lower project materials costs as compared to the same period in the prior year.

Research and development expense increased \$13.8 million during the year ended December 31, 2006 mainly due to expenses of \$5.4 million from the companies acquired in 2006, \$4.9 million in increased compensation, resulting from increased incentive compensation, headcount and salaries, and \$3.3 million in stock-based compensation expenses recorded during the current year.

We believe that the continued investment in research and development and ongoing development of new products are essential to the expansion of our markets, and expect to continue to make significant investment in research and development activities. We are subject to risks if products are not developed in a timely manner, due to rapidly changing customer requirements and competitive threats from other companies and technologies. Our success primarily depends on our products being designed into new generations of equipment for the semiconductor industry. We develop products that are technologically advanced so that they are positioned to be chosen for use in each successive generation of semiconductor capital equipment. If our products are not chosen to be designed into our customers' products, our net sales may be reduced during the lifespan of those products.

Selling, General and Administrative

| | Year Ended December 31, | | | % | % |
|--|--------------------------------|-------------|-------------|---------------------------|---------------------------|
| | 2007 | 2006 | 2005 | Change in 2007 | Change in 2006 |
| Selling, general and administrative expenses | \$ 135.2 | \$ 127.7 | \$ 93.1 | 5.9 | 37.3 |

Selling, general and administrative expenses increased \$7.5 million during the year ended December 31, 2007 primarily due to \$3.8 million of increased IT spending to support current and future initiatives including the

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implementation of an ERP system, \$0.7 million in increased compensation, \$0.9 million increase in costs of operating facilities mainly in Asia, and by \$1.1 million in foreign currency exchange losses as compared to the same period in the prior year.

Selling, general and administrative expenses increased \$34.7 million during the year ended December 31, 2006 primarily due to expenses of \$15.8 million from the companies acquired in 2006, \$11.3 million in increased compensation, resulting from increased incentive compensation, headcount and salaries, \$7.6 million in stock-based compensation expenses recorded during the current year and higher costs of \$2.1 million for our ERP implementation and other IT investments, offset by \$2.6 million in foreign currency exchange gains as compared to the same period in the prior year.

Amortization of Acquired Intangible Assets

| | Year Ended December 31, | | | % | % |
|--|--------------------------------|-------------|-------------|---------------------------|---------------------------|
| | 2007 | 2006 | 2005 | Change in 2007 | Change in 2006 |
| Amortization of acquired intangible assets | \$ 16.2 | \$ 17.4 | \$ 13.9 | (6.9) | 25.3 |

Amortization expense for the year ended December 31, 2007 decreased \$1.2 million primarily related to intangible assets from previous acquisitions that became fully amortized during 2007.

Amortization expense for the year ended December 31, 2006 increased \$3.5 million primarily due to the amortization related to \$33.6 million in acquired intangible assets from the acquisitions in 2006, which included a \$1.0 million order backlog intangible asset that was amortized over 3 months during the first quarter of 2006.

Purchase of in-process technology

| | Year Ended December 31, | | |
|-----------------------------------|------------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Purchase of in-process technology | \$ 0.9 | \$ 0.8 | |

In-process research and development amounts related to our acquisition of YDI in 2007 and Ion and Umetrics in 2006. The purchase price of the acquisitions was allocated to the assets acquired, including intangible assets, based on estimated fair values. The intangible assets included acquired in-process technology for projects, generally expected to have durations of 12 months, which did not have alternative future uses. Accordingly, these costs were expensed in the year of acquisition.

Income from Litigation Settlement

During the fourth quarter of 2005, we executed a settlement agreement with Advanced Energy Industries, Inc. (Advanced Energy) in connection with the patent infringement suit we had brought against Advanced Energy in federal district court in Delaware. Pursuant to the settlement agreement, Advanced Energy paid us \$3.0 million in cash in October 2005.

Interest Income, Net

| | Year Ended | | | % Change in 2007 | % Change in 2006 |
|----------------------|------------------------------|-------------|-------------|---------------------------------|---------------------------------|
| | December 31, 2007 | 2006 | 2005 | | |
| Interest income, net | \$ 14.5 | \$ 8.4 | \$ 6.5 | 72.5 | 30.1 |

Net interest income increased \$6.1 million during the year ended December 31, 2007 mainly related to higher average outstanding cash and investment balances in 2007 and higher average rates.

Net interest income increased \$1.9 million during the year ended December 31, 2006 mainly related to higher interest rates in 2006.

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| | Year Ended December 31, | | |
|--------------------------|------------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Impairment of Investment | \$ (1.5) | | |

During the fourth quarter of 2007, we determined that declines in the fair value of our investments in certain commercial paper were other-than-temporary. This commercial paper was issued by two structured investment vehicles (SIVs) that entered into receivership during the fourth quarter of 2007 and they failed to make payments at maturity. Due to the mortgage-related assets these issuers held, they were exposed to adverse market conditions that affected the value of their collateral and their ability to access short-term funding. These investments are not currently trading on active markets, and therefore, have no readily determinable market value. As a result of our evaluation as of December 31, 2007, we recorded a \$1.5 million impairment charge to earnings, based upon the Company receiving contemporaneous quotes from established third-party pricing services.

Provision for Income Taxes

| | Year Ended December 31, | | |
|----------------------------|--------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Provision for income taxes | \$ 33.7 | \$ 36.7 | \$ 12.4 |

The provision for income taxes in 2007, 2006 and 2005 are comprised of federal, state and foreign income taxes.

Our effective tax rate for the years ended December 31, 2007, 2006 and 2005 was 28.0%, 28.0% and 26.5%, respectively. The effective tax rate for 2007 is less than the statutory tax rate primarily due to the benefit from federal research and development credits and the profits of our international subsidiaries being taxed at rates lower than the U.S. statutory tax rate.

The effective tax rate in 2006 is less than the statutory tax rate primarily due to certain discrete tax matters related to our international operations, the benefit from the federal research and development credits, the reduction in the valuation allowance for state tax credits, and the profits of our international subsidiaries being taxed at rates lower than the U.S. statutory tax rate.

The effective tax rate in 2005 is less than the statutory tax rate primarily due to a tax benefit recorded as the result of the completion of the Internal Revenue Service (IRS) examination (see below), the benefit from federal research and development credits and the profits of our international subsidiaries being taxed at rates lower than the U.S. statutory tax rate.

We adopted FASB Interpretation 48, Accounting for Uncertainty in Income Taxes (FIN 48), as of January 1, 2007. As a result of the implementation of FIN 48, we did not recognize an adjustment in the liability for unrecognized income tax benefits. At the adoption date of January 1, 2007, the total amount of gross unrecognized tax benefits, which excludes interest and penalties discussed below, was \$11.6 million. If these benefits were recognized in a future period, the timing of which is not estimable, the net unrecognized tax benefit of \$10.1 million would impact our effective tax rate. The total amount of gross unrecognized tax benefits at December 31, 2007 was approximately

\$16.1 million, excluding penalties and interest. The increase from January 1, 2007 was primarily attributable to our tax positions taken during the current year. At December 31, 2007, if these benefits were recognized in a future period, the timing of which is not estimable, the net unrecognized tax benefit of approximately \$13.2 million would impact our effective tax rate.

MKS and its subsidiaries are subject to U.S. federal income tax as well as the income tax of multiple state and foreign jurisdictions. We have concluded all U.S. federal income tax matters for years through 2002. The 2003 federal tax year remains open to the extent of the loss carryforward to 2004 and 2005. As of December 31, 2007, there were ongoing audits in various other tax jurisdictions.

Over the next 12 months it is reasonably possible that the Company may recognize \$4.3 million to \$4.8 million of previously unrecognized tax benefits related to various federal, state and foreign tax positions as a result of the

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conclusion of various audits and the expiration of the statute of limitations. The following tax years, in the major tax jurisdictions noted, are open for assessment or refund: U.S. Federal: 2003 to 2006, Germany: 2001 to 2006, Korea: 2005 to 2006, Japan: 2000 to 2006 and the United Kingdom: 2005 and 2006.

We accrue interest and penalties, if applicable, for any uncertain tax positions. This interest and penalty expense is a component of income tax expense. At the date of adoption of FIN 48 and at December 31, 2007, we had \$0.7 million and \$1.5 million, respectively, accrued for interest on unrecognized tax benefits.

For the year ended December 31, 2007, the Company amended prior federal tax returns to reflect revised estimates for qualifying federal research and development costs that allowed the Company to claim additional research tax credits. As a result of this claim, the Company recorded a benefit to income tax expense of \$1.8 million.

During the year ended December 31, 2006, we received a notification letter from the Israeli Ministry of Industry Trade and Labor (MITL) indicating that our Israeli operations were in compliance with requirements relating to the tax holiday granted to our manufacturing operations in Israel in 2001. This tax holiday is anticipated to expire in 2011 and is subject to meeting continued investment, employment and other requirements under the guidelines of the MITL. Additionally, we recorded the impact of both a change in German tax rules allowing interest deductions on certain loans and an adjustment relating to transfer pricing. As a result of these items we recorded a net benefit to income tax expense of \$1.6 million for the year ended December 31, 2006.

During 2005, the IRS completed its examination of our federal tax returns for the tax years 1999 through 2002. As a result of this examination, during the year ended December 31, 2005, we recorded a benefit to income tax expense of \$1.9 million and a \$0.6 million reduction of goodwill related to a previous acquisition.

Liquidity and Capital Resources

Cash, cash equivalents and short-term marketable securities totaled \$323.8 million at December 31, 2007 compared to \$290.0 million at December 31, 2006. This increase is mainly due to an increase of \$119.1 million of cash generated from operations offset primarily by \$58.7 million of cash used in financing activities and \$24.0 million of cash used for the acquisition of YDI in November 2007. The primary driver in our current and anticipated future cash flows is and will continue to be cash generated from operations, consisting mainly of our net income and changes in operating assets and liabilities. In periods when our sales are growing, higher sales to customers will result in increased trade receivables, and inventories will generally increase as we build products for future sales. This may result in lower cash generated from operations. Conversely, in periods when our sales are declining, our trade accounts receivable and inventory balances will generally decrease, resulting in increased cash from operations.

Net cash provided by operating activities of \$119.1 million for the year ended December 31, 2007, resulted mainly from net income of \$86.4 million, a \$26.1 million decrease in operating liabilities and non-cash charges of \$30.6 million for depreciation and amortization and \$12.9 million for stock-based compensation, and a decrease in net operating assets of \$20.2 million and a deferred tax benefit of \$10.3 million. The \$26.1 million net decrease in operating liabilities is mainly caused by a decrease of \$18.9 million in accounts payable primarily as a result of inventory procurement activities and a decrease of \$6.6 million in accrued expenses and other current liabilities primarily as a result of lower accrued compensation and warranty costs. The \$20.2 million decrease in operating assets consisted primarily of an \$18.3 million decrease in accounts receivable as a result of lower sales in the last two months of 2007 compared to 2006. Net cash provided by operating activities of \$78.2 million for the year ended December 31, 2006, resulted mainly from net income of \$94.2 million, a \$27.7 million increase in operating liabilities and non-cash charges of \$31.3 million for depreciation and amortization and \$13.1 million for stock-based compensation, offset by an increase in net operating assets of \$77.4 million and a deferred tax benefit of \$11.5 million. The \$27.7 million net increase in operating liabilities is mainly caused by an increase of \$15.4 million

in accrued expenses and other current liabilities primarily as a result of higher accrued compensation and warranty costs, an increase of \$6.5 million in taxes payable as a result of higher net income and an increase of \$5.7 million in accounts payable primarily as a result of inventory procurement activities. The \$13.1 million for stock-based compensation resulted from the adoption of FAS 123R as of January 1, 2006. The \$77.4 million increase in operating assets consisted primarily of a \$33.6 million increase in accounts receivable as a result of higher revenue and a \$46.0 million increase in inventory as a result of increased product demand.

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Net cash used in investing activities of \$60.9 million for the year ended December 31, 2007, resulted primarily from the purchase of one technology company for \$24.0 million, purchases of property, plant and equipment of \$15.1 million, including approximately \$6.3 million related to our new China facility and net purchases of \$23.7 million of available for sale investments. Net cash used in investing activities of \$114.3 million for the year ended December 31, 2006, resulted primarily from the purchase of three technology companies for \$98.7 million, purchases of property, plant and equipment of \$10.7 million and net purchases of \$4.6 million of available for sale investments.

Net cash used in financing activities of \$58.7 million for the year ended December 31, 2007, resulted from \$101.2 million used to repurchase common stock and \$4.1 million in net repayment of short-term borrowings, offset primarily by \$45.3 million in proceeds from the exercises of stock options and purchases under our employee stock purchase plan. Net cash provided by financing activities of \$30.5 million for the year ended December 31, 2006, consisted primarily of \$23.3 million in proceeds from the exercise of stock options and purchases under our employee stock purchase plan and \$5.2 million in net proceeds from short-term borrowings.

On August 1, 2007, we renewed an unsecured short-term LIBOR based loan agreement with a bank to be utilized primarily by our Japanese subsidiary for short-term liquidity purposes. The credit line, which expires on July 31, 2008, allows us to borrow, in multiple currencies, up to an equivalent of \$35.0 million U.S. dollars. At December 31, 2007, we had outstanding borrowings of \$8.9 million U.S. dollars, payable on demand, at an interest rate of 1.62%, with \$26.1 million available for future borrowings.

Our Japanese subsidiary also has credit lines and short-term borrowing arrangements with a financial institution, which provide for aggregate borrowings as of December 31, 2007 of up to \$22.4 million, which generally expire and are renewed in three-month intervals. At December 31, 2007, total borrowings outstanding under these arrangements was \$10.0 million, at an interest rate ranging from 1.24% to 1.875%, with \$12.4 million available for future borrowings.

We have provided financial guarantees for certain unsecured borrowings and have standby letters of credit, some of which do not have fixed expiration dates. At December 31, 2007, our maximum exposure as a result of these standby letters of credit and performance bonds was approximately \$1.1 million.

Future payments due under debt, lease and purchase commitment obligations as of December 31, 2007 (in thousands) are as follows:

| Contractual Obligations | Total | Payment Due by Period | | | | Other |
|--|----------|-----------------------|-----------|-----------|------------------|--------|
| | | Less than 1 Year | 1-3 years | 3-5 years | After 5 years | |
| Debt Obligations | \$ 5,000 | \$ | \$ | \$ | \$ 5,000 | \$ |
| Operating Lease Obligations | 38,802 | 8,431 | 11,383 | 6,886 | 12,102 | |
| Purchase Obligations(1) | 132,042 | 115,080 | 11,410 | 5,552 | | |
| Capital Lease Obligations | 2,107 | 1,236 | 871 | | | |
| Other Long-Term Liabilities Reflected on the Balance Sheet under GAAP(2) | 20,634 | 178 | | | 7,674 | 12,782 |
| Contingent Purchase Consideration in Connection with | 10,000 | 2,500 | 7,500 | | | |

Acquisitions(3)

| | | | | | | |
|-------|------------|------------|-----------|-----------|-----------|-----------|
| Total | \$ 208,585 | \$ 127,425 | \$ 31,164 | \$ 12,438 | \$ 24,776 | \$ 12,782 |
|-------|------------|------------|-----------|-----------|-----------|-----------|

- (1) The majority of the outstanding inventory purchase commitments of approximately \$104.0 million at December 31, 2007 are to be purchased within the next 12 months. Additionally, approximately \$21.0 million represents a commitment, as of December 31, 2007, to a third party engaged to provide certain computer equipment, IT network services and IT support. This contract is for a period of approximately six years that began in September 2004 and has a significant penalty for early termination. The actual timing of payments and

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amounts may vary based on equipment deployment dates. However, the amount noted represents our expected obligation based on anticipated deployment.

- (2) We adopted FASB Interpretation 48, Accounting for Uncertainty in Income Taxes (FIN 48) as of January 1, 2007. According to FIN 48, this represents estimated liabilities for income taxes due for tax positions taken in a tax return that may not be sustained upon examination, based on the technical merits of the position.
- (3) In connection with the YDI acquisition, additional purchase consideration may be payable upon the achievement of specific annual and cumulative revenue targets between 2008 and 2010.

We believe that our working capital, together with the cash anticipated to be generated from operations, will be sufficient to satisfy our estimated working capital and planned capital expenditure requirements through at least the next 12 months.

On February 12, 2007, our Board of Directors approved a share repurchase program (the Program) for the repurchase of up to \$300.0 million of our outstanding stock over the next two years. The repurchases may be made from time to time on the open market or through privately negotiated transactions. The timing and amount of any shares repurchased under the Program will depend on a variety of factors, including price, corporate and regulatory requirements, capital availability and other market conditions. The Program may be discontinued at any time at our discretion and the discretion of our Board of Directors. During the year ended December 31, 2007, we repurchased 4,779,000 shares of common stock for \$101.2 million for an average price of \$21.17 per share.

To the extent permitted by Massachusetts law, our Restated Articles of Organization, as amended, require us to indemnify any of our current or former officers or directors or any person who has served or is serving in any capacity with respect to any of our employee benefit plans. Because no claim for indemnification has been pursued by any person covered by the relevant provisions of our Restated Articles of Organization, we believe that the estimated exposure for these indemnification obligations is currently minimal. Accordingly, we have no liabilities recorded for these requirements as of December 31, 2007.

We also enter into agreements in the ordinary course of business which include indemnification provisions. Pursuant to these agreements, we indemnify, hold harmless and agree to reimburse the indemnified party, generally our customers, for losses suffered or incurred by the indemnified party in connection with certain patent or other intellectual property infringement claims, and, in some instances, other claims, by any third party with respect to our products. The terms of these indemnification obligations are generally perpetual after execution of the agreements. The maximum potential amount of future payments we could be required to make under these indemnification agreements is, in some instances, not contractually limited. We have never incurred costs to defend lawsuits or settle claims related to these indemnification obligations. As a result, we believe the estimated fair value of these obligations is minimal. Accordingly, we have no liabilities recorded for these obligations as of December 31, 2007.

When, as part of an acquisition, we acquire all of the stock or all of the assets and liabilities of another company, we assume liability for certain events or occurrences that took place prior to the date of acquisition. The maximum potential amount of future payments we 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 we have not made significant payments for these indemnifications. Accordingly, no liabilities have been recorded for these obligations.

In conjunction with certain asset sales, we 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 amounts 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 we have not made significant payments for these indemnifications.

Derivatives

We conduct our operations globally. Consequently, the results of our operations are exposed to movements in foreign currency exchange rates. We hedge a portion of our forecasted foreign currency denominated intercompany sales of inventory, over a maximum period of 15 months, using forward foreign exchange contracts (forward

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exchange contracts) primarily related to Japanese, Korean and European currencies. These derivatives are designated as cash-flow hedges, and changes in their fair value are carried in accumulated other comprehensive income in our consolidated statements of stockholder s equity 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 in the consolidated statements of operations. As of December 31, 2007, the amount that will be reclassified from accumulated other comprehensive income to cost of sales over the next twelve months is immaterial. The ineffective portions of the derivatives are recorded in cost of sales and were immaterial in 2007, 2006 and 2005, respectively.

We also hedge certain intercompany and other payables with forward exchange contracts. Typically, as these derivatives hedge existing amounts that are denominated in foreign currencies, the derivatives do not qualify for hedge accounting. The foreign exchange gain or loss on these derivatives was immaterial in 2007, 2006 and 2005.

Realized and unrealized gains and losses on forward exchange contracts that do not qualify for hedge accounting are recognized immediately in earnings. The cash flows resulting from forward exchange contracts that qualify for hedge accounting are classified in our consolidated statements of cash flows as part of cash flows from operating activities. Cash flows resulting from forward exchange contracts that do not qualify for hedge accounting are classified in our statements of cash flows as investing activities. We do not hold or issue derivative financial instruments for trading purposes.

We had forward exchange contracts with notional amounts totaling \$66.7 million outstanding at December 31, 2007, of which, \$39.9 million were outstanding to exchange Japanese yen for U.S. dollars. We had forward exchange contracts with notional amounts totaling \$20.3 million outstanding at December 31, 2006, of which, \$14.6 million were outstanding to exchange Japanese yen for U.S. dollars. We had forward exchange contracts with notional amounts totaling \$35.3 million outstanding at December 31, 2005 of which \$28.5 million were outstanding to exchange Japanese yen for U.S. dollars.

Gains and losses on forward exchange contracts that qualify for hedge accounting are classified in cost of goods sold, which totaled a gain of \$1.3 million, \$1.9 million and \$0.8 million for the years ended December 31, 2007, 2006 and 2005, respectively.

Off-Balance Sheet Arrangements

We do not have any financial partnerships with unconsolidated entities, such as entities often referred to as structured finance, special purpose entities or variable interest entities which are often established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. Accordingly, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had such relationships.

Recently Issued Accounting Pronouncements

In September 2006, the Financial Accounting Standards Board (the FASB) issued SFAS No. 157, Fair Value Measurements (SFAS 157). SFAS 157 clarifies the principle that fair value should be based on the assumptions market participants would use when pricing an asset or liability and establishes a fair value hierarchy that prioritizes the information used to develop those assumptions. Under the standard, fair value measurements would be separately disclosed by level within the fair value hierarchy. SFAS 157 is effective for fiscal years beginning after November 15, 2007, with early adoption permitted. We do not believe that SFAS 157 will have a material impact on our consolidated financial statements. Certain portions of SFAS 157 have been deferred for one year.

In February 2007, the FASB issued SFAS No. 159, The Fair Value Option for Financial Assets and Liabilities (SFAS 159). SFAS 159 permits companies to choose to measure certain financial instruments and certain other items at fair value and requires that unrealized gains and losses on items for which the fair value option has been elected be reported in earnings. SFAS 159 is effective for fiscal years beginning after November 15, 2007, although early adoption is permitted. We do not believe that SFAS 159 will have a material impact on our consolidated financial statements.

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In December 2007, the FASB issued SFAS No. 141(R), *Business Combinations*, which replaces SFAS No. 141. This revised standard requires assets, liabilities and non-controlling interests acquired to be measured at fair value and requires that costs incurred to effect the acquisition be recognized separately from the business combination. In addition, this statement expands the scope to include all transactions and other events in which one entity obtains control over one or more businesses. This statement is effective for all business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after December 15, 2008. We are in the process of evaluating whether the adoption of this standard will have a material effect on our consolidated financial results.

In December 2007, the FASB issued SFAS No. 160, *Noncontrolling Interests in Consolidated Financial Statements, an Amendment of ARB No. 51 (SFAS No. 160)*. This statement establishes accounting and reporting standards for the non-controlling interest in a subsidiary and for the deconsolidation of a subsidiary. This statement is effective for fiscal years beginning on or after December 15, 2008. We are in the process of evaluating whether the adoption of this standard will have a material effect on our consolidated financial statements.

Item 7A. *Quantitative and Qualitative Disclosures about Market Risk*

Market Risk and Sensitivity Analysis

Our primary exposures to market risks include fluctuations in interest rates on our investment portfolio, short and long-term debt as well as fluctuations in foreign currency exchange rates.

Foreign Exchange Rate Risk

We enter into forward exchange contracts to reduce currency exposure arising from intercompany sales of inventory.

There were forward exchange contracts with notional amounts totaling \$66.7 million and \$20.3 million outstanding at December 31, 2007 and 2006, respectively. Of such forward exchange contracts, \$39.9 million and \$14.6 million, respectively, were outstanding to exchange Japanese yen for U.S. dollars with the remaining amounts relating to contracts to exchange the British pound, Korean Won and Euro for U.S. dollars. The potential fair value loss for a hypothetical 10% adverse change in the currency exchange rate on our forward exchange contracts at December 31, 2007 and 2006 would be \$6.7 million and \$2.0 million, respectively. The potential losses in 2007 and 2006 were estimated by calculating the fair value of the forward exchange contracts at December 31, 2007 and 2006 and comparing that with those calculated using the hypothetical forward currency exchange rates.

At December 31, 2007 and 2006 we had \$134.3 million and \$11.7 million, respectively, in loans outstanding between subsidiaries that were subject to foreign exchange exposure. The majority of the intercompany loans were related to our UK subsidiary, which were incurred in late December 2007 and were repaid in January 2008. At December 31, 2007 and 2006 a hypothetical 10% adverse change in foreign exchange rates would result in a net transaction loss of \$14.9 million and \$1.3 million, respectively, which would be recorded in current earnings.

At December 31, 2007 and 2006, we had \$19.0 million and \$21.8 million, respectively, related to short-term borrowings and current portion of long-term debt 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 \$2.1 million and \$2.4 million, respectively. The potential increase in fair value was estimated by calculating the fair value of the short-term borrowings at December 31, 2007 and 2006, respectively, and comparing that with the fair value using the hypothetical year-end exchange rate.

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Interest Rate Risk

Due to its short-term duration, the fair value of our cash and investment portfolio at December 31, 2007 and 2006 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.

Our total long-term debt outstanding, including the current portion, at December 31, 2007 and 2006 was \$5.0 million, respectively, and consisted of a mortgage note and industrial development revenue bond. The interest rate on these debt instruments was 4.0% at December 31, 2007 and was 3.95% at December 31, 2006. Due to the immaterial amounts of the outstanding debt, a hypothetical change of 10% in interest rates would not have a material effect on our near-term financial condition or results of operations.

From time to time, MKS has outstanding short-term borrowings with variable interest rates, primarily denominated in Japanese yen. At December 31, 2007 and 2006, we had \$19.0 million and \$21.8 million, respectively, outstanding related to these short-term borrowings at interest rates ranging from 1.24% to 1.875% and 1.45% to 1.50%, respectively. Due to the short-term nature and amount of this short-term debt, a hypothetical change of 10% in interest rates would not have a material effect on our near-term financial condition or results of operations.

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Item 8. *Financial Statements and Supplementary Data*

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To Board of Directors and Shareholders of
MKS Instruments, Inc.:

In our opinion, 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, 2007 and 2006, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2007 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, 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. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2007, based on criteria established in *Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements and financial statement schedule, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included 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. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for stock-based compensation in 2006, and as discussed in Note 9, the manner in which it accounts for uncertain tax positions in 2007.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become

inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

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As described in Management's Report on Internal Control over Financial Reporting, management has excluded Yield Dynamics, Inc. (YDI) from its assessment of internal control over financial reporting as of December 31, 2007 because YDI was acquired by the Company in a purchase business combination during 2007. We have also excluded YDI from our audit of internal control over financial reporting. YDI is a wholly-owned subsidiary whose total assets and total revenues represent approximately 3% and less than 1%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2007.

Boston, Massachusetts
February 28, 2008

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MKS INSTRUMENTS, INC.
CONSOLIDATED BALANCE SHEETS

| | December 31, 2007 2006 (In thousands, except share data) | |
|---|--|------------------|
| ASSETS | | |
| Current assets: | | |
| Cash and cash equivalents | \$ 223,968 | \$ 215,208 |
| Short-term investments | 99,797 | 74,749 |
| Trade accounts receivable, net of allowances of \$2,379 and \$4,533 at December 31, 2007 and 2006, respectively | 107,504 | 123,658 |
| Inventories | 150,731 | 149,820 |
| Deferred income taxes | 17,984 | 16,787 |
| Other current assets | 9,996 | 11,216 |
| Total current assets | 609,980 | 591,438 |
| Property, plant and equipment, net | 81,365 | 79,463 |
| Long-term investments | | 2,816 |
| Goodwill | 337,473 | 323,973 |
| Acquired intangible assets, net | 36,141 | 43,104 |
| Other assets | 11,301 | 2,926 |
| Total assets | \$ 1,076,260 | \$ 1,043,720 |
| LIABILITIES AND STOCKHOLDERS EQUITY | | |
| Current liabilities: | | |
| Short-term borrowings | \$ 18,967 | \$ 21,845 |
| Current portion of capital lease obligations | 1,236 | 1,176 |
| Accounts payable | 28,683 | 38,541 |
| Accrued compensation | 17,842 | 26,685 |
| Income taxes payable | 3,649 | 16,619 |
| Other accrued expenses | 25,368 | 25,031 |
| Total current liabilities | 95,745 | 129,897 |
| Long-term debt | 5,000 | 5,000 |
| Long-term portion of capital lease obligations | 871 | 1,113 |
| Deferred income taxes | | 1,535 |
| Other liabilities | 20,635 | 4,956 |
| Commitments and contingencies (Note 7) | | |
| Stockholders' equity: | | |
| Preferred Stock, \$0.01 par value, 2,000,000 shares authorized; none issued and outstanding | | |

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| | | |
|--|--------------|--------------|
| Common Stock, no par value, 200,000,000 shares authorized; 54,261,947 and 56,671,625 shares issued and outstanding at December 31, 2007 and 2006, respectively | 113 | 113 |
| Additional paid-in capital | 685,465 | 680,164 |
| Retained earnings | 255,244 | 210,877 |
| Accumulated other comprehensive income | 13,187 | 10,065 |
| Total stockholders' equity | 954,009 | 901,219 |
| Total liabilities and stockholders' equity | \$ 1,076,260 | \$ 1,043,720 |

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

Table of Contents**MKS INSTRUMENTS, INC.****CONSOLIDATED STATEMENTS OF OPERATIONS**

| | Year Ended December 31, | | |
|---|--|-------------|-------------|
| | 2007 | 2006 | 2005 |
| | (In thousands, except per share data) | | |
| Net sales | \$ 780,487 | \$ 782,801 | \$ 509,294 |
| Cost of sales | 449,000 | 444,679 | 308,860 |
| Gross profit | 331,487 | 338,122 | 200,434 |
| Research and development | 72,170 | 69,702 | 55,916 |
| Selling, general and administrative | 135,249 | 127,703 | 93,106 |
| Amortization of acquired intangible assets | 16,183 | 17,376 | 13,864 |
| Purchase of in-process technology | 900 | 800 | |
| Income from litigation settlement | | | 3,000 |
| Income from operations | 106,985 | 122,541 | 40,548 |
| Interest expense | (806) | (974) | (810) |
| Interest income | 15,294 | 9,374 | 7,269 |
| Impairment of investments | (1,457) | | |
| Income before income taxes | 120,016 | 130,941 | 47,007 |
| Provision for income taxes | 33,656 | 36,706 | 12,442 |
| Net income | \$ 86,360 | \$ 94,235 | \$ 34,565 |
| Net income per share: | | | |
| Basic | \$ 1.53 | \$ 1.70 | \$ 0.64 |
| Diluted | \$ 1.51 | \$ 1.68 | \$ 0.63 |
| Weighted average common shares outstanding: | | | |
| Basic | 56,349 | 55,395 | 54,067 |
| Diluted | 57,173 | 55,961 | 54,633 |

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

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MKS INSTRUMENTS, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS EQUITY

For the year ended December 31, 2007, 2006 and 2005

| | Common Stock | | Additional Paid-In Capital (In thousands, except share data) | Retained Earnings | Accumulated Other Comprehensive Income (Loss) | | Total Comprehensive Income (Loss) | Total Stockholders Equity |
|---|--------------|--------|---|----------------------|---|------------------|--|---------------------------------|
| | Shares | Amount | | | Income (Loss) | Income (Loss) | | |
| Balance at December 31, 2004 | 53,839,098 | \$ 113 | \$ 631,760 | \$ 82,077 | \$ 12,684 | | \$ 726,634 | |
| Net issuance under stock-based plans | 558,169 | | 6,058 | | | | 6,058 | |
| Tax benefit from stock-based plans | | | 1,102 | | | | 1,102 | |
| Other | | | 232 | | | | 232 | |
| Comprehensive income (net of tax): | | | | | | | | |
| Net income | | | | 34,565 | | \$ 34,565 | 34,565 | |
| Other comprehensive income: | | | | | | | | |
| Changes in value of financial instruments designated as cash flow hedges and unrealized gain on investments | | | | | 1,663 | 1,663 | 1,663 | |
| Foreign currency translation adjustment | | | | | (7,411) | (7,411) | (7,411) | |
| Comprehensive income | | | | | | \$ 28,817 | | |
| Balance at December 31, 2005 | 54,397,267 | \$ 113 | \$ 639,152 | \$ 116,642 | \$ 6,936 | | \$ 762,843 | |
| Net issuance under stock-based plans | 2,274,358 | | 23,255 | | | | 23,255 | |
| Stock-based compensation | | | 13,143 | | | | 13,143 | |
| Tax benefit from stock-based plans | | | 4,614 | | | | 4,614 | |
| Comprehensive income (net of tax): | | | | | | | | |
| Net income | | | | 94,235 | | 94,235 | 94,235 | |
| Other comprehensive income: | | | | | | | | |

| | | | | | | |
|---|-------------|--------|------------|------------|-----------|------------|
| Changes in value of financial instruments designated as cash flow hedges and unrealized (loss) on investments | | | | (43) | (43) | (43) |
| Foreign currency translation adjustment | | | | 3,172 | 3,172 | 3,172 |
| Comprehensive income | | | | | \$ 97,364 | |
| Balance at December 31, 2006 | 56,671,625 | \$ 113 | \$ 680,164 | \$ 210,877 | \$ 10,065 | \$ 901,219 |
| Net issuance under stock-based plans | 2,368,954 | | 45,266 | | | 45,266 |
| Stock-based compensation | | | 12,918 | | | 12,918 |
| Tax benefit from stock-based plans | | | 5,712 | | | 5,712 |
| Stock purchases | (4,778,632) | | (59,165) | (41,993) | | (101,158) |
| Other | | | 570 | | | 570 |
| Comprehensive income (net of tax): | | | | | | |
| Net income | | | | 86,360 | 86,360 | 86,360 |
| Other comprehensive income: | | | | | | |
| Changes in value of financial instruments designated as cash flow hedges and unrealized (loss) on investments | | | | (622) | (622) | (622) |
| Foreign currency translation adjustment | | | | 3,744 | 3,744 | 3,744 |
| Comprehensive income | | | | | \$ 89,482 | |
| Balance at December 31, 2007 | 54,261,947 | \$ 113 | \$ 685,465 | \$ 255,244 | \$ 13,187 | \$ 954,009 |

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

Table of Contents**MKS INSTRUMENTS, INC.****CONSOLIDATED STATEMENTS OF CASH FLOWS**

| | Year Ended December 31, | | |
|---|--------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| | (In thousands) | | |
| Cash flows from operating activities: | | | |
| Net income | \$ 86,360 | \$ 94,235 | \$ 34,565 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | | |
| Depreciation and amortization | 30,644 | 31,348 | 26,215 |
| Stock-based compensation | 12,918 | 13,143 | |
| Tax benefit from stock-based compensation | 5,712 | 4,614 | 1,102 |
| Excess tax benefit from stock-based compensation | (2,688) | (4,469) | |
| Deferred taxes | (10,283) | (11,518) | 303 |
| Impairment of investments | 1,457 | | |
| Other | 888 | 562 | 467 |
| Changes in operating assets and liabilities, net of effects of businesses acquired: | | | |
| Trade accounts receivable | 18,263 | (33,555) | (4,702) |
| Inventories | 1,206 | (46,013) | (1,829) |
| Other current assets | 708 | 2,213 | 307 |
| Accrued expenses | (6,615) | 15,437 | (2) |
| Accounts payable | (18,855) | 5,731 | 6,362 |
| Income taxes payable | (596) | 6,483 | 1,372 |
| Net cash provided by operating activities | 119,119 | 78,211 | 64,160 |
| Cash flows from investing activities: | | | |
| Acquisitions of businesses, net of cash acquired | (24,021) | (98,671) | |
| Purchases of short-term and long-term available-for-sale investments | (183,927) | (108,944) | (215,551) |
| Maturities and sales of short-term and long-term available-for-sale investments | 160,269 | 104,302 | 244,736 |
| Purchases of property, plant and equipment | (15,090) | (10,690) | (10,281) |
| Proceeds from sale of assets | 370 | 578 | 241 |
| Other | 1,451 | (827) | 901 |
| Net cash provided by (used in) investing activities | (60,948) | (114,252) | 20,046 |
| Cash flows from financing activities: | | | |
| Proceeds from short-term borrowings | 137,656 | 89,547 | 79,005 |
| Payments on short-term borrowings | (141,749) | (84,381) | (81,729) |
| Repurchases of common stock | (101,158) | | |
| Payments on long-term debt | | (1,667) | (2,036) |

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| | | | |
|--|------------|------------|------------|
| Principal payments on capital lease obligations | (1,426) | (754) | (377) |
| Proceeds from exercise of stock options and employee stock purchase plan | 45,266 | 23,255 | 6,058 |
| Excess tax benefit from stock-based compensation | 2,688 | 4,469 | |
| Net cash provided by (used in) financing activities | (58,723) | 30,469 | 921 |
| Effect of exchange rate changes on cash and cash equivalents | 9,312 | 207 | (2,943) |
| Increase (decrease) in cash and cash equivalents | 8,760 | (5,365) | 82,184 |
| Cash and cash equivalents at beginning of period | 215,208 | 220,573 | 138,389 |
| Cash and cash equivalents at end of period | \$ 223,968 | \$ 215,208 | \$ 220,573 |
| Supplemental disclosure of cash flow information: | | | |
| Cash paid during the period for: | | | |
| Interest | \$ 830 | \$ 880 | \$ 784 |
| Income taxes | \$ 27,116 | \$ 35,922 | \$ 10,213 |
| Non-cash financing activities: | | | |
| Equipment capital leases | \$ 1,244 | \$ 1,638 | \$ 1,666 |

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

Table of Contents**MKS INSTRUMENTS, INC.****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Table in thousands, except share and per share data)****1) Description of Business**

MKS Instruments, Inc. was founded in 1961 and is a leading worldwide provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters to improve process performance and productivity of advanced manufacturing processes. MKS is managed as one operating segment which is organized around three product groups: Instruments and Control Systems, Power and Reactive Gas Products and Vacuum Products. MKS products are derived from its core competencies in pressure measurement and control, materials delivery, gas composition analysis, electrostatic charge management, control and information technology, power and reactive gas generation and vacuum technology.

2) Summary of Significant Accounting Policies**Basis of Presentation**

The consolidated financial statements include the accounts of MKS Instruments, Inc. and its wholly owned subsidiaries (collectively, the Company). All significant intercompany accounts and transactions have been eliminated in consolidation.

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, | | |
|--|--|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Net income | \$ 86,360 | \$ 94,235 | \$ 34,565 |
| Shares used in net income per common share basic | 56,349,000 | 55,395,000 | 54,067,000 |
| Effect of dilutive securities: | | | |
| Stock options, restricted stock and employee stock purchase plan | 824,000 | 566,000 | 566,000 |
| Shares used in net income per common share diluted | 57,173,000 | 55,961,000 | 54,633,000 |
| Net income per common share basic | \$ 1.53 | \$ 1.70 | \$ 0.64 |

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| | | | | | | | |
|-----------------------------|---------|----|------|----|------|----|------|
| Net income per common share | diluted | \$ | 1.51 | \$ | 1.68 | \$ | 0.63 |
|-----------------------------|---------|----|------|----|------|----|------|

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MKS INSTRUMENTS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)
(Table in thousands, except share and per share data)

Options and restricted stock outstanding of 3,684,435, 4,789,894 and 5,957,682 during the years ended December 31, 2007, 2006 and 2005, respectively, are excluded from the calculation of diluted net income per common share because their inclusion would be anti-dilutive.

Stock-Based Compensation

Effect of Adoption of SFAS 123R, Share-Based Payment

Prior to January 1, 2006, the Company accounted for stock-based awards to employees using the intrinsic value method as prescribed by Accounting Principles Board Opinion No. 25, Accounting for Stock Issued to Employees, and related interpretations (APB 25). Accordingly, no compensation expense was recorded for options issued to employees in fixed amounts with fixed exercise prices at least equal to the fair market value of the Company's common stock at the date of grant. The Company had adopted the disclosure-only provisions of Statement of Financial Accounting Standards (SFAS) No. 123, Accounting for Stock-Based Compensation, as amended by SFAS No. 148, Accounting for Stock-Based Compensation-Transition and Disclosure, (SFAS 123).

On January 7, 2005, the Company accelerated the vesting of outstanding stock options granted to employees and officers with an exercise price of \$23.00 per share or greater. As a result of this action, options to purchase approximately 1,600,000 shares of the Company's common stock became exercisable on January 7, 2005. No compensation expense was recorded related to this action as these options had no intrinsic value on January 7, 2005. For purposes of the SFAS 123 pro forma calculation below, the expense related to the options that were accelerated was \$16,886,000, net of tax, for the year ended December 31, 2005. The reason that the Company accelerated the vesting of the identified stock options was to reduce the Company's compensation expense in periods subsequent to the adoption of SFAS No. 123R, Share-Based Payment (SFAS 123R).

As of January 1, 2006, the Company adopted SFAS 123R using the modified prospective method. SFAS 123R requires companies to recognize compensation cost for all stock-based awards based upon the grant-date fair value of those awards and to recognize the expense over the requisite service period for awards expected to vest. Using the modified prospective method of adopting SFAS 123R, MKS began recognizing compensation expense for equity-based awards granted after January 1, 2006 plus unvested awards granted prior to January 1, 2006. Under this method of implementation, prior periods were not restated. The Company has elected to adopt the alternative transition method for calculating the tax effects of equity-based compensation. The alternative transition method includes simplified methods to establish the beginning balance of the additional paid-in capital pool (APIC pool) related to the tax effects of employee stock-based compensation, and to determine the subsequent impact on the APIC pool and consolidated statement of cash flows of the tax effects of employee equity-based compensation awards that are outstanding upon the implementation of SFAS 123R. Subsequent to the initial adoption of SFAS 123R, the Company calculates potential windfall or shortfall tax benefits under the treasury stock method by excluding the impact of pro forma deferred tax assets.

The Company recognized the full impact of its share-based payment plans in the consolidated statements of operations for the years ended December 31, 2007 and 2006 under SFAS 123R. As of December 31, 2007, the Company capitalized \$570,000 of such cost on its consolidated balance sheet. The Company did not capitalize any

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(Table in thousands, except share and per share data)

amount as of December 31, 2006 as such costs were not material. The following table reflects the effect of recording stock-based compensation for the years ended December 31, 2007 and 2006 in accordance with SFAS 123R:

| | Year Ended December 31, 2007 | Year Ended December 31, 2006 |
|--|---|---|
| Stock-based compensation expense by type of award: | | |
| Employee stock options | \$ 3,516 | \$ 8,521 |
| Restricted stock | 8,481 | 3,862 |
| Employee stock purchase plan | 921 | 760 |
| Total stock-based compensation | 12,918 | 13,143 |
| Tax effect on stock-based compensation | (5,712) | (4,614) |
| Net effect on net income | \$ 7,206 | \$ 8,529 |
| Effect on earnings per share: | | |
| Basic | \$ 0.13 | \$ 0.15 |
| Diluted | \$ 0.13 | \$ 0.15 |

The pre-tax effect within the Statement of Operations of recording stock-based compensation for the years ended December 31, 2007 and 2006 was as follows:

| | Year Ended December 31, 2007 | Year Ended December 31, 2006 |
|--|---|---|
| Cost of sales | \$ 1,564 | \$ 2,204 |
| Research and development expense | 3,275 | 3,348 |
| Selling, general and administrative expense | 8,079 | 7,591 |
| Total pre-tax stock-based compensation expense | \$ 12,918 | \$ 13,143 |

Prior to the adoption of SFAS 123R

The following table illustrates the effect on net income and net income per share, for the year ended December 31, 2005, if the Company had applied the fair value recognition provisions of SFAS 123 to stock-based employee awards.

| | 2005 |
|---|-------------|
| Net income as reported | \$ 34,565 |
| Add: Stock-based employee compensation expense included in reported net income, net of tax | |
| Deduct: Total stock-based employee compensation expense determined under the fair-value-based method for all awards, net of tax | (24,321) |
| Pro forma net income | \$ 10,244 |
| Basic and diluted net income per share: | |
| Basic as reported | \$ 0.64 |
| Basic Pro forma | \$ 0.19 |
| Diluted as reported | \$ 0.63 |
| Diluted Pro forma | \$ 0.19 |

Table of Contents**MKS INSTRUMENTS, INC.****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**
(Table in thousands, except share and per share data)**Valuation Assumptions**

In connection with the adoption of SFAS 123R, the Company reassessed its valuation technique and related assumptions. The Company determines the fair value of restricted stock based on the number of shares granted and the closing market price of the Company's common stock on the date of the award, and estimates the fair value of stock options and employee stock purchase rights using the Black-Scholes valuation model, which is consistent with our valuation techniques previously utilized for options in footnote disclosures required under SFAS 123. Such values are recognized as expense on a straight-line basis over the requisite service periods, net of estimated forfeitures. The estimation of stock-based awards that will ultimately vest requires significant judgment. We consider many factors when estimating expected forfeitures, including types of awards and historical experience. Actual results, and future changes in estimates, may differ substantially from our current estimates.

There were no options granted during the year ended December 31, 2007. The weighted average grant date fair value of options granted during the year ended December 31, 2006, as determined under SFAS 123R, and during the year December 31, 2005, as determined under SFAS 123, was \$12.00 and \$8.27 per share, respectively. The total intrinsic value of options exercised during the years ended December 31, 2007, 2006 and 2005 was approximately \$16,462,000, \$14,252,000 and \$2,858,000, respectively. The fair values of options at the date of grant were estimated using the Black-Scholes option-pricing model with the following weighted average assumptions:

| | 2007 | 2006 | 2005 |
|-------------------------|------|-------|-------|
| Stock option plans: | | | |
| Expected life (years) | | 5.0 | 5.0 |
| Risk-free interest rate | | 4.9% | 4.0% |
| Expected Volatility | | 52.0% | 51.0% |
| Dividend yield | | 0.0% | 0.0% |

The weighted average fair value of employee stock purchase rights granted in 2007, 2006 and 2005 was \$4.88, \$5.18 and \$4.18, respectively. The fair value of the employees' purchase rights was estimated using the Black-Scholes option-pricing model with the following weighted average assumptions:

| | 2007 | 2006 | 2005 |
|---------------------------------|-------|-------|-------|
| Employee stock purchase rights: | | | |
| Expected life (years) | 0.5 | 0.5 | 0.5 |
| Risk-free interest rate | 5.0% | 4.8% | 2.7% |
| Expected volatility | 33.0% | 34.6% | 34.0% |
| Dividend yield | 0.0% | 0.0% | 0.0% |

Expected volatilities for 2007 and 2006 are based on a combination of implied and historical volatilities of our common stock and based on historical volatilities for 2005; the expected life represents the weighted average period of

time that options granted are expected to be outstanding giving consideration to vesting schedules and our historical exercise patterns; and the risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option.

The fair value of stock options and restricted stock awards that vested during the year ended December 31, 2007, 2006 and 2005 was approximately \$4,876,000, \$8,111,000 and \$10,097,000, respectively. As of December 31, 2007, the unrecognized compensation cost related to non-vested stock options and the unrecognized compensation cost related to restricted stock was approximately \$2,273,000 and \$17,247,000 respectively, and will be recognized over an estimated weighted average amortization period of 0.9 years and 1.9 years, respectively.

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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. Income and expense accounts are translated at the average exchange rates prevailing during the year. The resulting translation adjustments are included in accumulated other comprehensive income in consolidated stockholders' equity. Foreign exchange transaction gains and losses, which arise from transaction activity and are reflected in operations, were immaterial in 2007, 2006 and 2005.

Revenue Recognition and Accounts Receivable Allowances

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. In most transactions, the Company has no obligations to customers after the date products are shipped other than pursuant to warranty obligations. In some instances, the Company provides installation, training, support and services to customers after the product has been shipped. For revenue arrangements with multiple deliverables, the Company defers the fair value related to any undelivered elements until the undelivered element is delivered. Fair value is the price charged when the element is sold separately. 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 a maturity date of three months or less at the date of purchase are considered to be cash equivalents. 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.

The Company reviews its investment portfolio on a monthly basis to identify and evaluate individual investments that have indications of possible impairment. The factors considered in determining whether a loss is other-than-temporary include: the length of time and extent to which fair market value has been below the cost basis, the financial condition and near-term prospects of the issuer, credit quality, and the Company's ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in fair value. During this review, as of December 31, 2007, the Company determined that declines in the fair value of two of its investments in certain commercial paper were other-than-temporary. This commercial paper was issued by two structured investment vehicles (SIVs) that entered into receivership during the fourth quarter of 2007 and failed to make payment at maturity. Due to the

mortgage-related assets held by these issuers, they were exposed to adverse market conditions that affected the value of their collateral and their ability to access short-term funding. These investments are not currently trading on active markets, and therefore, have no readily determinable market value. As a result of the Company's evaluation as of December 31, 2007, it recorded a \$1,457,000 impairment charge to earnings based upon the Company receiving contemporaneous quotes from established third-party pricing services. This resulted in a new cost basis for the securities of \$4,275,000.

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The fair value of short-term available-for-sale investments with maturities or estimated lives of less than one year consists of the following:

| | December 31, | |
|--|---------------------|------------------|
| | 2007 | 2006 |
| Federal Government and Government Agency Obligations | \$ 46,813 | \$ 2,092 |
| Commercial Paper and Corporate Obligations | 52,984 | 72,657 |
| | \$ 99,797 | \$ 74,749 |

The fair value of long-term available-for-sale investments with maturities or estimated lives of one to five years consists of the following:

| | December 31, | |
|--|---------------------|-------------|
| | 2007 | 2006 |
| Commercial Paper and Corporate Obligations | \$ | \$ 2,816 |

The following table shows the gross unrealized gains and losses aggregated by investment category:

| | Cost | Gross Unrealized Gains | Gross Unrealized Losses | Estimated Fair Value |
|--|-------------|---------------------------------------|--|---------------------------------|
| As of December 31, 2007: | | | | |
| Federal Government and Government Agency Obligations | \$ 13,554 | \$ 15 | \$ | \$ 13,569 |
| Commercial Paper and Corporate Obligations | 13,853 | 39 | 64 | 13,828 |
| Total | \$ 27,407 | \$ 54 | \$ 64 | \$ 27,397 |
| As of December 31, 2006: | | | | |
| Commercial Paper and Corporate Obligations | \$ 29,581 | \$ 156 | \$ 19 | \$ 29,718 |

Interest income is accrued as earned. Dividend income is recognized as income on the date the stock trades ex-dividend. The cost of marketable securities sold is determined by the specific identification method and realized

gains or losses are reflected in income and were not material in 2007, 2006 and 2005.

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 and

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)
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office equipment, which includes ERP software. 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 acquired. These include acquired customer lists, technology, patents, trade name and covenants not to compete. Intangible assets are amortized from two 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. The Company assesses goodwill for impairment on an annual basis during the fourth quarter of each fiscal year, 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, 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 impairment is indicated, the assets are written down to their estimated fair value.

Research and Development

Research and development costs are expensed as incurred and consist mainly of compensation related expenses and project materials. The Company's research and development efforts include numerous projects, which generally have duration of 12 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 immaterial in 2007, 2006 and 2005.

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 net deferred tax assets and assesses the need for 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

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allowance to reduce its net deferred tax assets to the amount that is 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 operations. As of December 31, 2005, the Company had a valuation allowance of \$3,497,000 for its state tax credit carryforwards. During the fourth quarter of 2006, the Company determined that it would begin utilizing these aforementioned state tax credits and reduced the valuation allowance to reflect the amount of the state tax credits that are more likely than not expected to be utilized. The remaining valuation allowance at December 31, 2006 was \$317,000, related to the remaining state tax credits acquired with the purchase of Ion. During 2007, the Company increased the valuation allowance for the state tax loss carryforwards and state tax credits acquired in the purchase of YDI. The valuation allowance is \$534,000 at December 31, 2007.

New Accounting Pronouncements

In September 2006, the Financial Accounting Standards Board (the FASB) issued SFAS No. 157, Fair Value Measurements (SFAS 157). SFAS 157 clarifies the principle that fair value should be based on the assumptions market participants would use when pricing an asset or liability and establishes a fair value hierarchy that prioritizes the information used to develop those assumptions. Under the standard, fair value measurements would be separately disclosed by level within the fair value hierarchy. SFAS 157 is effective for fiscal years beginning after November 15, 2007, with early adoption permitted. The Company does not believe that SFAS 157 will have a material impact on its consolidated financial statements. Certain portions of SFAS 157 have been deferred for one year.

In February 2007, the FASB issued SFAS No. 159, The Fair Value Option for Financial Assets and Liabilities (SFAS 159). SFAS 159 permits companies to choose to measure certain financial instruments and certain other items at fair value and requires that unrealized gains and losses on items for which the fair value option has been elected be reported in earnings. SFAS 159 is effective for fiscal years beginning after November 15, 2007, although early adoption is permitted. The Company does not believe that SFAS 159 will have a material impact on its consolidated financial statements.

In December 2007, the FASB issued SFAS no. 141(R), Business Combinations , which replaces SFAS No. 141. This revised standard requires assets, liabilities and non-controlling interests acquired to be measured at fair value and requires that costs incurred to effect the acquisition be recognized separately from the business combination. In addition, this statement expands the scope to include all transactions and other events in which one entity obtains control over one or more businesses. This statement is effective for all business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after December 15, 2008. The Company is in the process of evaluating whether the adoption of this standard will have a material effect on its consolidated financial statements.

In December 2007, the FASB issued SFAS No. 160, Noncontrolling Interests in Consolidated Financial Statements, an Amendment of ARB No. 51 . This statement establishes accounting and reporting standards for the non-controlling interest in a subsidiary and for the deconsolidation of a subsidiary. This statement is effective for fiscal years beginning on or after December 15, 2008. The Company is in the process of evaluating whether the adoption of this standard will have a material effect on its financial position, results of operations or cash flows.

Use of Estimates

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. 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, stock-based compensation, inventory, intangible assets, goodwill, and other

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)
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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.

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 primarily related to Japanese, Korean 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, 2007, the amount that will be reclassified from accumulated other comprehensive income to cost of sales over the next twelve months is immaterial. The ineffective portion of the derivatives is recorded in cost of sales and was immaterial in 2007, 2006 and 2005.

The Company hedges certain intercompany and other payables with forward foreign exchange contracts. 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 or loss on these derivatives was immaterial in 2007, 2006 and 2005.

Realized and unrealized gains and losses on forward exchange contracts that do not qualify for hedge accounting are recognized immediately in earnings. The cash flows resulting from forward exchange contracts that qualify for hedge accounting are classified in the consolidated statement of cash flows as part of cash flows from operating activities. Cash flows resulting from forward exchange contracts that do not qualify for hedge accounting are classified in the consolidated 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 \$66,660,000 outstanding at December 31, 2007 of which \$39,925,000 were outstanding to exchange Japanese Yen for U.S. dollars. There were forward exchange contracts with notional amounts totaling \$20,324,000 outstanding at December 31, 2006 of which \$14,619,000 were outstanding to exchange Japanese yen for U.S. dollars. There were forward exchange contracts with notional amounts totaling \$35,299,000 outstanding at December 31, 2005. Of such forward exchange contracts, \$28,461,000 were outstanding to exchange Japanese yen for US dollars.

Gains and losses on forward exchange contracts that qualify for hedge accounting are classified in cost of goods sold and totaled a gain of \$1,312,000, \$1,932,000 and \$812,000 for the years ended December 31, 2007, 2006 and 2005, respectively.

The fair values of forward exchange contracts at December 31, 2007 and 2006, determined by applying period end currency exchange rates to the notional contract amounts, amounted to an unrealized gain of \$43,000 and \$998,000 for the years ended December 31, 2007 and 2006, respectively.

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 some banks with which it has borrowings. The Company maintains

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investments primarily in U.S. Treasury and government agency securities and corporate debt securities, with minimum rating of A1-P1 or AAA. The Company enters into forward currency contracts with high credit-quality financial institutions in order to minimize credit risk exposure. The Company's customers are primarily concentrated in the semiconductor industry, and a limited number of customers account for a significant portion of the Company's revenues. The Company regularly monitors the creditworthiness of its customers and believes it has adequately provided for potential credit loss exposures. Credit is extended for all customers based primarily on financial condition and collateral is not required.

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, therefore, 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, | |
|-----------------|---------------------|-------------|
| | 2007 | 2006 |
| Raw material | \$ 73,529 | \$ 82,007 |
| Work in process | 26,171 | 26,943 |
| Finished goods | 51,031 | 40,870 |
| | \$ 150,731 | \$ 149,820 |

5) Property, Plant and Equipment

Property, plant and equipment consist of the following:

| | December 31, | |
|---|---------------------|-------------|
| | 2007 | 2006 |
| Land | \$ 11,566 | \$ 11,310 |
| Buildings | 64,991 | 63,932 |
| Machinery and equipment | 86,747 | 87,136 |
| Furniture and fixtures and office equipment | 47,165 | 38,244 |

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| | | |
|---|-----------|-----------|
| Leasehold improvements | 13,750 | 8,082 |
| Construction in progress | 3,239 | 2,846 |
| | 227,458 | 211,550 |
| Less: accumulated depreciation and amortization | 146,093 | 132,087 |
| | \$ 81,365 | \$ 79,463 |

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Depreciation and amortization of property, plant and equipment totaled \$14,476,000, \$13,972,000 and \$12,351,000 for the years ended December 31, 2007, 2006 and 2005, respectively.

6) Debt**Credit Agreements and Short-Term Borrowings**

On July 31, 2007, the Company renewed an unsecured short-term LIBOR based loan agreement with a bank to be utilized primarily by its Japanese subsidiary for short-term liquidity purposes. The credit line, which expires on July 31, 2008, provides for the Company to borrow in multiple currencies of up to an equivalent of \$35,000,000 U.S. dollars. At December 31, 2007, the Company had outstanding borrowings of \$8,952,000 U.S. dollars, payable on demand, at an interest rate of 1.62%.

Additionally, the Company's Japanese subsidiary has lines of credit and short-term borrowing arrangements with two financial institutions which provide for aggregate borrowings as of December 31, 2007 of up to \$22,379,000, which generally expire and are renewed at three month intervals. At December 31, 2007 and 2006, total borrowings outstanding under these arrangements were \$10,015,000 and \$5,041,000, respectively, at interest rates ranging from 1.24% to 1.875% at December 31, 2007 and at an interest rate of 1.50% at December 31, 2006.

Long-Term Debt

Long-term debt consists of the following:

| | December 31, | |
|-------------------------------------|---------------------|-------------|
| | 2007 | 2006 |
| Mortgage notes | \$ 5,000 | \$ 5,000 |
| Less: current portion | | |
| Long-term debt less current portion | \$ 5,000 | \$ 5,000 |

The Company has 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, 2007 the interest rate was 4.0%. The bond is collateralized by the building. The remaining principal balance outstanding at December 31, 2007 was \$5,000,000. The net book value of the building at December 31, 2007 was approximately \$9,472,000.

7) Commitments and Contingencies

On October 3, 2005, MKS entered into a settlement agreement with Advanced Energy Industries, Inc. (Advanced Energy), pursuant to which Advanced Energy paid MKS \$3,000,000 in cash in October 2005. The settlement agreement was entered into in connection with a patent infringement litigation suit.

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 2012 and thereafter. Generally, the facility leases require the Company to pay

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maintenance, insurance and real estate taxes. Rental expense under operating leases totaled \$8,257,000, \$7,443,000 and \$7,439,000, for the years ended December 31, 2007, 2006 and 2005, respectively.

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

| | Operating Leases | Capital Leases |
|---|-------------------------|-----------------------|
| Year ending December 31, | | |
| 2008 | \$ 8,431 | \$ 1,345 |
| 2009 | 6,287 | 744 |
| 2010 | 5,096 | 160 |
| 2011 | 3,678 | |
| 2012 | 3,208 | |
| Thereafter | 12,102 | |
| Total minimum lease payments | \$ 38,802 | 2,249 |
| Less: amounts representing interest | | 142 |
| Present value of minimum lease payments | | 2,107 |
| Less: current portion | | 1,236 |
| Long-term portion | | \$ 871 |

As of December 31, 2007, the Company has entered into non-cancelable purchase commitments for certain inventory components and other equipment and services used in its normal operations. The majority of these purchase commitments covered by these arrangements are for periods of less than one year and aggregate to approximately \$103,689,000. Additionally, the Company has engaged a third party to provide certain computer equipment, IT network services and IT support. This contract is for a period of approximately six years beginning in September 2004 and has a significant penalty for early termination. The obligation at December 31, 2007 of approximately \$20,803,000, excluding capital lease and interest payments of \$2,249,000, will be paid over the term of the arrangement. Average annual payments are expected to be approximately \$6,934,000.

To the extent permitted by Massachusetts law, the Company's Restated Articles of Organization, as amended, require the Company to indemnify any of its current or former officers or directors or any person who has served or is serving in any capacity with respect to any of the Company's employee benefit plans. Because no claim for indemnification has been pursued by any person covered by the relevant provisions of the Company's Restated Articles of Organization, the Company believes that the estimated exposure for these indemnification obligations is currently minimal. Accordingly, the Company has no liabilities recorded for these requirements as of December 31, 2007.

The Company also enters into agreements in the ordinary course of business which include indemnification provisions. Pursuant to these agreements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified party, generally its customers, for losses suffered or incurred by the indemnified party in connection with certain patent or other intellectual property infringement claims, and, in some instances, other claims, by any third party with respect to the Company's products. The term of these indemnification obligations is generally perpetual 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, not contractually limited. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification obligations. As a result, the Company believes the estimated fair value of these obligations is minimal. Accordingly, the Company has no liabilities recorded for these obligations as of December 31, 2007.

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

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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 amounts 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

Stock Repurchase Program

On February 12, 2007, MKS Board of Directors approved a share repurchase program (the Program) for the repurchase of up to \$300,000,000 of its outstanding stock over the subsequent two years. The repurchases may be made from time to time on the open market or through privately negotiated transactions. The timing and amount of any shares repurchased under the Program will depend on a variety of factors, including price, corporate and regulatory requirements, capital availability, and other market conditions. The Program may be discontinued at any time at the discretion of the Company and its Board of Directors. During the year ended December 31, 2007, the Company repurchased 4,779,000 shares of common stock for \$101,157,000 for an average price of \$21.17 per share. From January 1, 2008 through February 21, 2008, the Company purchased 812,210 shares of common stock for \$15,744,914, representing an average price of \$19.39 per share.

Stock Purchase Plans

The Company's Third Amended and Restated 1999 Employee Stock Purchase Plan (the Purchase Plan) authorizes the issuance of up to an aggregate of 1,250,000 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 Global Market on the day that each offering commences or (2) 85% of the closing price on the day that each offering terminates. During 2007 and 2006, the Company issued 166,127 and 120,515 shares, respectively, of Common Stock to employees who participated in the Purchase Plan at exercise prices of \$17.64 and \$15.44 per share in 2007 and \$16.59 and \$17.65 per share in 2006, respectively. As of December 31, 2007, there were 305,445 shares reserved for future issuance under the Purchase Plan.

The Company's Second Amended and Restated International Employee Stock Purchase Plan (the Foreign Purchase Plan) authorizes the issuance of up to an aggregate of 250,000 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 Global Market on the day that each offering commences or (2) 85% of the closing price on the day that each offering terminates. During 2007 and 2006, the Company issued 32,803 and 23,236, respectively, shares of Common Stock to employees who participated in the Foreign Purchase Plan at exercise prices of \$17.64 and \$15.44 per share in 2007 and \$16.59 and \$17.65 per share in 2006, respectively. As of December 31, 2007, there were 82,417 shares reserved for future issuance under the Foreign Purchase Plan.

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MKS INSTRUMENTS, INC.

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Equity Incentive Plans

The Company's equity incentive plans (the Plans) are intended to attract and retain employees and to provide an incentive for them to assist the Company to achieve long-range performance goals and to enable them to participate in the long-term growth of the Company. Employees may be granted restricted stock and restricted stock units (collectively, restricted stock), options to purchase shares of the Company's stock and other equity incentives under the Plans.

The Company's 2004 Stock Incentive Plan (the 2004 Plan) was adopted by the board of directors on March 4, 2004 and approved by the stockholders on May 13, 2004. As of December 31, 2007 there were 8,245,399 shares authorized for issuance under the 2004 Plan, which amount shall increase each year by an amount equal to 5% of the total outstanding shares of the Company's common stock outstanding on January 1 of such year, provided that the maximum aggregate number of shares of common stock which may be issued under the 2004 Plan is 15,000,000 shares (subject to adjustment for certain changes in MKS' capitalization). The Company may grant options, restricted stock awards, stock appreciation rights and other stock-based awards to employees, officers, directors, consultants and advisors under the 2004 Plan. As of December 31, 2007 there were 6,832,159 shares available for future grant under the 2004 Plan.

The Company's Second Restated 1995 Stock Incentive Plan (the 1995 Plan) expired in November 2005 and no further awards may be granted under the 1995 Plan, although there are still outstanding options available for exercise under this plan.

The Company's 1997 Director Stock Plan (the 1997 Director Plan) provides for (i) the initial grant of options to purchase 20,000 shares of common stock to each person who first becomes an outside director and (ii) annual grants of options to purchase 12,000 shares of common stock on the date of the annual meeting of stockholders. In December 2004, the board of directors amended the 1997 Director Plan to allow for all options granted on or after May 17, 2000 to be exercisable within the three year period from the date of the director's termination as director. On March 4, 2004, the board of directors approved, and on May 13, 2004, the stockholders approved, an increase in the number of shares available for issuance under the 1997 Director Plan from 300,000 shares to 750,000 shares. The 1997 Director Plan was terminated on February 12, 2007.

On January 7, 2005, the Company accelerated the vesting of outstanding options with an exercise price of \$23.00 or greater. As a result of this action, options to purchase approximately 1,600,000 shares became exercisable on January 7, 2005. No compensation expense was recorded in 2005 related to this action as these options had no intrinsic value on January 7, 2005. The reason that the Company accelerated the vesting of the identified stock options was to reduce the Company's compensation charges in future years.

The Company has granted options to employees under the 2004 Plan, 1995 Plan and the 1993 Stock Option Plan and to directors under the 1997 Director Plan and the 1996 Director Stock Option Plan (collectively, the Plans). The Plans are administered by the compensation committee of the Company's board of directors.

At December 31, 2007, 6,832,159 shares of the Company's common stock were available for future grants under the Plans. Stock options are granted at an exercise price equal to 100% of the fair value of the Company's common stock.

Generally, stock options granted to employees under the Plans in 2001 and after, 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. Options granted to directors generally vest at the earliest of (1) the next annual meeting, (2) 13 months from date of grant, or (3) the effective date of an acquisition. Restricted stock awards generally vest three years from the date of grant.

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(Table in thousands, except share and per share data)

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

| | Year Ended December 31, | | | | | |
|---------------------------------|-------------------------|--|-------------|--|------------|--|
| | 2007 | | 2006 | | 2005 | |
| | Options | Weighted Average Exercise Price | Options | Weighted Average Exercise Price | Options | Weighted Average Exercise Price |
| Outstanding beginning of period | 7,614,655 | \$ 21.62 | 9,459,271 | \$ 20.36 | 10,023,717 | \$ 20.25 |
| Granted | | | 102,000 | \$ 22.94 | 316,500 | \$ 16.93 |
| Exercised | (2,233,303) | \$ 18.58 | (1,563,706) | \$ 13.33 | (382,211) | \$ 10.70 |
| Forfeited or Expired | (258,296) | \$ 25.59 | (382,910) | \$ 24.64 | (498,735) | \$ 23.34 |
| Outstanding end of period | 5,123,056 | \$ 22.74 | 7,614,655 | \$ 21.62 | 9,459,271 | \$ 20.36 |
| Exercisable at end of period | 4,810,516 | \$ 23.22 | 6,720,395 | \$ 22.36 | 7,750,739 | \$ 21.45 |

The following table presents the activity for restricted stock under the Plans:

| | Years Ended December 31, | | | |
|---|-----------------------------------|--|-----------------------------------|--|
| | 2007 | | 2006 | |
| | Non-vested Restricted Stock | Weighted Average Grant Date Fair Value | Non-vested Restricted Stock | Weighted Average Grant Date Fair Value |
| Non-vested restricted stock beginning of period | 714,125 | \$ 22.00 | \$ | \$ |
| Granted | 775,353 | \$ 22.06 | 741,090 | \$ 22.01 |
| Vested | (4,527) | \$ 23.39 | (1,250) | \$ 23.43 |
| Forfeited or Expired | (135,601) | \$ 22.53 | (25,715) | \$ 22.27 |
| Non-vested restricted stock end of period | 1,349,350 | \$ 21.98 | 714,125 | \$ 22.00 |

The following table summarizes information with respect to options outstanding and exercisable under the Plans at December 31, 2007:

| | | Options Outstanding | | | | Options Exercisable | | |
|-----------|----------|---------------------|-------------|------------|-----------|---------------------|------------|------------|
| | | Weighted | Weighted | Aggregate | | Weighted | Aggregate | |
| | | Average | Average | Intrinsic | | Average | Intrinsic | |
| | | Price | Remaining | Value | | Price | Value | |
| | | | Contractual | (In | | | (In | |
| | | | Life (In | Thousands) | | | Thousands) | |
| | | | Years) | | Number of | | | |
| | | | | | Shares | | | |
| | | | | | | | | |
| Number | Exercise | Exercise | Contractual | (In | Number of | Exercise | Intrinsic | |
| of Shares | Price | Price | Life (In | Thousands) | Shares | Price | Value | (In |
| | | | Years) | | | | (In | Thousands) |
| | | | | | | | | |
| \$ 6.67 | \$13.87 | 96,174 | \$ 8.99 | 1.85 | \$ 976 | 95,517 | \$ 8.96 | \$ 972 |
| \$14.00 | \$19.00 | 1,735,341 | \$ 15.95 | 5.38 | 5,535 | 1,436,532 | \$ 16.12 | 4,338 |
| \$19.40 | \$29.50 | 2,530,041 | \$ 25.02 | 4.80 | | 2,516,967 | \$ 25.05 | |
| \$29.93 | \$61.50 | 761,500 | \$ 32.36 | 4.12 | | 761,500 | \$ 32.36 | |
| | | 5,123,056 | \$ 22.74 | 4.84 | \$ 6,511 | 4,810,516 | \$ 23.22 | \$ 5,310 |

The weighted average remaining contractual life of options exercisable was 4.71 years at December 31, 2007.

The aggregate intrinsic value in the table above represents the total pretax intrinsic value, based on the Company's closing stock price of \$19.14 as of December 31, 2007, which would have been received by the option holders had all option holders exercised their options as of that date. The total number of in-the-money options exercisable as of December 31, 2007 was 1,532,049.

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The total cash received from employees as a result of employee stock option exercises during the years ended December 31, 2007 and 2006 was approximately \$42,005,000 and \$20,838,000, respectively. In connection with these exercises, the net tax benefits realized by the Company for the years ended December 31, 2007 and 2006 were approximately \$5,712,000 and \$4,614,000, respectively.

The Company settles employee stock option exercises with newly issued common shares.

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 | Unrealized Gain (Loss) on Investments | Accumulated Other Comprehensive Income (Loss) |
|---|---|---|--|--|
| Balance at December 31, 2005 | \$ 6,294 | \$ 594 | \$ 48 | \$ 6,936 |
| Foreign currency translation adjustment, net of taxes of \$0 | 3,172 | | | 3,172 |
| Changes in value of financial instruments designated as cash flow hedges, net of tax benefit of \$90 | | (149) | | (149) |
| Change in unrealized gain on investments, net of taxes of \$64 | | | 106 | 106 |
| Balance at December 31, 2006 | \$ 9,466 | \$ 445 | \$ 154 | \$ 10,065 |
| Foreign currency translation adjustment, net of taxes of \$0 | 3,744 | | | 3,744 |
| Changes in value of financial instruments designated as cash flow hedges, net of tax benefit of \$423 | | (532) | | (532) |
| Change in unrealized (loss) on investments, net of tax benefit of \$71 | | | (90) | (90) |
| Balance at December 31, 2007 | \$ 13,210 | \$ (87) | \$ 64 | \$ 13,187 |

9) Income Taxes

A reconciliation of the Company's 2007, 2006 and 2005 effective tax rate to the U.S. federal statutory rate follows:

| | 2007 | 2006 | 2005 |
|---|-------------|-------------|-------------|
| U.S. Federal income tax statutory rate | 35.0% | 35.0% | 35.0% |
| Federal and state tax credits | (4.3) | (1.7) | (4.7) |
| State income taxes, net of federal benefit | 1.7 | 2.3 | 1.7 |
| Effect of foreign operations taxed at various rates | (4.9) | (7.1) | (5.3) |
| Extraterritorial income and qualified production activity tax benefit | (0.7) | (0.9) | (2.0) |
| Deferred tax asset valuation allowance | | (2.1) | 1.3 |
| Other | 1.2 | 2.5 | 0.5 |
| | 28.0% | 28.0% | 26.5% |

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

| | Year Ended December 31, | | |
|-----------------------------|--------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Income before income taxes: | | | |
| United States | \$ 64,228 | \$ 72,276 | \$ 14,872 |
| Foreign | 55,788 | 58,665 | 32,135 |
| | \$ 120,016 | \$ 130,941 | \$ 47,007 |
| Current taxes: | | | |
| United States Federal | \$ 29,663 | \$ 36,056 | \$ 1,958 |
| State | 1,682 | 3,252 | 1,259 |
| Foreign | 12,594 | 8,916 | 8,922 |
| | 43,939 | 48,224 | 12,139 |
| Deferred taxes: | | | |
| United States Federal | (7,741) | (9,219) | 856 |
| State and Foreign | (2,542) | (2,299) | (553) |
| | (10,283) | (11,518) | 303 |
| Provision for income taxes | \$ 33,656 | \$ 36,706 | \$ 12,442 |

At December 31, 2007 and 2006, the significant components of the deferred tax assets and deferred tax liabilities were as follows:

| | 2007 | 2006 |
|--|-------------|-------------|
| Deferred tax assets: | | |
| Net operating losses and credits | \$ 7,604 | \$ 2,751 |
| Inventory and warranty reserves | 14,632 | 13,863 |
| Accounts receivable and other accruals | 2,310 | 5,320 |
| Depreciation and amortization | 6,030 | 5,988 |
| Stock-based compensation | 8,424 | 4,447 |
| Other | 6,346 | 2,316 |
| Total deferred tax assets | 45,346 | 34,685 |

| | | |
|--------------------------------|-----------|-----------|
| Deferred tax liabilities: | | |
| Acquired intangible assets | (17,560) | (18,618) |
| Other | (508) | (498) |
| Total deferred tax liabilities | (18,068) | (19,116) |
| Valuation allowance | (534) | (317) |
| Net deferred tax assets | \$ 26,744 | \$ 15,252 |

At December 31, 2007 and 2006, the Company had Massachusetts research credit carryforwards of \$4,477,000 and \$3,341,000, respectively. These credit carryforwards will expire at various dates through 2022.

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At December 31, 2007, as a result of the acquisition of YDI, the Company had a federal net operating loss carryforward of \$8,832,000 and a federal general business credit carryforward of \$810,000. The Company's intention is to carryforward both these tax attributes, subject to the limitations of the Internal Revenue Code. The loss and credit carryforwards expire at various dates through 2027.

At December 31, 2006, as a result of the acquisition of Ion Systems Inc., the Company had a federal net operating loss carryforward of \$1,216,000 and a federal general business credit carryforward of \$71,000. The Company carried both of these tax attributes to previous Ion tax years and recovered \$497,000 of previously paid taxes.

Although the Company believes that its tax positions are consistent with applicable U.S. federal, state and international laws, certain tax reserves are maintained at December 31, 2007 should these positions be challenged by the applicable tax authority and additional tax assessed on audit.

The Company has adopted FASB Interpretation 48, Accounting for Uncertainty in Income Taxes (FIN 48), as of January 1, 2007. As a result of the implementation of FIN 48, the Company did not recognize an adjustment in the liability for unrecognized income tax benefits. A reconciliation of the beginning and ending amount of gross unrecognized tax benefits is as follows:

| | |
|--|---------------|
| Balance at January 1, 2007 | \$ 11,637,000 |
| Increases for prior years | 1,264,000 |
| Increases for the current year | 3,240,000 |
| Reductions related to settlements with taxing authorities | |
| Reductions related to expiration of statute of limitations | (18,000) |
| Balance at December 31, 2007 | \$ 16,123,000 |

At December 31, 2007, if these benefits were recognized in a future period, the timing of which is not estimable, the net unrecognized tax benefit of approximately \$13,242,000 would impact our effective tax rate.

MKS and its subsidiaries are subject to U.S. federal income tax as well as the income tax of multiple state and foreign jurisdictions. The Company has concluded all U.S. federal income tax matters for years through 2002. The 2003 Federal tax year remains open to the extent of the loss carryforwards to 2004 and 2005. As of December 31, 2007, there were on-going audits in various other tax jurisdictions.

Over the next 12 months it is reasonably possible that the Company may recognize \$4,300,000 to \$4,800,000 of previously unrecognized tax benefits related to various federal, state and foreign tax positions as a result of the conclusion of various audits and the expiration of the statute of limitations. The following tax years, in the major tax jurisdictions noted, are open for assessment or refund: U.S. Federal: 2003 to 2006, Germany: 2001 to 2006, Korea: 2005 to 2006, Japan: 2000 to 2006 and the United Kingdom: 2005 and 2006.

The Company accrues interest and penalties, if applicable, for any uncertain tax positions. Any interest and penalty expense is a component of income tax expense. At the date of adoption of FIN 48 and at December 31, 2007, the Company had \$700,000 and \$1,500,000, respectively, accrued for interest on unrecognized tax benefits.

For the year ended December 31, 2007, the Company amended prior federal tax returns to reflect revised estimates for qualifying research and development costs that allowed the company to claim additional research tax credits. As a result of this claim, the Company recorded a benefit to income tax expense of \$1,800,000 million.

During the year ended December 31, 2006, the Company received a notification letter from the Israeli Ministry of Industry Trade and Labor (MITL) indicating that its Israeli operations were in compliance with requirements relating to the tax holiday granted to its manufacturing operations in Israel in 2001. This tax holiday is anticipated to expire in 2011 and is subject to meeting continued investment, employment and other requirements under the

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guidelines of the MITL. This tax holiday resulted in income tax savings of \$3,393,000, \$5,125,000 and \$1,190,000 for the years ended December 31, 2007, 2006 and 2005, respectively.

Additionally, for the year ended December 31, 2006, the Company recorded the impact of both a change in German tax rules allowing interest deductions on certain loans and adjustments relating to transfer pricing. As a result of these items the Company recorded additional income tax benefits of \$1,565,000 for the year ended December 31, 2006. The net reduction in the valuation allowance for the year ended December 31, 2006 resulted from the utilization of tax credit carryovers of \$2,706,000 and the expiration of credits of \$474,000 on a merged subsidiary.

During 2005, the Internal Revenue Service (IRS) completed its examination of the Company s tax returns for the tax years 1999 through 2002. As a result of this examination, during the year ended December 31, 2005, the Company recorded a reduction in income taxes payable of \$1,621,000, a benefit to income tax expense of \$1,901,000 and a \$576,000 reduction of goodwill related to a previous acquisition.

On October 22, 2004, the American Jobs Creation Act of 2004 (the Act) was signed into law. The Act contains a provision allowing U.S. multinational companies a one-time incentive to repatriate foreign earnings at an effective tax rate of 5.25%. During 2005, the Company conducted an extensive study of the new provision and concluded that no opportunities existed from which the Company could benefit from repatriation of its undistributed foreign earnings. Through December 31, 2007, the Company has not provided deferred income taxes on the undistributed earnings of its foreign subsidiaries because such earnings were intended to be permanently reinvested outside the U.S. Determination of the potential deferred income tax liability on these undistributed earnings is not practicable because such liability, if any, is dependent on circumstances existing if and when remittance occurs. At December 31, 2007, the Company had \$199,253,000 of undistributed earnings in its foreign subsidiaries.

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 between 1% and 50% of their annual compensation to this plan, and, with respect to employees who are age 50 and older, certain specified additional amounts, limited by an annual maximum amount determined by the IRS. 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 \$2,516,000 \$2,385,000 and \$1,894,000 for 2007, 2006 and 2005, 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. The bonus expense was \$3,713,000 in 2007, \$10,300,000 in 2006 and was \$2,402,000 in 2005.

The Company provides supplemental retirement benefits for certain of its officers and executive officers. This obligation was \$5,765,000 and \$3,098,000 at December 31, 2007 and 2006, respectively.

11) Segment and Geographical Information and Significant Customer

The Company operates in one segment for the development, manufacturing, sales and servicing of products that measure, control, power and monitor critical parameters of advanced manufacturing processes. The Company's chief decision-maker reviews consolidated operating results to make decisions about allocating resources and assessing performance for the entire Company.

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Information about the Company's operations in different geographic regions is presented in the tables below. 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.

| | Year Ended December 31, | | |
|----------------------|--------------------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Geographic net sales | | | |
| United States | \$ 477,801 | \$ 515,896 | \$ 320,816 |
| Japan | 103,474 | 96,936 | 79,820 |
| Europe | 88,279 | 70,648 | 52,687 |
| Asia | 110,933 | 99,321 | 55,971 |
| | \$ 780,487 | \$ 782,801 | \$ 509,294 |

| | December 31, | |
|-------------------|---------------------|-------------|
| | 2007 | 2006 |
| Long-lived assets | | |
| United States | \$ 63,731 | \$ 68,393 |
| Japan | 6,520 | 5,479 |
| Europe | 4,386 | 4,908 |
| Asia | 9,269 | 3,609 |
| | \$ 83,906 | \$ 82,389 |

The Company groups its products into three product groups. Net sales for these product groups are as follows:

| | December 31, | | |
|---------------------------------|---------------------|-------------|-------------|
| | 2007 | 2006 | 2005 |
| Instruments and Control Systems | \$ 377,992 | \$ 371,919 | \$ 233,279 |
| Power and Reactive Gas Products | 319,403 | 328,810 | 215,858 |
| Vacuum and Other Products | 83,092 | 82,072 | 60,157 |
| | \$ 780,487 | \$ 782,801 | \$ 509,294 |

The Company had one customer comprising 20%, 21% and 18% of net sales for the years ended December 31, 2007, 2006 and 2005, respectively. During the years ended December 31, 2007, 2006 and 2005, the Company estimates that approximately 68%, 70% and 71% of its net sales, respectively, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers.

12) Acquisitions

On November 7, 2007, the Company acquired Yield Dynamics, Inc. (YDI), a provider of yield management technology located in Sunnyvale, California. YDI s data and yield management software, along with MKS portfolio of sensors that control critical processes, data collection and integration hardware, and real-time fault detection and classification software, provides a comprehensive offering for generating, collecting and analyzing process sensor data and correlating the data to wafers, chambers and tools across the semiconductor fab as well as other thin film manufacturing processes. The purchase price consisted of \$23,659,000 in cash, net of \$651,000 in cash acquired and \$363,000 in acquisition related costs. The purchase agreement includes contingent payments of up to \$10,000,000 based upon achieving specific annual and cumulative revenue targets between 2008 and 2010.

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The following table summarizes the estimated fair value of the assets acquired and liabilities assumed at the date of the acquisition:

| | |
|--|---------------|
| Current assets | \$ 693 |
| Intangible assets | 9,010 |
| Other assets | 4,039 |
| Goodwill | 15,407 |
| Total assets acquired | 29,149 |
| Current liabilities | (844) |
| Deferred tax liabilities | (3,632) |
| Total liabilities assumed | (4,476) |
| Total purchase price including acquisition costs | \$ 24,673 |

The goodwill and other intangible assets associated with the acquisition are not deductible for tax purposes. Of the \$9,010,000 of acquired intangible assets, the following table reflects the allocation of the acquired intangible assets and related estimates of useful lives:

| | | |
|-------------------------------------|--------------|----------------------|
| Customer relationships | \$ 2,300 | 8-year useful life |
| Completed technology | 5,500 | 6-year useful life |
| Others | 310 | 2-5-year useful life |
| In-process research and development | 900 | |
| | \$ 9,010 | |

This transaction resulted in an amount of purchase price that exceeded the estimated fair values of tangible and intangible assets, which was allocated to goodwill. The Company believes that the amount of goodwill relative to identifiable intangible assets relates to several factors including: (1) being a provider of yield management software technology which will be increasingly important to solution providers for semiconductor and other industrial customers and (2) enhanced ability to combine YDI's software products with MKS' multivariate software and traditional hardware products.

On January 3, 2006, the Company completed its acquisition of Ion Systems, Inc. (Ion), a leading provider of electrostatic management solutions located in Alameda, California, pursuant to an Agreement and Plan of Merger dated November 25, 2005. Ion's ionization technology monitors electrostatic charge to reduce process contamination and improve yields, which complements the Company's process monitoring and control technologies. The aggregate

purchase price consisted of \$68,073,000 in cash, net of \$5,056,000 in cash acquired, and \$807,000 in acquisition related costs.

Table of Contents**MKS INSTRUMENTS, INC.****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**
(Table in thousands, except share and per share data)

The following table summarizes the estimated fair value of the assets acquired and liabilities assumed at the date of the acquisition:

| | |
|--|-----------|
| Current assets | \$ 17,310 |
| Intangible assets | 25,947 |
| Other assets | 3,066 |
| Goodwill | 45,017 |
| | |
| Total assets acquired | 91,340 |
| Current liabilities | (7,245) |
| Deferred tax liabilities | (10,159) |
| | |
| Total liabilities assumed | (17,404) |
| | |
| Total purchase price including acquisition costs | \$ 73,936 |

The goodwill and other intangible assets associated with the acquisition are not deductible for tax purposes. Of the \$25,947,000 of acquired intangible assets, the following table reflects the allocation of the acquired intangible assets and related estimates of useful lives:

| | | |
|-------------------------------------|-----------|--------------------|
| Customer relationships | \$ 11,992 | 8-year useful life |
| Completed technology | 10,255 | 6-year useful life |
| Trade names | 2,300 | 8-year useful life |
| Order backlog | 1,000 | 3 months |
| In-process research and development | 400 | |
| | | |
| | \$ 25,947 | |

This transaction resulted in an amount of purchase price that exceeded the estimated fair values of tangible and intangible assets, which was allocated to goodwill. The Company believes that the amount of goodwill relative to identifiable intangible assets relates to several factors including: (1) potential buyer-specific synergies related to market opportunities for a combined product offering and (2) potential to leverage the Company's sales force and intellectual property to attract new customers and revenue.

On January 3, 2006, the Company completed its acquisition of Umetrics, AB (Umetrics), a leader in multivariate data analysis and modeling software located in Umea, Sweden, pursuant to a Sale and Purchase Agreement dated December 15, 2005. Umetrics' multivariate data analysis and modeling software converts process data into useable information for yield improvement when linked with the Company's open and modular platform of process sensors and data collection, integration, data storage, and visualization capabilities. The purchase price consisted of

\$27,400,000 in cash, net of \$2,602,000 in cash acquired, and \$392,000 in acquisition related costs.

Table of Contents**MKS INSTRUMENTS, INC.****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**
(Table in thousands, except share and per share data)

The following table summarizes the estimated fair value of the assets acquired and liabilities assumed at the date of the acquisition:

| | |
|--|---------------|
| Current assets | \$ 4,243 |
| Intangible assets | 7,650 |
| Other assets | 400 |
| Goodwill | 22,060 |
| Total assets acquired | 34,353 |
| Current liabilities | (1,929) |
| Deferred tax liabilities | (2,030) |
| Total liabilities assumed | (3,959) |
| Total purchase price including acquisition costs | \$ 30,394 |

The goodwill and other intangible assets associated with the acquisition are not deductible for tax purposes. Of the \$7,650,000 of acquired intangible assets, the following table reflects the allocation of the acquired intangible assets and related estimates of useful lives:

| | | |
|-------------------------------------|--------------|----------------------|
| Customer relationships | \$ 2,300 | 8-year useful life |
| Completed technology | 4,150 | 4-6-year useful life |
| Trade names | 800 | 8-year useful life |
| In-process research and development | 400 | |
| | \$ 7,650 | |

This transaction resulted in an amount of purchase price that exceeded the estimated fair values of tangible and intangible assets, which was allocated to goodwill. The Company believes that the amount of goodwill relative to identifiable intangible assets relates to several factors including: (1) being a provider of multivariate software technology which will be increasingly important to solution providers for semiconductor and other industrial customers and (2) enhanced ability to combine Umetrics' software products with MKS' traditional hardware products.

Ion's ionization technology and Umetrics' multivariate data analysis technology both complement our process control and monitoring technologies and will support the Company's mission to improve process performance and productivity.

On October 11, 2006, we completed our acquisition of Novx Corp. (Novx), a provider of electrostatic charge monitoring technology for semiconductor, data storage, telecommunication, medical device and other markets. Novx's

technology expands our capability to monitor, detect and control electrostatic charge in advanced process environments, such as semiconductor and hard disk drive manufacturing. The total purchase price for Novx was \$2,552,000.

The results of these acquisitions were included in the Company's consolidated operations beginning on the date of acquisition. The pro forma consolidated statements reflecting the operating results of YDI, had it been acquired as of January 1, 2007, would not differ materially from the operating results of the Company as reported for the twelve months ended December 31, 2007. The pro forma consolidated statements reflecting the operating results of Ion, Umetrics and Novx, had they been acquired as of January 1, 2006, would not differ materially from the operating results of the Company for the twelve months ended December 31, 2006.

Table of Contents**MKS INSTRUMENTS, INC.****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**
(Table in thousands, except share and per share data)**13) Goodwill and Intangible Assets**

The Company is required to perform an annual impairment test of its goodwill under the provisions of SFAS 142. SFAS 142 requires that companies identify and assess goodwill at the reporting unit level. Reporting units are defined as operating segments or one level below an operating segment, referred to as a component. The Company has determined that its reporting units are components of its operating segment. The Company allocates goodwill to reporting units at the time of acquisition and bases that allocation on which reporting units will benefit from the acquired assets and liabilities. The fair value of each reporting unit with goodwill is compared to its recorded book value. An excess of book value over fair value indicates that an impairment of goodwill exists. Fair value is based on a discounted cash flow analysis of expectations of future earnings for each of the reporting units with goodwill. The Company completed its annual impairment test for 2007 and 2006 and concluded that no impairment of goodwill existed as of October 31, 2007 or October 31, 2006, the annual goodwill measurement date.

The changes in the carrying amount of goodwill during the years ended December 31, 2007 and 2006 were as follows:

| | Year Ended | |
|---|---------------------|--------------------------|
| | December 31, | December 31, 2006 |
| | 2007 | |
| Balance, beginning of year | \$ 323,973 | \$ 255,243 |
| Goodwill acquired during the year | 15,407 | 68,606 |
| Adjustments to previously recorded goodwill | (1,907) | 124 |
| Balance, end of year | \$ 337,473 | \$ 323,973 |

The adjustments to previously recorded goodwill for 2007 relate mainly to various tax adjustments for previous acquisitions.

Components of the Company's acquired intangible assets are comprised of the following:

| | December 31, 2007 | | December 31, 2006 | |
|--|--------------------------|---------------------|--------------------------|---------------------|
| | Gross | Accumulated | Gross | Accumulated |
| | Carrying | Amortization | Carrying | Amortization |
| | Amount | Amount | Amount | Amount |
| Completed technology | \$ 93,204 | \$ (75,681) | \$ 87,087 | \$ (63,570) |
| Customer relationships | 23,542 | (9,644) | 20,932 | (7,139) |
| Patents, trademarks, trade names and other | 29,729 | (25,009) | 16,494 | (10,700) |
| | \$ 146,475 | \$ (110,334) | \$ 124,513 | \$ (81,409) |

Aggregate amortization expense related to acquired intangibles for the years ended December 31, 2007, 2006 and 2005 were \$17,083,000, \$17,376,000 and \$13,864,000, respectively. Estimated amortization expense related to acquired intangibles for each of the five succeeding years is as follows:

| Year | Amount |
|-------------|---------------|
| 2008 | \$ 8,912 |
| 2009 | 7,313 |
| 2010 | 6,132 |
| 2011 | 5,707 |
| 2012 | 3,484 |

Table of Contents**MKS INSTRUMENTS, INC.****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)**
(Table in thousands, except share and per share data)**14) 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 years ended December 31, were as follows:

| | 2007 | 2006 |
|--|-------------|-------------|
| Balance at beginning of year | \$ 11,549 | \$ 7,766 |
| Warranty assumed through acquisitions | | 612 |
| Provisions for product warranties | 5,992 | 13,006 |
| Direct charges to the warranty liability | (8,044) | (9,835) |
| Balance at end of year | \$ 9,497 | \$ 11,549 |

15) Other Balance Sheet Information

| | December 31, | |
|------------------------------|---------------------|-------------|
| | 2007 | 2006 |
| Other Assets: | | |
| Deferred tax assets, net | \$ 8,760 | \$ |
| Other | 2,541 | 2,926 |
| Total other assets | \$ 11,301 | \$ 2,926 |
| Other Accrued Expenses: | | |
| Product warranties | \$ 9,497 | \$ 11,549 |
| Deferred revenue | 5,084 | 3,819 |
| Other | 10,787 | 9,663 |
| Total other accrued expenses | \$ 25,368 | \$ 25,031 |
| Other Liabilities: | | |
| Income tax payable | \$ 12,782 | \$ |

| | | |
|-------------------------|-----------|----------|
| Accrued compensation | 7,621 | 4,725 |
| Other | 232 | 231 |
| Total other liabilities | \$ 20,635 | \$ 4,956 |

16) Related Party Transactions

The Vice President and General Manager of the Company's Vacuum Products Group is the general partner of two real estate entities (the Aspen Entities). The Company leased from the Aspen Entities certain facilities occupied by the Company's Vacuum Products Group in Boulder, Colorado until the Aspen Entities sold those facilities to a third party on March 30, 2007. The Company paid the Aspen Entities \$191,000, \$751,000 and \$835,000 in 2007, 2006 and 2005, respectively, to lease such facilities.

Emerson Electric Co. (Emerson) was the beneficial owner of approximately 5% of the outstanding shares of the Company's common stock at December 31, 2006. During 2007, Emerson was an unrelated party. For the years ended December 31, 2006 and 2005, the Company purchased materials and administrative services from Emerson and its subsidiaries totaling approximately \$1,430,000 and \$800,000, respectively.

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**MKS INSTRUMENTS, INC.
SUPPLEMENTAL FINANCIAL DATA**

| | Quarter Ended | | | |
|------------------------------|--|----------------|-----------------|----------------|
| | March 31 | June 30 | Sept. 30 | Dec. 31 |
| | (Table in thousands, except per share data) | | | |
| | (Unaudited) | | | |
| 2007 | | | | |
| Statement of Operations Data | | | | |
| Net sales | \$ 211,432 | \$ 203,978 | \$ 181,014 | \$ 184,063 |
| Gross profit | 92,862 | 86,030 | 76,598 | 75,997 |
| Income from operations | 35,880 | 27,643 | 23,068 | 20,394 |
| Net income(1) | \$ 27,290 | \$ 22,527 | \$ 21,382 | \$ 15,161 |
| Net income per share: | | | | |
| Basic | \$ 0.48 | \$ 0.40 | \$ 0.38 | \$ 0.27 |
| Diluted | \$ 0.48 | \$ 0.39 | \$ 0.37 | \$ 0.27 |
| 2006 | | | | |
| Statement of Operations Data | | | | |
| Net sales | \$ 179,061 | \$ 198,351 | \$ 205,494 | \$ 199,895 |
| Gross profit | 73,745 | 86,501 | 90,619 | 87,257 |
| Income from operations | 21,869 | 34,452 | 35,622 | 30,598 |
| Net income(2) | \$ 15,435 | \$ 24,374 | \$ 27,933 | \$ 26,493 |
| Net income per share: | | | | |
| Basic | \$ 0.28 | \$ 0.44 | \$ 0.50 | \$ 0.47 |
| Diluted | \$ 0.28 | \$ 0.44 | \$ 0.50 | \$ 0.47 |

(1) Net income for the quarter ended September 30, 2007 includes a net tax benefit of \$1.8 million attributable to a discrete tax matter related to our research and development tax credits.

(2) Net income for the quarter ended September 30, 2006 includes a net tax benefit of \$1.6 million primarily attributable to certain discrete tax matters related to our international operations. Net income for the quarter ended December 31, 2006 includes a net tax benefit of \$3.1 million attributable to the impact on prior quarters of the retroactive extension of the R&D tax credit from January 1, 2006 through December 31, 2006 and to a reduction of the valuation allowance on state tax credits.

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Item 9. *Changes in and Disagreements with Accountants on Accounting and Financial Disclosure*

None.

Item 9A. *Controls and Procedures*

Evaluation of Disclosure Controls and Procedures

Our management (with the participation of our Chief Executive Officer and Chief Financial Officer) evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act)), as of December 31, 2007. Disclosure controls and procedures are designed to ensure that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported on a timely basis and that such information is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that these disclosure controls and procedures are effective and designed to ensure that the information required to be disclosed in our reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the requisite time periods.

Limitations on Effectiveness of Controls

Our management has concluded that our disclosure controls and procedures and internal controls provide reasonable assurance that the objectives of our control system are met. However, our management (including our Chief Executive Officer and Chief Financial Officer) does not expect that the disclosure controls and procedures or internal controls will prevent all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Due to the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues, errors and instances of fraud, if any, within the Company have been or will be detected. These inherent limitations include the realities that judgments in decision making can be faulty and that breakdowns can occur because of simple errors or mistakes. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the control. The design of any system is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurances that any design will succeed in achieving its stated goals under all potential future conditions. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Securities Exchange Act as a process designed by, or under the supervision of, the Company's Chief Executive Officer and Chief Financial Officer and effected by the Company's Board of Directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that:

Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;

Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and

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Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2007. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control - Integrated Framework*.

Based on our assessment, management concluded that, as of December 31, 2007, our internal control over financial reporting was effective based on those criteria.

Management has excluded the operations of Yield Dynamics, Inc. (YDI) from its assessment of internal control over financial reporting as of December 31, 2007 because this entity was acquired by the Company in a purchase business combination during fiscal 2007. The total assets and total revenues of the acquired businesses of YDI represent approximately 3% and less than 1%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2007.

Our internal controls over financial reporting as of December 31, 2007 have been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their attestation report which appears on pages 35 through 36.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during our fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item is set forth under the captions Election of Directors, Executive Officers, Code of Ethics, Directors Audit Committee Financial Expert and Corporate Governance in our definitive proxy statement for the 2008 Annual Meeting of Stockholders, and 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 2008 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 captions "Executive Officers - Executive Compensation" and "Executive Officers - Compensation Discussion and Analysis" in our definitive proxy statement for the 2008 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.

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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 2008 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.

The information required by Item 201(d) of Regulation S-K is set forth under the caption "Executive Officers' Equity Compensation Plan Information" in our definitive proxy statement for the 2008 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 13. *Certain Relationships and Related Transactions, and Director Independence*

The information required by this item is set forth under the caption "Executive Officers' Certain Relationships and Related Transactions" and "Corporate Governance" in our definitive proxy statement for the 2008 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 14. *Principal Accountant Fees and Services*

The information required by this item is set forth under the caption "Independent Registered Public Accounting Firm" in our definitive proxy statement for the 2008 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.

PART IV

Item 15. *Exhibits and Financial Statement Schedules*

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

1. *Financial Statements.* The following Consolidated Financial Statements are included under Item 8 on this Annual Report on Form 10-K.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Financial Statements:

| | |
|---|----|
| <u>Report of Independent Registered Public Accounting Firm</u> | 35 |
| <u>Consolidated Balance Sheets at December 31, 2007 and 2006</u> | 37 |
| <u>Consolidated Statements of Operations for the years ended December 31, 2007, 2006 and 2005</u> | 38 |
| <u>Consolidated Statements of Stockholders' Equity for the years ended December 31, 2007, 2006 and 2005</u> | 39 |
| <u>Consolidated Statements of Cash Flows for the years ended December 31, 2007, 2006 and 2005</u> | 40 |
| <u>Notes to Consolidated Financial Statements</u> | 41 |

2. *Financial Statement Schedules*

The following consolidated financial statement schedule is included in this Annual Report on Form 10-K:

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.

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3. *Exhibits.* The following exhibits are filed as part of this Annual Report on Form 10-K pursuant to Item 15(b).

| Exhibit No. | Title |
|--------------------|--|
| +3.1(1) | Restated Articles of Organization |
| +3.2(2) | Articles of Amendment, as filed with the Secretary of State of Massachusetts on May 18, 2001 |
| +3.3(3) | Articles of Amendment, as filed with the Secretary of State of Massachusetts on May 16, 2002 |
| +3.4(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(7)* | Second Amended and Restated 1997 Director Stock Option Plan, and forms of option agreements thereto |
| +10.5(8)* | 2004 Stock Incentive Plan, as amended (the 2004 Plan) |
| +10.6(9)* | Form of Nonstatutory Stock Option Agreement to be granted under the 2004 Plan |
| +10.7(10)* | Form of Performance Stock Award under the 2004 Plan |
| +10.8(11)* | Form of Restricted Stock Award under the 2004 Plan |
| +10.9(12)* | Form of Restricted Stock Unit Agreement (cliff vesting) under the 2004 Plan |
| +10.10(13)* | Form of Restricted Stock Unit Agreement for Initial Grant to Non-Employee Directors under the 2004 Plan |
| +10.11(13)* | Form of Restricted Stock Unit Agreement for Annual Grant to Non-Employee Directors under the 2004 Plan |
| +10.12(13)* | Form of Performance-Based Restricted Stock Unit Agreement under the 2004 Plan |
| +10.13(13)* | Form of Time-Based Restricted Stock Unit Agreement under the 2004 Plan |
| 10.14* | Form of Restricted Stock Unit Agreement under the 2004 Plan |
| +10.15(14)* | Second Restated 1995 Stock Incentive Plan (the 1995 Plan) |
| +10.16(15)* | Form of Nonstatutory Stock Option Agreement under the 1995 Plan |
| +10.17(10)* | Form of Performance Stock Award under Registrant s 1995 Plan |
| +10.18(15)* | Third Restated 1999 Employee Stock Purchase Plan |
| +10.19(15)* | Second Restated International Employee Stock Purchase Plan |
| +10.20(16)* | Employment Agreement dated as of July 1, 2005 between John Bertucci and the Registrant |
| 10.21* | Employment Agreement dated July 1, 2005 between Leo Berlinghieri and the Registrant, as amended on November 13, 2007 |
| +10.22(16)* | Employment Agreement dated as of July 1, 2005 between Ronald C. Weigner and the Registrant |
| +10.23(16)* | Amended and Restated Employment Agreement dated as of July 1, 2005 between William D. Stewart and the Registrant |
| +10.24(14)* | Employment Agreement dated as of July 30, 2004 between John Smith and the Registrant |
| +10.25(17)* | Employment Agreement dated as of April 25, 2005 between Gerald Colella and the Registrant |
| +10.26(18)* | Employment Agreement dated as of November 25, 2005 between Frank Schneider and the Registrant |
| 10.27* | Summary of 2008 Compensatory Arrangements with Executive Officers |
| +10.28(19)* | Summary of Compensatory Arrangements with Non-Employee Directors |
| +10.29(20) | Optional Advanced Demand Grid Note dated August 3, 2004 in favor of HSBC Bank USA (HSBC Note), and Amendment thereto dated as of July 29, 2005 |
| +10.30(21) | Second Amendment, dated July 31, 2007, to HSBC Note |

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| Exhibit No. | Title |
|--------------------|---|
| 10.31 | Third Amendment, dated July 31, 2007, to HSBC Note |
| +10.32(22) | Global Supply Agreement dated April 12, 2005 by and between the Registrant and Applied Materials, Inc. |
| +10.33(23) | Settlement Agreement dated as of October 3, 2005 by and between the Registrant, Applied Science and Technology, Inc. and Advanced Energy, Inc. |
| 21.1 | Subsidiaries of the Registrant |
| 23.1 | Consent of PricewaterhouseCoopers LLP |
| 31.1 | Certification of Principal Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended |
| 31.2 | Certification of Principal Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended |
| 32.1 | Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 |

+ Previously filed

* Management contract or compensatory plan arrangement filed as an Exhibit to this Form 10-K pursuant to Item 15(b) 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 for the quarter ended June 30, 2001.
- (3) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2002.
- (4) Incorporated by reference to the Registration Statement on Form S-1 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 filed with the Securities and Exchange Commission on January 29, 2001.
- (6) Incorporated by reference to the Registration Statement on Form S-8 filed with the Securities and Exchange Commission on January 29, 2001.
- (7) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2004.
- (8) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2006.
- (9) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2004.

- (10) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2005.
- (11) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on February 17, 2006.
- (12) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2006.
- (13) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2006.
- (14) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2002.
- (15) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2004.

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- (16) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on July 5, 2005.
- (17) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on April 27, 2005.
- (18) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on January 9, 2006.
- (19) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on October 31, 2006.
- (20) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005
- (21) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on August 3, 2006.
- (22) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
- (23) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on April 27, 2005.
- (24) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on October 7, 2005.

(b) Exhibits

MKS hereby files as exhibits to our Annual Report on Form 10-K those exhibits listed in Item 15(a) above.

(c) Financial Statement Schedules

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MKS INSTRUMENTS, INC.
SCHEDULE II VALUATION AND QUALIFYING ACCOUNTS

| Description | Balance at Beginning of Year | Additions | | Deductions & Write-offs | Balance at End of Year |
|--|---------------------------------------|---|--|-------------------------------|------------------------------|
| | | Charged to Costs and Expenses | Charged to Other Accounts (Dollars in thousands) | | |
| Accounts receivable allowance Year ended December 31, | | | | | |
| 2007 | \$ 4,533 | \$ 1,721 | \$ | \$ 3,875 | \$ 2,379 |
| 2006 | \$ 3,178 | \$ 5,607 | \$ | \$ 4,252 | \$ 4,533 |
| 2005 | \$ 3,238 | \$ 4,101 | \$ | \$ 4,161 | \$ 3,178 |

Table of Contents**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/ Leo Berlinghieri
Leo Berlinghieri

Chief Executive Officer, President and Director

(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 | Date |
|------------------------|---|-------------------|
| /s/ John R. Bertucci | Chairman of the Board of Directors | February 28, 2008 |
| John R. Bertucci | | |
| /s/ Leo Berlinghieri | Chief Executive Officer, President and Director (Principal Executive Officer) | February 28, 2008 |
| Leo Berlinghieri | | |
| /s/ Ronald C. Weigner | Vice President and Chief Financial Officer (Principal Financial and Accounting Officer) | February 28, 2008 |
| Ronald C. Weigner | | |
| /s/ Cristina H. Amon | Director | February 28, 2008 |
| Cristina H. Amon | | |
| /s/ Robert R. Anderson | Director | February 28, 2008 |
| Robert R. Anderson | | |
| /s/ Gregory R. Beecher | Director | February 28, 2008 |
| Gregory R. Beecher | | |
| /s/ Richard S. Chute | Director | February 28, 2008 |
| Richard S. Chute | | |
| /s/ Hans-Jochen Kahl | Director | February 28, 2008 |
| Hans-Jochen Kahl | | |
| /s/ Louis P. Valente | Director | February 28, 2008 |
| Louis P. Valente | | |