

AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON APRIL 10, 2000

REGISTRATION NO. 333-

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

MKS INSTRUMENTS, INC.
(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

MASSACHUSETTS
(STATE OR OTHER JURISDICTION OF
INCORPORATION OR ORGANIZATION)

3823
(PRIMARY STANDARD INDUSTRIAL
CLASSIFICATION CODE NUMBER)

04-2277512
(I.R.S. EMPLOYER
IDENTIFICATION NUMBER)

SIX SHATTUCK ROAD
ANDOVER, MA 01810
(978) 975-2350
(ADDRESS, INCLUDING ZIP CODE, AND TELEPHONE NUMBER,
INCLUDING AREA CODE, OF REGISTRANT'S PRINCIPAL EXECUTIVE OFFICES)

JOHN R. BERTUCCI
CHAIRMAN AND CHIEF EXECUTIVE OFFICER
MKS INSTRUMENTS, INC.
SIX SHATTUCK ROAD
ANDOVER, MA 01810
(978) 975-2350
(NAME, ADDRESS, INCLUDING ZIP CODE, AND TELEPHONE
NUMBER, INCLUDING AREA CODE, OF AGENT FOR SERVICE)

COPIES TO:

MARK G. BORDEN, ESQ.
HALE AND DORR LLP
60 STATE STREET
BOSTON, MASSACHUSETTS 02109
(617) 526-6000

DAVID C. CHAPIN, ESQ.
ROPES & GRAY
ONE INTERNATIONAL PLACE
BOSTON, MASSACHUSETTS 02110
(617) 951-7000

APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC: As soon
as practicable after the effective date hereof.

If any of the securities being registered on this Form are to be offered on
a delayed or continuous basis pursuant to Rule 415 under the Securities Act of
1933, check the following box. []

If this Form is filed to register additional securities for an offering
pursuant to Rule 462(b) under the Securities Act, check the following box and
list the Securities Act registration statement number of the earlier effective
registration statement for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(c)
under the Securities Act, check the following box and list the Securities Act
registration statement number of the earlier effective registration statement
for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(d)
under the Securities Act, check the following box and list the Securities Act
registration statement number of the earlier effective registration statement
for the same offering. []

If delivery of the prospectus is expected to be made pursuant to Rule 434,
please check the following box: []

THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR
DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL
FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION
STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(a) OF
THE SECURITIES ACT OF 1933 OR UNTIL THE REGISTRATION STATEMENT SHALL BECOME
EFFECTIVE ON SUCH DATE AS THE COMMISSION, ACTING PURSUANT TO SECTION 8(a), MAY
DETERMINE.

CALCULATION OF REGISTRATION FEE

TITLE OF SHARES TO BE REGISTERED	AMOUNT TO BE REGISTERED(1)	PROPOSED MAXIMUM OFFERING PRICE PER SHARE(2)	PROPOSED MAXIMUM AGGREGATE OFFERING PRICE(1)	AMOUNT OF REGISTRATION FEE
-----	-----	-----	-----	-----

Common Stock, no par value per share.....	3,450,000	\$49.38	\$170,361,000.00	\$44,976
---	-----------	---------	------------------	----------

- (1) Includes 450,000 shares of common stock issuable upon exercise of the underwriters' over-allotment option.
- (2) Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act and based upon the average of the high and low prices on the Nasdaq National Market on April 5, 2000.

THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED WITHOUT NOTICE. WE MAY NOT SELL THESE SECURITIES UNTIL THE REGISTRATION STATEMENT FILED WITH THE SECURITIES AND EXCHANGE COMMISSION IS EFFECTIVE. THIS PROSPECTUS IS NOT AN OFFER TO SELL THESE SECURITIES AND WE ARE NOT SOLICITING OFFERS TO BUY THESE SECURITIES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

Prospectus (Not Complete)
 Issued April 10, 2000

3,000,000 SHARES

[MKS LOGO]

COMMON STOCK

MKS Instruments, Inc. is offering 2,000,000 shares of common stock, and the selling stockholders are offering an additional 1,000,000 shares of common stock, in a firmly underwritten offering. We will not receive any of the proceeds from the sale of shares by the selling stockholders.

Our common stock is traded on the Nasdaq National Market under the symbol "MKSI." The last reported sale price of our common stock on the Nasdaq National Market on April 6, 2000 was \$51.13 per share.

INVESTING IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE 7.

	PER SHARE	TOTAL
	-----	-----
Offering Price.....	\$	\$
Discounts and Commissions to Underwriters.....	\$	\$
Offering Proceeds to MKS.....	\$	\$
Offering Proceeds to the Selling Stockholders.....	\$	\$

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

MKS and the selling stockholders have granted the underwriters the right to purchase up to an additional 450,000 shares of common stock to cover any over-allotments. The underwriters can exercise this right at any time within thirty days after the offering. Banc of America Securities LLC expects to deliver the shares of common stock to investors on _____, 2000.

BANC OF AMERICA SECURITIES LLC
 CIBC WORLD MARKETS
 LEHMAN BROTHERS
 ADAMS, HARKNESS & HILL, INC.
 NEEDHAM & COMPANY, INC.

 , 2000

INSIDE FRONT COVER (PG. 2):

This page is produced in four-color process. Amidst a dark background, the MKS logo appears at the top right of the page, and to the top left is the phrase "A Wide Range of Products Made Using MKS Process Control Instruments." Two paragraphs describing the role MKS plays in complex advanced materials manufacturing processes also appear on this page, and are as follows:

"MKS Surrounds the Process. Technologically complex, gas related manufacturing processes are used to create such products as semiconductor devices, optical filters, fiber optic cables, flat panel displays, magnetic and optical storage media, architectural glass, solar panels and gas lasers. These processes build up very thin layers of materials, step by step, through the interaction of specific gases and materials inside tightly controlled process chambers. Maintaining control of these complex steps throughout the entire manufacturing process is critical to maximizing uptime, yield and throughput. MKS's process control instruments, components and integrated subsystems surround many gas related processes - managing the flow rates of gases entering and exiting the process chamber; controlling the gas composition and pressure inside the chamber; analyzing and monitoring the composition of the gases; and isolating the gases from the outside environment."

In the center of the page is a photo montage, displaying images of semiconductor devices, flat panel displays, fiber optic cables, solar panels, magnetic and optical storage media and gas lasers. Each of these images has a text label adjacent to it.

(Headings for images)

"Semiconductor Devices

Flat Panel Displays

Optical Filters and Fibers

Solar Panels

Magnetic and Optical Storage Media

Gas Lasers"

"MKS, MKS Instruments, Baratron, Mass-Flo, HPS and ORION are trademarks of MKS. This prospectus contains trademarks, service marks and trade names of companies and organizations other than MKS."

INSIDE SPREAD (PGS. 3 AND 4):

These pages are produced in four-color process. The main focus of the spread is the illustration of a typical process chamber, with numerous MKS products surrounding the chamber. At the top of the illustration, centered across the two pages, is the title "MKS Instruments...Surrounding the Process." Each product is described in a brief paragraph, and the paragraphs appear on both sides of the illustration--left and right columns. The paragraphs are as follows:

DIRECT LIQUID INJECTION SUBSYSTEMS

For use in the delivery of a wide variety of new materials to the process chamber that cannot be delivered using conventional thermal-based mass flow controllers.

AUTOMATIC PRESSURE CONTROLLERS WITH INTEGRATED BARATRON(R) PRESSURE TRANSDUCERS

A compact, integrated measurement and control package for use in controlling upstream or downstream process chamber pressure.

ULTRA-CLEAN MASS FLOW CONTROLLERS

For the precise measurement and control of mass flow rates of inert or corrosive gases and vapors into the process chamber.

ULTRA-CLEAN MINI-BARATRON(R) PRESSURE TRANSDUCERS

For use in gas cabinets to feed ultra-pure gases to critical process systems.

PRESSURE CONTROL VALVES

To precisely control the flow of gases to a process chamber in wide range of flow rates.

GAS BOX RATE OF RISE CALIBRATORS

For fast verification of mass flow controller accuracy and repeatability during a process.

DIGITAL COLD CATHODE IONIZATION AND CONVECTION VACUUM GAUGES

A variety of indirect pressure gauges for measuring very low chamber pressures and conveying information digitally to host computers.

ORION(R) PROCESS MONITORS AND RESIDUAL GAS ANALYZERS

For the analysis of the composition of background and process gases inside the process chamber.

PRESSURE SWITCHES

Provide protection of vacuum equipment and processes by signaling when atmospheric pressure has been achieved.

BARATRON(R) PRESSURE MEASURING INSTRUMENTS

For the accurate measurement and control of a wide range of process pressures.

IN-SITU DIAGNOSTICS ACCESS VALVE

Enables accurate calibration and diagnostics of vacuum gauges and pressure transducers while directly mounted on the process chamber.

EXHAUST THROTTLE VALVES AND AUTOMATIC PRESSURE CONTROLLERS

For isolation and downstream control of process chamber pressures and pressure control within the exhaust systems.

HIGH VACUUM VALVES

To isolate the process chamber from both the pumps and atmospheric gases.

HEATED PUMPING LINES

To reduce contaminants in the vacuum pump and pump exhaust stream.

VAPOR SUBLIMATION TRAP

to collect by-products and particulates that could otherwise contaminate devices in the process chamber and damage vacuum pumps.

Prices of products shown above range from \$200 to \$80,000.

The above graphic depicts a generalized process chamber with a number of MKS's manufactured products shown.

YOU SHOULD RELY ONLY ON THE INFORMATION CONTAINED IN THIS PROSPECTUS. WE HAVE NOT AUTHORIZED ANYONE TO PROVIDE YOU WITH INFORMATION DIFFERENT FROM THAT CONTAINED IN THIS PROSPECTUS. WE ARE OFFERING TO SELL, AND SEEKING OFFERS TO BUY, SHARES OF COMMON STOCK ONLY IN JURISDICTIONS WHERE OFFERS AND SALES ARE PERMITTED. THE INFORMATION CONTAINED IN THIS PROSPECTUS IS ACCURATE ONLY AS OF THE DATE OF THIS PROSPECTUS, REGARDLESS OF THE TIME OF DELIVERY OF THIS PROSPECTUS OR OF ANY SALE OF OUR COMMON STOCK. THE INFORMATION IN OUR INTERNET WEBSITE IS NOT INCORPORATED BY REFERENCE INTO THIS PROSPECTUS. IN THIS PROSPECTUS, "MKS," "WE," "US" AND "OUR" REFER TO MKS INSTRUMENTS, INC. (UNLESS THE CONTEXT OTHERWISE REQUIRES).

TABLE OF CONTENTS

	PAGE

Prospectus Summary.....	4
Risk Factors.....	7
Special Note Regarding Forward-Looking Information.....	12
Use of Proceeds.....	13
Price Range of Our Common Stock.....	14
Dividend Policy.....	14
Capitalization.....	15
Selected Consolidated Financial Data.....	16
Management's Discussion and Analysis of Financial Condition and Results of Operations.....	18
Business.....	26
Management.....	42
Principal and Selling Stockholders.....	44
Underwriting.....	46
Legal Matters.....	48
Experts.....	48
Where You Can Find More Information.....	48
Incorporation of Certain Documents by Reference.....	48

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information that is important to you. You should read this entire prospectus carefully. Unless otherwise indicated, all information contained in this prospectus assumes that the underwriters will not exercise their over-allotment option. This prospectus contains forward-looking statements, which involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including those set forth under "Risk Factors" and elsewhere in this prospectus.

MKS INSTRUMENTS, INC.

We are a leading worldwide developer, manufacturer and supplier of instruments, components and integrated subsystems used to measure, control and analyze gases in semiconductor manufacturing and similar industrial manufacturing processes. We sold products to over 4,000 customers in 1999. In addition to semiconductors, our products are used in processes to manufacture a diverse range of products, such as optical filters, fiber optic cables, flat panel displays, magnetic and optical storage media, architectural glass, solar panels and gas lasers.

The ability of semiconductor device manufacturers to offer integrated circuits with smaller geometries and greater functionality at higher speeds requires continuous improvements in semiconductor process equipment and process controls. Manufacturing a semiconductor, or a similar industrial product, requires hundreds of process steps, many of which involve the precise measurement and control of gases. These process steps take place within a process chamber, where specific gas mixtures at precisely controlled pressures are used to control the required process atmosphere and are used as a source of material.

Given the complexity of the semiconductor manufacturing process, the value of the products manufactured and the significant cost of semiconductor manufacturing equipment and facilities, significant importance is placed upon:

- uptime, which is the amount of time that semiconductor manufacturing equipment is available for processing;
- yield, which is the ratio of acceptable output to total output; and
- throughput, which is the aggregate output that can be processed per hour.

The design and performance of instruments that control the pressure or flow of gases are becoming more critical to the semiconductor manufacturing process since they directly affect uptime, yield and throughput. In addition, the increasing sophistication of semiconductor devices requires an increase in the number of components and subsystems used in the design of semiconductor manufacturing process tools. To address manufacturing complexity, improve quality and reliability, and ensure long-term service and support, semiconductor device manufacturers and semiconductor capital equipment manufacturers are increasingly seeking to reduce their supplier base and are, therefore, choosing to work with suppliers that provide a broad range of integrated, technologically advanced products backed by worldwide service and support.

We believe that we offer the widest range of pressure and vacuum measurement and control products serving the semiconductor industry. Our objective is to be the leading worldwide supplier of instruments, components and integrated subsystems used to measure, control and analyze gases in semiconductor and other advanced thin-film processing applications and to help semiconductor device manufacturers achieve improvements in their return on investment capital. Our strategy to accomplish this objective includes:

- extending our technology leadership;
- continuing to broaden our comprehensive product offerings;
- building upon our close working relationships with customers;

- expanding the application of our existing technologies to related markets; and
- leveraging our global infrastructure and world class manufacturing capabilities.

For over 25 years, we have focused on satisfying the needs of semiconductor capital equipment manufacturers and semiconductor device manufacturers. As a result, we have established long-term relationships with many of our customers. We sell our products primarily to:

- semiconductor capital equipment manufacturers;
- semiconductor device manufacturers;
- industrial manufacturing companies; and
- university, government and industrial research laboratories.

Our customers include Applied Materials, Inc., Lam Research Corporation, Novellus Systems, Inc., Tokyo Electron Limited, Inc., Air Products and Chemicals, Inc., and Motorola, Inc. We sell our products primarily through our direct sales force located in 22 offices worldwide.

MKS Instruments, Inc. is a Massachusetts corporation organized in June 1961. Our principal executive offices are located at Six Shattuck Road, Andover, MA 01810, and our telephone number is (978) 975-2350.

THE OFFERING

Common stock offered by MKS.....	2,000,000 shares
Common stock offered by the selling stockholders.....	1,000,000 shares
Common stock to be outstanding after this offering.....	26,970,762 shares
Use of proceeds.....	For working capital, capital expenditures, potential acquisitions and general corporate purposes. See "Use of Proceeds." We will not receive any of the proceeds from the sale of common stock by the selling stockholders.
Nasdaq National Market symbol.....	MKSI

Our common stock to be outstanding after this offering is based on shares outstanding as of March 24, 2000 and excludes the following as of that date:

- 2,760,834 shares of common stock issuable upon the exercise of options outstanding as of such date at a weighted average exercise price of \$11.51 per share;
- 937,583 shares of common stock reserved for future issuance under our stock option plans; and
- 463,480 shares of common stock reserved for sale under our employee stock purchase plans.

See "Capitalization" and Note 8 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus.

SUMMARY CONSOLIDATED FINANCIAL DATA

The following table presents our summary consolidated statement of income data for 1995 through 1999 and our summary consolidated balance sheet data as of December 31, 1999. Consolidated balance sheet data is presented on an actual basis and as adjusted to reflect the sale of 2,000,000 shares of common stock at an

assumed public offering price of \$ per share, after deducting the estimated underwriting discount and offering expenses payable by us.

	YEARS ENDED DECEMBER 31,				
	1995	1996	1997	1998	1999
	(IN THOUSANDS, EXCEPT PER SHARE DATA)				
STATEMENT OF INCOME DATA:					
Net sales.....	\$157,164	\$170,862	\$188,080	\$139,763	\$187,083
Gross profit.....	69,461	68,854	80,474	55,979	79,855
Income from operations.....	24,106	16,068	23,963	9,135	27,611
Net income.....	\$ 21,658	\$ 12,503	\$ 20,290	\$ 7,186	\$ 24,037
HISTORICAL NET INCOME PER SHARE:					
Basic.....	\$ 1.20	\$ 0.69	\$ 1.12	\$ 0.40	\$ 1.05
Diluted.....	\$ 1.20	\$ 0.69	\$ 1.10	\$ 0.38	\$ 1.00
PRO FORMA STATEMENT OF INCOME DATA (UNAUDITED)(1):					
Pro forma net income.....	\$ 13,821	\$ 8,248	\$ 13,806	\$ 5,044	\$ 18,412
Pro forma net income per share:					
Basic.....	\$ 0.77	\$ 0.46	\$ 0.76	\$ 0.28	\$ 0.81
Diluted.....	\$ 0.77	\$ 0.46	\$ 0.76	\$ 0.27	\$ 0.77

AS OF DECEMBER 31, 1999

	ACTUAL	AS ADJUSTED

(IN THOUSANDS)

BALANCE SHEET DATA:

Cash and cash equivalents.....	\$ 35,714	\$
Working capital.....	87,088	
Total assets.....	174,605	
Short-term obligations.....	20,828	
Long-term obligations, less current portion.....	5,662	
Stockholders' equity.....	119,169	

(1) Data is computed on the same basis as Note 2 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus. The historical net income per share data does not include provisions for federal income taxes because prior to our initial public offering in 1999, we were treated as an S corporation for federal and certain state income tax purposes. The Pro Forma Statement of Income Data presents net income and net income per share data as if we had been subject to income taxes as a C corporation during the periods presented.

RISK FACTORS

You should consider carefully the risks described below before you decide to buy our common stock. If any of the following risks actually occur, our business, financial condition or results of operations would likely suffer. In such case, the trading price of our common stock could fall, and you may lose all or part of the money you paid to buy our common stock.

This prospectus contains forward-looking statements that involve risks and uncertainties. These forward-looking statements are usually accompanied by words such as "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "potential," "projects," "will," "would" and similar expressions. Our actual results may differ materially from the results discussed in the forward-looking statements because of factors such as the Risk Factors discussed below.

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 66% of our sales during 1999 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. Historically, the semiconductor market has been highly cyclical and has experienced periods of overcapacity, resulting in significantly reduced demand for capital equipment. For example, in 1996 and 1998, the semiconductor capital equipment industry experienced significant declines, which caused a number of our customers to reduce their orders. We cannot be certain that semiconductor downturns will not recur. A decline in the level of orders as a result of any future downturn or slowdown in the semiconductor capital equipment industry could have a material adverse effect on our business, financial condition and results of operations.

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

A substantial portion of our shipments occur shortly after an order is received and therefore we operate with a low level of backlog. As a consequence of the just-in-time nature of shipments and the low level of backlog, 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 are relatively fixed and based in part on expectations of future net sales. The inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net sales on 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 of capital spending by customers;
- production capacity constraints; and
- specific features requested by customers.

For example, we were in the process of increasing our production capacity when the semiconductor capital equipment market began to experience a significant downturn in 1996. This downturn had a material adverse effect on our operating results in the second half of 1996 and the first half of 1997. After an increase in business in the latter half of 1997, the market experienced another downturn in 1998, which had a material

adverse effect on our 1998 and first quarter 1999 operating results. As a result of the factors discussed above, it is likely that we will in the future experience quarterly or annual fluctuations and that, in one or more future quarters, our operating results will 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 five largest customers accounted for approximately 33% of our net sales in 1999 and 24% of our net sales in 1998. The loss of a major customer or any reduction in orders by these customers, including reductions due to market or competitive conditions, would likely have a material adverse effect on our business, financial condition and results of operations. During 1999, one customer, Applied Materials, accounted for approximately 22% of our net sales. While we have entered into a purchase contract with Applied Materials that expires in 2000 unless it is extended by mutual agreement, 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 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; and
- the success of our customers in creating demand for their capital equipment products which incorporate our products.

AN INABILITY TO CONVINCE SEMICONDUCTOR DEVICE MANUFACTURERS TO SPECIFY THE USE OF OUR PRODUCTS TO OUR CUSTOMERS, WHO 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 NEW 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 current so that they are positioned to be chosen for use in each successive new generation of semiconductor capital equipment. If our products are not chosen by our customers, our net sales may be reduced during the lifespan of our customers' products.

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 competitor's 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 in the semiconductor industry. 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.

SALES TO FOREIGN MARKETS CONSTITUTE APPROXIMATELY 31% 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, which include sales by our foreign subsidiaries, but exclude direct export sales which were less than 10% of our total net sales, accounted for approximately 31% of net sales in 1999 and 32% of net sales in 1998. 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.

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

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, sales made by our foreign subsidiaries are denominated in the currency of the country in which these products are sold and the currency we 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 exchange contracts and 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.

COMPETITION FOR PERSONNEL IN THE SEMICONDUCTOR AND INDUSTRIAL MANUFACTURING INDUSTRIES IS INTENSE. WE DO NOT TYPICALLY HAVE EMPLOYMENT AGREEMENTS WITH OUR EMPLOYEES AND THEREFORE WE CANNOT BE SURE THAT WE WILL BE ABLE TO RETAIN THEM.

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. Competition for such personnel is intense, and we cannot be certain that we will be successful in attracting and retaining such personnel.

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.

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;
- 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. 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.

THE MARKET PRICE OF OUR SHARES MAY EXPERIENCE EXTREME PRICE AND VOLUME FLUCTUATIONS 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. Recently, prices of securities of technology companies have been especially volatile and have often fluctuated for reasons that are unrelated to the operating performance of the companies. The market price of shares of 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.

AFTER THIS OFFERING ONE STOCKHOLDER, ALONG WITH MEMBERS OF HIS FAMILY, WILL CONTINUE TO HAVE A CONTROLLING INTEREST IN MKS AND WILL BE ABLE TO EFFECT IMPORTANT CORPORATE ACTIONS WITHOUT THE APPROVAL OF OTHER STOCKHOLDERS.

Upon consummation of this offering, John R. Bertucci, Chairman and Chief Executive Officer of MKS, and members of his family will, in the aggregate, beneficially own approximately 55.6% of our outstanding common stock. As a result, these stockholders, acting together, will be able to take any of the following actions without the approval of our public stockholders:

- amend our Articles of Organization in certain respects or approve a merger, sale of assets or other major corporate transaction;
- defeat any non-negotiated takeover attempt that may be beneficial to our public stockholders;
- determine the amount and timing of dividends paid to themselves and to our public stockholders; and
- otherwise control our management and operations and the outcome of all matters submitted for a stockholder vote, including the election of directors.

CERTAIN PROVISIONS OF OUR ARTICLES OF ORGANIZATION, OUR BY-LAWS AND MASSACHUSETTS LAW COULD DISCOURAGE POTENTIAL ACQUISITION PROPOSALS AND COULD DELAY OR PREVENT A CHANGE IN CONTROL OF MKS.

Anti-takeover provisions could diminish the opportunities for stockholders to participate in tender offers including tender offers at a price above the then current market value of the common stock. Such provisions

may also inhibit increases in the market price of the common stock that could result from takeover attempts. For example, while 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 MKS. 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 By-Laws will provide for a classified board of directors consisting of three classes. This classified board could also have the effect of delaying, deterring or preventing a change in control of MKS.

YOU WILL BE RELYING ON THE JUDGMENT OF OUR MANAGEMENT REGARDING OUR USE OF PROCEEDS.

We have not designated any specific use for the net proceeds from the sale of our common stock described in this prospectus. Rather, we expect to use the net proceeds of this offering for working capital, capital expenditures, general corporate purposes and potential acquisitions. Consequently, our management will have significant flexibility in applying the net proceeds. You will be relying on the judgment of our management regarding the application of the proceeds. Our management will have the ability to change the application of the proceeds of this offering without stockholder approval.

YOU WILL EXPERIENCE AN IMMEDIATE AND SUBSTANTIAL DILUTION IN THE BOOK VALUE OF YOUR INVESTMENT.

The public offering price of the common stock in this offering is \$ higher than the tangible pro forma book value of our common stock on a per share basis after the offering. As a result, investors purchasing common stock in this offering will incur immediate and substantial dilution. In the past, we issued options to acquire common stock at prices significantly below the public offering price in this offering. To the extent these options are exercised, there will be further dilution to investors.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus includes and incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. All statements, other than statements of historical facts, included or incorporated in this prospectus regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. The words "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "potential," "projects," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included or incorporated in this prospectus, particularly under the heading "Risk Factors", that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. We do not assume any obligation to update any forward-looking statements.

USE OF PROCEEDS

The net proceeds we will receive from the sale of the 2,000,000 shares of common stock offered by us at an assumed public offering price of \$ per share are estimated to be \$ (\$ if the underwriters' over-allotment option is exercised in full), after deducting the estimated underwriting discount and offering expenses payable by us. We will not receive any of the proceeds from the sale of shares by the selling stockholders.

We expect to use the net proceeds for general corporate purposes, including working capital, product development and capital expenditures. A portion of the net proceeds may also be used for the acquisition of businesses, products and technologies that are complementary to ours. There are currently no commitments or agreements with respect to any such material acquisition. Pending such uses, we intend to invest the net proceeds from this offering in investment-grade, interest-bearing securities.

PRICE RANGE OF OUR COMMON STOCK

Our common stock is traded on the Nasdaq National Market under the symbol "MKSI." On April 6, 2000, the closing price of our common stock, as reported on the Nasdaq National Market, was \$51.13 per share. The following table sets forth for the periods indicated the high and low sales prices per share of our common stock as reported by the Nasdaq National Market.

1999 - - - - -	HIGH - - - - -	LOW - - -
First Quarter (beginning March 30).....	14 1/2	13 3/8
Second Quarter.....	19 3/4	11 7/8
Third Quarter.....	22 1/2	17 3/4
Fourth Quarter.....	36 1/2	19 1/4
2000		
First Quarter.....	62 1/4	30 1/2

On March 24, 2000, there were 24,970,762 shares of our common stock outstanding, held by approximately 40 holders of record.

DIVIDEND POLICY

We currently intend, subject to our contractual obligations under the Tax Indemnification and S Corporation Distribution Agreement, to retain earnings for the continued development of our business. Restrictions or limitations on the payment of dividends may be imposed in the future under the terms of credit agreements or under other contractual provisions. In the absence of such restrictions or limitations, the payment of any dividends will be at the discretion of our board of directors.

CAPITALIZATION

The following table sets forth our capitalization as of December 31, 1999:

- on an actual basis; and
- on an as adjusted basis to reflect the sale of 2,000,000 shares of our common stock by us at an assumed public offering price of \$ _____ per share after deducting the estimated underwriting discount and offering expenses payable by us.

	AS OF DECEMBER 31, 1999	
	----- ACTUAL	AS ADJUSTED -----
	(IN THOUSANDS, EXCEPT SHARE DATA)	
Long-term obligations, less current portion.....	\$ 5,662	\$
Stockholders' equity:		
Preferred Stock, \$0.01 par value; 2,000,000 shares authorized, none issued and outstanding.....	--	
Common stock, no par value; 50,000,000 shares authorized, 24,632,849 shares issued and outstanding (actual); 26,632,849 shares issued and outstanding (as adjusted).....	113	
Additional paid-in capital.....	84,713	
Retained earnings.....	33,166	
Shareholder receivable.....	(856)	
Accumulated other comprehensive income.....	2,033	
	-----	-----
Total stockholders' equity.....	119,169	
	-----	-----
Total capitalization.....	\$124,831	\$
	=====	=====

Our common stock outstanding after this offering is based on shares outstanding as of December 31, 1999 and excludes the following as of that date:

- 2,652,591 shares of common stock issuable upon the exercise of options outstanding at a weighted average exercise price of \$8.31 per share; and
- 1,263,613 shares reserved for issuance under our stock option plan and 413,480 shares reserved for sale under our employee stock purchase plan.

See Note 8 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus.

SELECTED CONSOLIDATED FINANCIAL DATA

The following selected financial data as of December 31, 1998 and 1999 and for the years ended December 31, 1997, 1998 and 1999 have been derived from our consolidated financial statements, which are incorporated by reference into this prospectus, which have been audited by PricewaterhouseCoopers LLP, independent accountants, as indicated in their report. The selected financial data as of December 31, 1995, 1996 and 1997 and for the years ended December 31, 1995 and 1996 are derived from our consolidated financial statements, which were also audited by PricewaterhouseCoopers LLP, not included herein. The data should be read in conjunction with the Consolidated Financial Statements, including the Notes thereto, which are incorporated by reference into this prospectus, and with "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this prospectus.

	YEARS ENDED DECEMBER 31,				
	1995	1996	1997	1998	1999
	(IN THOUSANDS, EXCEPT PER SHARE DATA)				
STATEMENT OF INCOME DATA:					
Net sales.....	\$157,164	\$170,862	\$188,080	\$139,763	\$187,083
Gross profit.....	69,461	68,854	80,474	55,979	79,855
Income from operations.....	24,106	16,068	23,963	9,135	27,611
Net income.....	\$ 21,658	\$ 12,503	\$ 20,290	\$ 7,186	\$ 24,037
Historical net income per share:					
Basic.....	\$ 1.20	\$ 0.69	\$ 1.12	\$ 0.40	\$ 1.05
	=====	=====	=====	=====	=====
Diluted.....	\$ 1.20	\$ 0.69	\$ 1.10	\$ 0.38	\$ 1.00
	=====	=====	=====	=====	=====
Historical weighted average common shares outstanding:					
Basic.....	18,053	18,053	18,053	18,053	22,784
Diluted.....	18,053	18,053	18,388	18,720	23,954
PRO FORMA STATEMENT OF INCOME DATA (UNAUDITED)(1):					
Historical income before taxes.....	\$ 22,658	\$ 13,303	\$ 22,268	\$ 8,135	\$ 29,268
Pro forma provision for income taxes assuming C corporation tax.....	8,837	5,055	8,462	3,091	10,856
	-----	-----	-----	-----	-----
Pro forma net income.....	\$ 13,821	\$ 8,248	\$ 13,806	\$ 5,044	\$ 18,412
Pro forma net income per common share:					
Basic.....	\$ 0.77	\$ 0.46	\$ 0.76	\$ 0.28	\$ 0.81
	=====	=====	=====	=====	=====
Diluted.....	\$ 0.77	\$ 0.46	\$ 0.76	\$ 0.27	\$ 0.77
	=====	=====	=====	=====	=====
Pro forma weighted average common shares outstanding:					
Basic.....	18,053	18,053	18,053	18,053	22,784
Diluted.....	18,053	18,053	18,262	18,538	23,786

(1) Data is computed on the same basis as Note 2 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus. The historical net income per share data does not include provisions for federal income taxes because prior to our initial public offering in 1999, we were treated as an S corporation for federal and certain state income tax purposes. The Pro Forma Statement of Income Data presents net income and net income per share data as if we had been subject to income taxes as a C corporation during the periods presented.

AS OF DECEMBER 31,

	1995	1996	1997	1998	1999
(IN THOUSANDS)					
BALANCE SHEET DATA:					
Cash and cash equivalents.....	\$ 3,650	\$ 3,815	\$ 2,511	\$11,188	\$ 35,714
Working capital.....	32,202	22,404	30,321	31,493	87,088
Total assets.....	104,511	95,000	106,536	96,232	174,605
Short-term obligations.....	15,192	16,124	13,852	12,819	20,828
Long-term obligations, less current portion.....	20,462	18,899	15,624	13,786	5,662
Stockholders' equity.....	48,392	45,498	52,848	54,826	119,169

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

The following discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed in the forward-looking statements as a result of certain factors including those set forth under "Risk Factors" and elsewhere in this prospectus. The following discussion and analysis should be read in conjunction with "Selected Consolidated Financial Data" appearing elsewhere in this prospectus and with our 1999 Consolidated Financial Statements and Notes thereto, which are incorporated by reference into this prospectus.

OVERVIEW

MKS was founded in 1961. We develop, manufacture and supply instruments, components and integrated subsystems used to measure, control and analyze gases in semiconductor manufacturing and similar industrial manufacturing processes. During 1999, we estimate that approximately 66% of our net sales were to semiconductor capital equipment manufacturers and semiconductor device manufacturers. We expect that sales to such customers will continue to account for a substantial majority of our sales. Our customers include semiconductor capital equipment manufacturers, semiconductor device manufacturers, industrial manufacturing companies and university, government and industrial research laboratories. Our top five customers accounted for approximately 33% of our net sales in 1999, 24% in 1998 and 32% in 1997. During 1999, Applied Materials accounted for approximately 22% of our net sales. We typically enter into contracts with our semiconductor equipment manufacturer customers that provide for quantity discounts. We recognize revenue, and accrue for anticipated returns and warranty costs, upon completion of our delivery obligations.

A significant portion of our sales are to operations in international markets. International sales by our foreign operations, located in Japan, Korea, Europe, Singapore and Taiwan, were 31.3% of net sales in 1999 and 32.4% of net sales in 1998. Sales by our Japanese subsidiary comprised 16.4% of net sales in 1999 and 15.1% in 1998. We do not classify export sales made directly by us as international sales. Such export sales have generally been less than 10% of our net sales. We currently use, and plan to continue to use, forward exchange contracts and local currency purchased options to reduce currency exposure arising from foreign currency denominated intercompany sales of inventory. Gains and losses on derivative financial instruments that qualify for hedge accounting are classified in cost of sales. Gains and losses on derivative financial instruments that do not qualify for hedge accounting are marked to market and recognized immediately in other income. See Note 3 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus.

We were treated as an S corporation for federal income tax purposes prior to our initial public offering in 1999. Our S corporation status terminated upon the closing of the offering, at which time we became subject to federal, and certain state, income taxation as a C corporation. The pro forma net income reflects a pro forma effective tax rate of 38.0% in 1997 and 1998, and 37.1% in 1999 to reflect federal and state income taxes which would have been payable had we been taxed as a C corporation for each period.

On April 5, 1999, we closed the initial public offering of our common stock. In connection with that offering and the exercise of an over-allotment option by the underwriters, we sold 6,375,000 shares of common stock. Our net proceeds were approximately \$82 million. Also on that date, we distributed \$40 million, which was the estimated amount of our undistributed S corporation earnings as of the day prior to the closing of our initial public offering.

RESULTS OF OPERATIONS

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 income data:

	YEARS ENDED DECEMBER 31,		
	1997	1998	1999
Net sales.....	100.0%	100.0%	100.0%
Cost of sales.....	57.2	59.9	57.3
Gross profit.....	42.8	40.1	42.7
Research and development.....	7.8	8.7	7.1
Selling, general and administrative.....	22.3	24.9	20.8
Income from operations.....	12.7	6.5	14.8
Interest income (expense), net.....	(1.0)	(0.8)	0.4
Other income, net.....	0.1	0.1	0.4
Income before income taxes.....	11.8	5.8	15.6
Provision for income taxes.....	1.0	0.7	2.8
Net income.....	10.8%	5.1%	12.8%
Pro forma data:			
Historical income before income taxes.....	11.8%	5.8%	15.6%
Pro forma provision for income taxes.....	4.5	2.2	5.8
Pro forma net income.....	7.3%	3.6%	9.8%

Year Ended 1999 Compared to 1998

Net sales. Net sales increased 33.9% to \$187.1 million for 1999 from \$139.8 million for 1998. International net sales were \$58.5 million in 1999 or 31.3% of net sales and \$45.3 million in 1998 or 32.4% of net sales. The increase in net sales was primarily due to increased sales volume of our existing products in the United States and in Asia which resulted primarily from increased sales to our semiconductor capital equipment manufacturing and semiconductor device manufacturer customers.

Gross profit. Gross profit as a percentage of net sales increased to 42.7% for 1999 from 40.1% in 1998. The increase was primarily due to fuller utilization of existing manufacturing capacity as a result of increased net sales.

Research and development. Research and development expenses increased 9.0% to \$13.2 million or 7.1% of net sales for 1999 from \$12.1 million or 8.7% of net sales for 1998. The increase was due to increased spending for development materials.

Selling, general and administrative. Selling, general and administrative expenses increased 12.4% to \$39.0 million or 20.8% of net sales from \$34.7 million or 24.9% of net sales for 1998. The increase was due primarily to increased incentive compensation expense of \$3.3 million, professional fees, and other selling expenses.

Interest income (expense), net. During 1999, we generated net interest income of \$0.8 million primarily from the invested net proceeds of the initial public offering, offset by interest expense on outstanding debt. Net interest expense of \$1.2 million for 1998 represents interest on outstanding loans, offset by interest income earned on cash and cash equivalents and short-term investments.

Other income, net. Other income of \$0.8 million for 1999 includes a distribution of \$0.7 million from one of our mutual insurance carriers upon the initial public offering of the insurance carrier, and also includes gains recorded from foreign exchange contracts which did not qualify for hedge accounting. Other income of

\$0.2 million in 1998 primarily represents foreign exchange translation gains on intercompany payables of \$1.0 million offset by \$0.7 million for costs associated with our planned initial public offering in early 1998.

Effective April 1, 1999 we adopted Statement of Financial Accounting Standards (SFAS) No. 133, "Accounting for Derivative Instruments and Hedging Activities." SFAS No. 133 requires that all derivative instruments be recorded on the balance sheet at their fair value. Changes in the fair value of derivatives are recorded each period in current earnings or other comprehensive income, depending on whether a derivative is designated as part of a hedge transaction and, if it is, the type of hedge transaction. The adoption of SFAS No. 133 did not have a material impact on our financial position or results of operations. The derivative instruments currently held by us which have been designated as hedges, including forward exchange contracts, local currency purchased options, and an interest rate swap, qualify for hedge accounting under SFAS No. 133, and changes in their fair value will be recorded as a component of other comprehensive income until the hedged transaction occurs.

Pro forma provision for income taxes. Prior to the closing of our initial public offering in April 1999 we were treated as an S corporation for tax purposes. As an S corporation, we were not subject to federal, and certain state income taxes. Upon the closing of our initial public offering on April 5, 1999, our status as an S corporation was terminated and we became subject to taxes as a C corporation. The pro forma provision for income taxes reflects the estimated tax expense we would have incurred had we been subject to federal and state income taxes as a C corporation. The pro forma provision differs from the federal statutory rate due primarily to the effects of state and foreign taxes and certain tax credits. The pro forma provision for 1999 reflects a pro forma tax rate of 37.1%. This rate differs from the pro forma tax rate of 38% for 1998 due to increased tax credits and lower nondeductible expenses in 1999.

Year Ended 1998 Compared to 1997

Net sales. Net sales decreased 25.7% to \$139.8 million for 1998 from \$188.1 million for 1997. International net sales were approximately \$45.3 million in 1998 or 32.4% of net sales and \$51.4 million in 1997 or 27.3% of net sales. The decrease in net sales was primarily due to decreased sales volume of our existing products in the United States and in Asia caused by the 1998 downturn in the semiconductor capital equipment market.

Gross profit. Gross profit as a percentage of net sales decreased to 40.1% for 1998 from 42.8% in 1997. The change was primarily due to manufacturing overhead costs being a higher percentage of net sales due to lower sales volume in 1998.

Research and development. Research and development expenses decreased 17.3% to \$12.1 million or 8.7% of net sales for 1998 from \$14.7 million or 7.8% of net sales for 1997. The decrease was due to reduced spending for development materials primarily related to certain projects that were completed during 1998.

Selling, general and administrative. Selling, general and administrative expenses decreased 17.0% to \$34.7 million or 24.9% of net sales for 1998 from \$41.8 million or 22.3% of net sales for 1997. The decrease was due primarily to a decrease of approximately \$4.2 million in compensation expense resulting from the reduction in personnel during 1998 and reduced incentive compensation. Additionally, expenses were reduced as a result of lower spending on advertising, travel, and other selling and administrative costs.

Interest expense, net. Net interest expense decreased to \$1.2 million for 1998 from \$1.9 million for 1997 primarily due to lower debt outstanding during 1998.

Other income, net. Other income of \$0.2 million in 1998 primarily represents foreign exchange translation gains on intercompany payables of \$1.0 million offset by \$0.7 million for costs associated with our planned initial public offering in early 1998 which was postponed. Other income of \$0.2 million in 1997 represents gains of \$1.2 million from foreign exchange contracts that did not qualify for hedge accounting, offset by a foreign exchange translation loss on an intercompany payable.

Pro forma provision for income taxes. The pro forma provision for income taxes for 1998 reflects the estimated tax expense we would have incurred had we been subject to federal and state income taxes as a C corporation under the Internal Revenue Code. The pro forma provision reflects a pro forma tax rate of 38.0%, which differs from the federal statutory rate due primarily to the effects of state and foreign taxes and certain tax credits.

Quarterly Operating Results

The following tables present unaudited consolidated financial information for the eight quarters ended December 31, 1999. In the opinion of management, this information has been presented on the same basis as the audited 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus. All adjustments which management considers necessary for a fair presentation of the results of such periods have been included to present fairly the unaudited quarterly results when read in conjunction with our 1999 Consolidated Financial Statements and Notes thereto. The results for any quarter are not necessarily indicative of future quarterly results of operations.

	QUARTERS ENDED							
	MARCH 31, 1998	JUNE 30, 1998	SEPT. 30, 1998	DEC. 31, 1998	MARCH 31, 1999	JUNE 30, 1999	SEPT. 30, 1999	DEC. 31, 1999
	(IN THOUSANDS, EXCEPT PER SHARE DATA)							
STATEMENT OF INCOME DATA:								
Net sales.....	\$46,163	\$34,026	\$28,834	\$30,740	\$37,910	\$44,209	\$50,621	\$54,343
Cost of sales.....	26,757	20,265	18,140	18,622	22,557	25,550	28,876	30,245
Gross profit.....	19,406	13,761	10,694	12,118	15,353	18,659	21,745	24,098
Research and development.....	3,794	3,107	2,568	2,668	2,955	3,317	3,482	3,476
Selling, general and administrative.....	10,112	9,045	7,808	7,742	8,857	9,435	10,264	10,458
Income from operations.....	5,500	1,609	318	1,708	3,541	5,907	7,999	10,164
Interest income (expense), net...	(375)	(337)	(234)	(241)	(242)	232	331	487
Other income (expense), net.....	(281)	123	77	268	168	--	681	--
Income before income taxes.....	4,844	1,395	161	1,735	3,467	6,139	9,011	10,651
Provision for income taxes.....	565	163	19	202	338	(1,437)	2,974	3,356
Net income.....	\$ 4,279	\$ 1,232	\$ 142	\$ 1,533	\$ 3,129	\$ 7,576	\$ 6,037	\$ 7,295
Historical net income per share:								
Basic.....	\$ 0.24	\$ 0.07	\$ 0.01	\$ 0.08	\$ 0.17	\$ 0.31	\$ 0.25	\$ 0.30
Diluted.....	\$ 0.23	\$ 0.07	\$ 0.01	\$ 0.08	\$ 0.16	\$ 0.30	\$ 0.24	\$ 0.28
Historical weighted average common shares outstanding:								
Basic.....	18,053	18,053	18,053	18,053	18,054	24,065	24,458	24,558
Diluted.....	18,751	18,737	18,553	18,841	19,402	24,951	25,628	25,834
Pro forma statement of income data:								
Historical income before income taxes.....	\$ 4,844	\$ 1,395	\$ 161	\$ 1,735	\$ 3,467	\$ 6,139	\$ 9,011	\$10,651
Pro forma provision for income taxes assuming C corporation tax.....	1,841	530	61	659	1,317	2,333	3,334	3,872
Pro forma net income.....	\$ 3,003	\$ 865	\$ 100	\$ 1,076	\$ 2,150	\$ 3,806	\$ 5,677	\$ 6,779
Pro forma net income per common share:								
Basic.....	\$ 0.17	\$ 0.05	\$ 0.01	\$ 0.06	\$ 0.12	\$ 0.16	\$ 0.23	\$ 0.28
Diluted.....	\$ 0.16	\$ 0.05	\$ 0.01	\$ 0.06	\$ 0.11	\$ 0.15	\$ 0.22	\$ 0.26
Pro forma weighted average common shares outstanding:								
Basic.....	18,053	18,053	18,053	18,053	18,054	24,065	24,458	24,558
Diluted.....	18,557	18,548	18,434	18,612	18,890	24,951	25,558	25,745

	QUARTERS ENDED							
	MARCH 31, 1998	JUNE 30, 1998	SEPT. 30, 1998	DEC. 31, 1998	MARCH 31, 1999	JUNE 30, 1999	SEPT. 30, 1999	DEC. 31, 1999
PERCENTAGE OF NET SALES:								
Net sales.....	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of sales.....	58.0	59.6	62.9	60.6	59.5	57.8	57.0	55.7
Gross profit.....	42.0	40.4	37.1	39.4	40.5	42.2	43.0	44.3
Research and development.....	8.2	9.1	8.9	8.6	7.8	7.5	6.9	6.4
Selling, general and administrative...	21.9	26.6	27.1	25.2	23.4	21.3	20.3	19.2
Income from operations.....	11.9	4.7	1.1	5.6	9.3	13.4	15.8	18.7
Interest income (expense), net.....	(0.8)	(1.0)	(0.8)	(0.8)	(0.6)	0.5	0.7	0.9
Other income (expense), net.....	(0.6)	0.4	0.3	0.8	0.4	--	1.3	--
Income before income taxes.....	10.5	4.1	0.6	5.6	9.1	13.9	17.8	19.6
Provision for income taxes.....	1.2	0.5	0.1	0.6	0.8	(3.2)	5.9	6.2
Net income.....	9.3%	3.6%	0.5%	5.0%	8.3%	17.1%	11.9%	13.4%
Pro forma data:								
Historical income before income taxes.....	10.5%	4.1%	0.6%	5.6%	9.1%	13.9%	17.8%	19.6%
Pro forma provision for income taxes.....	4.0	1.6	0.3	2.1	3.4	5.3	6.6	7.1
Pro forma net income.....	6.5%	2.5%	0.3%	3.5%	5.7%	8.6%	11.2%	12.5%

Our quarterly operating results have varied significantly and are likely to continue to vary significantly due to a number of factors including:

- specific economic conditions in the industries in which our customers operate, particularly the semiconductor industry;
- the timing of the receipt of orders from major customers;
- customer cancellations or shipment delays;
- price competition;
- disruption in sources of supply;
- seasonal variations of capital spending by customers;
- production capacity constraints;
- specific features requested by customers;
- exchange rate fluctuations;
- the introduction or announcement of new products by us or our competitors; and
- other factors, many of which are beyond our control.

Our net sales have fluctuated over the past eight quarters primarily due to the cyclicity in the semiconductor capital equipment industry. In each quarter of 1998, the decline in the markets adversely affected the sales of our products. Gross profit as a percentage of net sales decreased in each of the first three quarters of 1998 as a result of manufacturing overhead costs becoming a higher percentage of net sales due to lower sales volume. In each of the quarters of 1999, the upturn in the semiconductor capital equipment industry beneficially affected our sales. Gross profit as a percentage of net sales increased in each of the quarters of 1999 as a result of fuller utilization of existing manufacturing capacity as a result of the increased net sales.

The decrease in research and development expenses for the first, second, and third quarters of 1998 was due to reduced spending for development materials for projects that were completed during 1998. These expenses began to increase in the fourth quarter of 1998 and in each of the first three quarters of 1999 due to increased spending for development materials.

The decrease in selling, general and administrative expenses in each of the quarters of 1998 was primarily due to a decrease in compensation expense along with other selling related expenses. The increase in these expenses in each of the quarters of 1999 was primarily due to increased incentive compensation expense, professional fees and other selling expenses.

Other expenses in the first quarter of 1998 include \$0.7 million for costs associated with our planned initial public offering in early 1998 which was postponed. Beginning in the second quarter of 1999, we generated net interest income resulting from the invested net proceeds from our initial public offering. Other income in the first quarter of 1999 includes gains from foreign exchange contracts which did not qualify for hedge accounting. Other income in the third quarter of 1999 resulted from a distribution from one of our mutual insurance carriers upon its initial public offering.

LIQUIDITY AND CAPITAL RESOURCES

We have financed our operations and capital requirements through a combination of cash provided by operations, long-term real estate financing, capital lease financing and short-term lines of credit. On April 5, 1999, we completed the initial public offering of our common stock. In connection with that offering and the exercise of an over-allotment option by the underwriters, we sold 6,375,000 shares of common stock. Our net proceeds were approximately \$82 million and were received in the second quarter of 1999. Underwriting discounts and commissions were approximately \$6 million, and other offering costs were approximately \$1 million. On April 5, 1999, we distributed \$40 million to our stockholders, which was the estimated amount of our undistributed S corporation earnings as of the day prior to the closing of the offering.

Operations provided cash of \$17.1 million for 1999 primarily from generating net income. This cash flow was impacted by depreciation and changes in the levels of accounts payable, accrued expenses, accounts receivable and a non-cash deferred tax credit. Investing activities utilized cash of \$33.4 million for 1999 primarily from purchasing short-term investments with the net proceeds from the initial public offering and for the purchase of property and equipment. Financing activities provided cash of \$41.2 million, with net proceeds from the initial public offering of \$82.1 million offset by the distribution to stockholders of \$40.0 million.

Working capital was \$87.1 million as of December 31, 1999, an increase of \$55.6 million from December 31, 1998. We have a combined \$30.0 million line of credit with two banks, expiring December 31, 2000, all of which is available.

Prior to our initial public offering, we entered into a Tax Indemnification and S Corporation Distribution Agreement with our then existing stockholders. The agreement includes provisions for the payment, with interest, by those stockholders or MKS, as the case may be, for the difference between the \$40 million distributed as an estimate of the amount of the accumulated adjustments account as of April 4, 1999, which is the date our S corporation status was terminated, and the actual amount of the accumulated adjustments account on that day. The actual amount of the accumulated adjustments account cannot be determined until we calculate the amount of our taxable income for the year ending December 31, 1999. Based on our estimate of the taxable income for the year ending December 31, 1999, we believe that an additional distribution to the then existing stockholders will be required under this agreement. The amount of the additional distribution, prior to interest, is currently estimated to be \$3.4 million. The amount of the additional distribution payable has been charged directly to retained earnings and had no impact on net income or earnings per share. The amount of the accumulated adjustments account can be affected by income tax audits of MKS. If any audit increases or decreases the accumulated adjustments account, MKS or the then existing stockholders, as the case may be, will also be required to make a payment with interest, of such difference to the other party. No stockholders, other than the then existing stockholders, are parties to the Tax Indemnification and S Corporation Distribution Agreement.

We believe that the net proceeds from this offering, together with our working capital and the cash anticipated to be generated from operations and funds available from existing credit facilities, will be sufficient to satisfy our estimated working capital and planned capital expenditure requirements through at least the next 24 months.

EFFECT OF CURRENCY EXCHANGE RATES AND EXCHANGE RATE RISK MANAGEMENT

A significant portion of our business is conducted outside of the United States through our foreign subsidiaries, which maintain their accounting records in their local currencies. Consequently, period to period comparability of results of operations is affected by fluctuations in exchange rates. We derive a significant portion of our revenue from foreign locations. To the extent the dollar value of foreign denominated revenue is diminished as a result of a strengthening U.S. dollar, our results of operations could be adversely affected.

The primary currencies to which we have exposure are the Japanese yen and the German mark. The nature of this exposure is from MKS selling inventory to our overseas subsidiaries for resale in local currency. To reduce the risks associated with foreign currency rate fluctuations, we have entered into forward exchange contracts and local currency purchased options on a continuing basis in amounts and timing consistent with the underlying currency exposures on the probable intercompany sales of inventory.

The Company also entered into local currency purchased options to hedge intercompany payables. Since these derivatives hedge existing amounts that are denominated in foreign currencies, the options do not qualify for hedge accounting under SFAS No. 133.

Gains on forward exchange contracts and local currency purchased options, qualifying for hedge accounting, amounted to \$1.2 million for the year ended December 31, 1997, \$0.3 million for the year ended December 31, 1998 and losses of \$0.1 million for the year ended December 31, 1999 and are classified in cost of sales. Gains of \$1.2 million in 1997, losses of \$0.2 million in 1998 and gains of \$0.4 million in 1999 on forward exchange contracts that did not qualify for hedge accounting were recognized in earnings and are classified in other income (expense), net. Also, included in other income (expense), net are an exchange translation loss of \$1.0 million in 1997 and a gain of \$1.0 million in 1998 on intercompany payables from our subsidiaries. We plan to continue to use forward exchange contracts and local currency purchased options to seek to mitigate the impact of exchange rate fluctuations. See Notes 2 and 3 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus.

MARKET RISK AND SENSITIVITY ANALYSIS

Foreign Exchange Rate Risk

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

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

At December 31, 1999, we had \$12,423,000 related to short-term borrowings denominated in Japanese yen. The carrying value of these short-term borrowings approximates fair value due to their short period to maturity. Assuming a hypothetical 10% adverse change in the Japanese yen to U.S. dollar year end exchange rate, the fair value of these short-term borrowings would increase by \$1,381,000. The potential increase in fair value was estimated by calculating the fair value of the short-term borrowings at December 31, 1999 and comparing that with the fair value using the hypothetical year end exchange rate.

Interest Rate Risk

We are exposed to fluctuations in interest rates in connection with our variable rate term loans. In order to minimize the effect of changes in interest rates on earnings, we entered into an interest rate swap that fixed the interest rate on our variable rate term loans. Under the swap agreement, we pay a fixed rate of 5.85% on the notional amount and receive LIBOR. At December 31, 1999, the notional amount of the interest rate swap was equal to the principal amount of the variable rate term loans. The potential increase in the fair value of term loans when adjusting for the interest rate swap paying at a fixed rate resulting from a hypothetical 10% decrease in interest rates was not material.

Due to its short-term duration, the fair value of our cash and investment portfolio at December 31, 1999 approximated its carrying value. Interest rate risk was estimated as the potential decrease in fair value resulting from a hypothetical 10% increase in interest rates for securities contained in the investment portfolio. The resulting hypothetical fair value was not materially different from the year-end carrying value.

RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

See Note 2 of Notes to our 1999 Consolidated Financial Statements, which are incorporated by reference into this prospectus, for a discussion of the impact of recently issued accounting pronouncements.

YEAR 2000 COMPLIANCE

The Year 2000 problem stems from the fact that many currently installed computer systems include software and hardware products that are unable to distinguish 21st century dates from those in the 20th century. As a result, computer software and/or hardware used by many companies and governmental agencies may need to be upgraded to comply with Year 2000 requirements or risk system failure or miscalculations causing disruptions to normal business activities. To date, we have experienced no material year 2000 problems with our internal computer software and hardware, products, facilities and manufacturing equipment or third party goods, services and interfaces.

BUSINESS

We are a leading worldwide developer, manufacturer and supplier of instruments, components and integrated subsystems used to measure, control and analyze gases in semiconductor manufacturing and similar industrial manufacturing processes. We offer a comprehensive line of products which are used to manufacture, among other things:

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

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

- Pressure Measurement and Control Products;
- Material Delivery and Analysis Products; and
- Vacuum Products.

For over 25 years, we have focused on satisfying the needs of semiconductor capital equipment manufacturers and semiconductor device manufacturers and have established long-term relationships with many of our customers. Over 4,000 customers worldwide purchased products from us during 1999, including:

- semiconductor capital equipment manufacturers;
- semiconductor device manufacturers;
- industrial manufacturing companies; and
- university, government and industrial research laboratories.

Our customers include Applied Materials, Inc., Lam Research Corporation, Novellus Systems, Inc., Tokyo Electron Limited, Inc., Air Products and Chemicals, Inc. and Motorola, Inc. We sell our products primarily through our direct sales force, which consists of 126 employees, as of December 31, 1999, in 22 offices in France, Germany, Japan, Korea, The Netherlands, Singapore, Taiwan, the United Kingdom and the United States.

INDUSTRY BACKGROUND

In the past 40 years, significant advances in materials science and processing technologies have made possible the manufacture of products ranging from highly complex microprocessor chips to simple but effective airtight coatings for food packagings. In many materials processing applications, specific gas mixtures at precisely controlled pressures are used:

- to create and maintain the required process atmosphere;
- to provide a source of materials to be deposited on a surface, such as a silicon wafer; and
- to remove or etch materials from a surface to form a circuit pattern.

Currently, the largest commercial application employing materials science and processing technologies is the manufacture of semiconductors. Worldwide semiconductor sales have increased as the use of semiconductors has expanded beyond personal computers and computer systems to a wide array of additional applications such as data and telecommunications systems, automotive products, consumer goods, medical products and household appliances. In large part, this growth has been facilitated by the ability of semiconductor device manufacturers to produce increasingly fast, more complex, higher performance semiconductors while steadily reducing cost per function, power consumption requirements and size of these products to meet end-user and system designer requirements. Advancements in semiconductor processing technologies have allowed semiconductor device designers to reduce circuit pattern sizes and subsequently increase the number of individual semiconductor circuits on a silicon wafer. These trends have driven the need for increasingly complex and sophisticated semiconductor device manufacturing processes, process equipment and process controls.

Semiconductor Manufacturing Process

The manufacturing of semiconductors requires hundreds of process steps. Many steps involve the controlled application or removal of layers of materials to or from a surface referred to as a substrate. These process steps take place within a process chamber, which provides a controlled environment for the fabrication of semiconductor devices. Most of the key processes used in the production of semiconductors require precise automatic control of gas pressure, flow and composition in the process chamber. A typical process step uses from three to five different gases.

To ensure the integrity and performance of the manufacturing process, semiconductor device manufacturers require sophisticated instruments that can provide precise automated control of all major process variables within the process chamber. The process steps required to produce circuit patterns involve the control of multiple gases flowing into the process chamber at specified intervals, and at controlled pressure and vacuum levels. In a typical process step, the process chamber is evacuated to a base pressure established by a vacuum pumping system and measured with vacuum gauges. Automatic shut-off valves are sequenced to protect pumps and process instruments from exposure to atmospheric pressure. Chamber leak integrity may be checked by gas analyzers scanning for the presence of undesirable atmospheric gases or water vapor. Mass flow controllers automatically control the flow rates of multiple gases into the process chamber. Simultaneously, the automatic pressure control system for the process chamber measures the pressure in the chamber and controls it at the desired level by electronically adjusting the position of a control valve located between the process chamber and the vacuum pump. Downstream of the process chamber, heated lines, particle traps, and vacuum valves and switches are used to prevent contamination of the process chamber as a result of the backstream of particles and exhaust gases back into the process chamber. This improves circuit quality, reduces maintenance and prolongs equipment life.

The pressures used in semiconductor manufacturing processes range from as low as one trillionth of atmospheric pressure to as high as two hundred times atmospheric pressure. The following table shows the wide range of pressures required for typical semiconductor manufacturing processes:

PRESSURE RANGES OF TYPICAL SEMICONDUCTOR MANUFACTURING PROCESSES

[PRESSURE RANGES OF TYPICAL SEMICONDUCTOR MANUFACTURING PROCESSES CHART]

(This table graphically depicts, using graybars, the gas pressure ranges, from one trillionth of atmospheric pressure to two hundred times atmospheric pressure used in various typical semiconductor manufacturing process steps (introduction of gases into process chamber, deposition of materials and thin films on to substrates, introduction of gases to etch circuit patterns, deposition of conductive metal layers onto substrates and implantation of positively charged atoms into substrates).

Uptime, yield and throughput are critical semiconductor manufacturing concepts. Uptime is the amount of time that the semiconductor processing tool is available for processing. Yield is the ratio of acceptable circuits to total circuits processed. Throughput is the number of wafers that can be processed per hour. Uptime, yield and throughput depend in large part upon:

- precise repeatable measurement and control of the specific gas pressure, flow rates and composition;
- the maintenance of the vacuum integrity of the process chamber; and
- the prevention of wafer contamination from particles entering the chamber.

Pressure variations of as little as one one-hundred-thousandth of atmospheric pressure can change process yields significantly and errors in gas flow rates and composition may impair circuit performance. Atmospheric contamination and particle contamination can produce defects that significantly reduce wafer yields and the time required to remove contaminants reduces uptime and throughput. The speed of response and precision of the automatic control systems directly affects uptime, throughput of wafers and process yields.

Other Similar Industrial Manufacturing Processes

Many of the same processes used to manufacture semiconductors are also used to manufacture optical filters, fiber optic cables, flat panel displays, magnetic and optical storage media, architectural glass, solar panels and gas lasers.

Trends in Semiconductor Manufacturing

The ability of semiconductor device manufacturers to offer integrated circuits with smaller geometries and greater functionality at higher speeds requires continuous improvements in semiconductor process equipment and process controls. The transition to smaller circuit patterns, such as 0.18 micron and smaller line-widths, requires more process steps. It is also leading to the introduction of new materials such as copper

and low-k dielectrics. These in turn require new technologies for delivery of gases and vapors to the process chamber. In addition, the introduction of advanced processes such as high density plasma is leading to a need for lower pressures, which are more difficult to measure and control than higher pressures. These trends, along with increased wafer sizes, which result in higher circuit value per wafer, are leading to the need for increased sophistication of semiconductor processing equipment, a heightened emphasis on uptime, yield and throughput and the need for more precise process controls. As a result, the design and performance of instruments that control pressure or the flow of gases, or analyze the composition of gases, are becoming even more critical to the semiconductor manufacturing process.

To address the increasing complexity of semiconductor devices, semiconductor device manufacturers typically develop processes to create particular device features using specific manufacturing equipment. The process for each feature is then documented and may be subsequently replicated for use in multiple fabrication facilities around the world. The precision, repeatability and reliability of the measurement and control instrumentation used for each process is critical to providing uptime, high yield and throughput on manufacturing equipment at all facilities employing such processes. Semiconductor device manufacturers are placing increasing importance on uptime, yield, throughput and process consistency throughout their facilities to maximize capital equipment productivity and to reduce ongoing operating costs.

The increasing sophistication of semiconductor devices requires an increase in the number of components and integrated subsystems used in the design of semiconductor manufacturing process tools. To reduce manufacturing complexity, improve quality and reliability and ensure long-term service and support, semiconductor capital equipment manufacturers and semiconductor device manufacturers are increasingly seeking to establish relationships with a smaller group of broad-based suppliers that meet their needs on a worldwide basis and provide:

- advanced technological capabilities to address the increasing complexities of the semiconductor manufacturing process;
- instrument and component designs that ensure repeatable processes around the world;
- value-added, integrated instruments and components; and
- a worldwide sales, service and support infrastructure.

MKS SOLUTION AND STRATEGY

Our objective is to be the leading worldwide supplier of instruments, components and integrated subsystems used to measure, control and analyze gases in semiconductor and other advanced thin-film materials processing applications and to help semiconductor device manufacturers achieve improvements in their return on invested capital. The principal elements of our solution and strategy to achieve this objective are:

Technology Leadership. Our products incorporate leading-edge technologies to control and monitor increasingly complex gas-related semiconductor manufacturing processes, thereby enhancing uptime, yield and throughput which can improve the investment return on capital equipment and facilities. Our instruments, components and integrated subsystems provide:

- high precision operation over the extreme and variable pressure ranges required for semiconductor processes;
- precise, consistent and repeatable measurement and control performance that allows processes to be replicated in manufacturing facilities around the world;
- advanced control technologies which enhance uptime, yield and throughput;
- multiple, diverse and alternative technologies for controlling the flow rate and composition of gases and vapors needed for new classes of advanced materials for next generation semiconductor devices; and

- innovative vacuum technologies that reduce atmospheric and particle contamination, thereby enhancing uptime, yield and throughput.

Our products have continuously advanced as our customers' needs have evolved. We seek to extend our technological leadership by applying our expertise in vacuum, pressure, flow and gas composition measurement control and analysis technologies to develop advanced products that meet the critical gas-related process requirements of semiconductor and advanced thin-film materials manufacturers.

We have introduced technological innovations including:

- corrosion-resistant pressure and vacuum sensors;
- automatic pressure and vacuum control systems; and
- compact single unit gas composition analyzers to replace bulky multi-component systems.

We have developed, and continue to develop, new products to address emerging industry trends such as the transition from the use of 200mm wafers to 300mm wafers and the shrinking of integrated circuit line-widths from 0.25 micron to 0.18 micron and smaller. We have supplied pre-production equipment to be incorporated into semiconductor capital equipment manufacturers' 300mm pre-production semiconductor wafer process equipment, which is expected to be included in pilot production lines of device manufacturers.

We have also developed equipment that is being used by research laboratories for semiconductor devices using less than 0.18 micron line-widths. In addition, we have developed, and continue to develop, materials delivery systems for new classes of materials, such as copper for conductors, titanium nitride for barriers and a class of organic and inorganic dielectric materials that are beginning to be used in small geometry manufacturing.

We have been a leader in making our products compatible with emerging digital network standards, such as DeviceNet. DeviceNet enables components used in semiconductor manufacturing processes to transmit self-diagnostic and other information on a digital host network. This reduces system complexity and space requirements.

To ensure that we maintain our leading-edge position, we align our research and development program to the International Technology Roadmap for Semiconductors, or ITRS. The ITRS identifies technological developments, as well as obstacles, required to produce future generations of semiconductor devices. We also maintain associations with leading universities to anticipate future semiconductor production needs three to seven years in advance.

Comprehensive Product Offering. We currently offer, and intend to continue to offer, the widest range of pressure and vacuum measurement and control products serving the semiconductor manufacturing and similar industrial manufacturing industries. We offer a full line of products including a wide range of gas pressure, flow and composition analysis measurement and control instruments and vacuum gauges, valves and components.

Since the development of our original Baratron laboratory-based pressure measurement instrument in 1961, we have continuously enhanced and expanded our product offerings in response to the evolving needs of our customers. For example, we recently introduced the ORION CVD-process monitor, which addresses the growing copper process market. We plan to introduce new products throughout 2000, including integrated vapor delivery subsystems, application specific Baratron pressure measurement instruments and additional integrated vacuum subsystems for process improvement.

Our products are designed to meet the increasingly complex needs of our customers. With the increasing sophistication of semiconductor capital equipment leading to an increasing number of components and subsystems in semiconductor manufacturing process tools, we deliver products that reduce equipment size and improve process performance. Our subsystem products combine several components into single integrated solutions. Our integrated solutions deliver higher performance at a lower cost than similar subsystems built from discrete components. Additionally, our integrated solutions are easier to install and configure, further reducing the overall cost to the customer.

We plan to continue to expand our product lines through both internal development and acquisitions of complementary businesses, products and technologies. In March 2000, we entered into a definitive agreement to acquire Compact Instrument Technology, LLC. This strategic acquisition complements our core capabilities in gas composition analysis and provides additional capabilities to reduce the size and costs of monitors for advanced processes.

Close Working Relationships with Customers. We have focused on satisfying the needs of semiconductor device manufacturers and semiconductor capital equipment manufacturers for over 25 years and have established long-term relationships with many of our customers. We work with our customers at the pre-design and design stage to identify and respond to their requests for current and future generations of products. These close working relationships allow us to understand and address the cost and performance expectations of our customers. Our comprehensive product offering enables us to meet a broad range of customer needs and provide a single source of solutions for semiconductor device and semiconductor capital equipment manufacturers as they seek to consolidate their supplier relationships to a smaller select group. We plan to enhance our relationships with our major customers and identify opportunities to develop similar relationships with additional semiconductor capital equipment manufacturers and semiconductor device manufacturers.

Applications in Related Markets. We are leveraging our accumulated expertise in the semiconductor industry by developing products for applications that employ production processes similar to semiconductor fabrication processes in their reliance upon gases and vacuum-based production technologies. Applications served by us outside the semiconductor industry include optical filters, fiber optic cables, flat panel displays, magnetic and optical storage media, solar panels and gas lasers. We plan to continue to identify and develop products that address advanced materials processing applications where gas management plays a critical role.

Global Infrastructure and World Class Manufacturing Capabilities. As semiconductor device manufacturers have become increasingly global, they have required that suppliers offer comprehensive local repair service and close customer support. Manufacturers require close support to enable them to calibrate, repair, modify, upgrade and retrofit their equipment to improve process consistency, uptime, yield and throughput. To meet these market requirements, we maintain a global sales and support organization with 22 offices worldwide. We currently manufacture our products at nine facilities in the United States and abroad. We continue to devote significant resources to expand and maintain our worldwide production and service capabilities to meet the global demand for gas measurement, control and analysis instruments and vacuum technology components.

We believe that the ability to manufacture reliable instruments and components in a cost-effective manner is critical to meet the demanding just-in-time delivery requirements of semiconductor capital equipment manufacturers and semiconductor device manufacturers. Our worldwide production and manufacturing facilities provide us with the ability to manufacture reliable gas measurement, control and analysis instruments and components in a timely and cost-effective manner. With a total of approximately 250,000 square feet of manufacturing capacity in five locations in the United States and four others in Germany, Japan, the United Kingdom and Korea, we have implemented world class practices in quality and delivery techniques. Our manufacturing facilities in the United States, the United Kingdom and Germany are ISO 9001 certified.

PRODUCTS

We offer a full line of instruments, components and integrated subsystems that are used to measure, control and analyze gases in semiconductor manufacturing and other advanced thin-film manufacturing processes. We supply products in three principal product areas. We also provide value-added integrated subsystems combining these products. Our products include:

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

The following schematic shows where our products are used in a typical semiconductor or other thin-film manufacturing process.

[CHART]

[Schematic showing where MKS products are used in a typical semiconductor manufacturing process.]

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

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

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

The following table shows our principal Baratron pressure measurement product lines:

BARATRON PRESSURE MEASUREMENT PRODUCTS

PRODUCT LINES -----	DESCRIPTION -----	RANGES OF LIST PRICES -----
High precision, high accuracy pressure and vacuum measurement instruments	Instruments with built-in temperature stabilization features, for high precision, high accuracy and high temperature operation	\$2,700 - \$6,900
General purpose pressure and vacuum measurement instruments	Rugged instruments with and without built- in temperature stabilization features, for reliable, precise and accurate process measurement	\$ 500 - \$4,250
Ultra-clean high pressure and vacuum measurement instruments	Instruments with ultra-clean surfaces exposed to gas, for precise, high purity applications	\$ 650 - \$1,150
General purpose "MINI" pressure and vacuum measurement instruments	Small footprint instruments for precise, accurate, general purpose process measurement	\$ 650 - \$1,500
Electronic pressure and vacuum switches	Economical, stable instrument providing "go/no-go" output for precise pressure trip-points and alarms	\$ 400 - \$ 800

Our list prices for our Baratron measurement products vary depending upon precision, accuracy, pressure range, operating temperature range, stability and gas purity specifications.

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

In most cases, our Baratron pressure measurement instruments provide the pressure input to the automatic pressure control device. Together, these components create an integrated automatic pressure control system. 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.

AUTOMATIC PRESSURE AND VACUUM CONTROL PRODUCTS

PRODUCT LINES -----	DESCRIPTION -----	RANGES OF LIST PRICES -----
Automatic throttle control valve controllers	Analog controllers, self-tuning digital controllers and displayless self-tuning controllers	\$ 950 - \$2,700
Throttle control valves	Non-sealing and sealing valves; high speed sealing throttle control valves; and automatic, microprocessor-based smart throttle control valves	\$1,500 - \$8,800
Automatic solenoid control valve controllers	Stand-alone control electronics packages or integrated sensor, valve and control electronics packages	\$1,400 - \$3,000
Solenoid control valves	Elastomer and all-metal-sealed solenoid control valves	\$ 500 - \$1,550

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

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

Flow Measurement and Control Products. Our flow measurement products include gas, vapor and liquid flow measurement products based upon thermal conductivity, pressure and direct liquid injection technologies. The flow control products combine the flow measuring device with valve control elements based upon solenoid, piezo-electric and piston pump technologies. The products measure and automatically control the mass flow rate of gases and vapors into the process chamber. Our broad product lines include products that allow the precise, automatic flow control of inert or corrosive gases, the automatic control of low vapor pressure gases and heated liquid source materials, and the automatic control of delicate, advanced technology liquid sources and vaporized solid sources for next generation devices.

Our line of thermal-based mass flow controllers, which control gas flow based on the molecular weight of gases, includes all-metal-sealed designs and ultra-clean designs for semiconductor applications, and general purpose controllers for applications where all-metal-sealed construction is not required. We have also developed pressure-based mass flow controllers, based on Baratron pressure instrument measurement and control technology, which use flow restrictors in the gas line to transform pressure control into mass flow control.

FLOW MEASUREMENT AND CONTROL PRODUCTS

PRODUCT LINES -----	DESCRIPTION -----	RANGES OF LIST PRICES -----
Direct liquid injection subsystem	Pumps and vaporizes into process chamber liquid precursors for metals and dielectrics	\$8,500 - \$25,450
Gas box rate of rise calibrator	Measures pressure increase with time in a known volume	\$8,100 - \$11,800
Pressure-based vapor delivery systems	Measures and controls flow of low pressure vapors into chamber	\$4,900 - \$12,400
Pressure-based mass flow controllers	Gas flow controller consisting of Baratron sensor, control valve, orifice and electronics	\$2,700 - \$ 2,800
Ultra-clean, all-metal-sealed thermal mass flow controllers	Gas flow controller consisting of sensor, control valve and electronics	\$1,450 - \$ 9,500
General purpose elastomer-sealed mass flow controllers	Gas flow controller consisting of sensor, control valve and electronics	\$ 950 - \$ 2,450

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

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

Gas Composition Analysis Instruments. Our gas analysis instruments are sold primarily to the semiconductor industry. The residual gas analysis product lines include a quadrupole mass spectrometer sensor, which is a device that separates gases based on molecular weight. Our quadrupole mass spectrometer sensors include built-in electronics to analyze the composition of background and process gases in the process chamber. Our ORION process monitoring system is a sophisticated quadrupole mass spectrometer process analyzer for statistical process monitoring of manufacturing processes operating from very low pressures to atmospheric pressure. These instruments are provided both as portable laboratory systems and as process gas monitoring systems used in the diagnosis of semiconductor manufacturing process systems and are sold at prices up to \$120,000. The gas monitoring systems can indicate out-of-bounds conditions, such as the presence of undesirable atmospheric gases, water vapor or out-of-tolerance amounts of specific gases in the process chamber, enabling operators to diagnose and repair faulty equipment. Our gas sampling systems provide a turn-key solution for withdrawing gases from chambers at relatively high pressures for introduction into the low pressure gas analyzers. Next generation semiconductor manufacturing processes, with smaller circuit patterns and larger wafer sizes, are expected to require sophisticated gas analysis instruments and/or monitoring equipment to ensure tighter process control and earlier diagnosis of equipment malfunction. Our recent definitive agreement to acquire Compact Instrument Technology enhances our core capabilities in gas composition analysis and process monitoring.

VACUUM PRODUCTS. We design and manufacture a wide variety of vacuum technology products, including vacuum gauges, 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. Unlike Baratron pressure measurement instruments, vacuum gauges do not measure pressure directly. These gauges are used to measure vacuum at pressures lower than those measurable with a Baratron pressure measurement instrument or to measure vacuum in the Baratron pressure measurement instrument range where less accuracy is required. Our indirect pressure gauges use thermal conductivity and ionization gauge technologies to measure pressure from atmospheric pressure to one trillionth of atmospheric pressure. Our Baratron pressure measurement instruments, together with our vacuum gauges, are capable of measuring the full range of pressures used in semiconductor and other thin-film manufacturing processes from two hundred times atmospheric pressure to one trillionth of atmospheric pressure.

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

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

VACUUM PRODUCTS

PRODUCT LINES - - - - -	DESCRIPTION - - - - -	RANGES OF LIST PRICES - - - - -
Cold cathode and hot filament vacuum gauges	Electronic gauges to measure pressure down to one trillionth of atmospheric pressure	\$ 600 - \$7,150
Convection gauges	Electronic gauges to measure from one atmosphere down to one millionth of atmospheric pressure	\$ 250 - \$ 700

PRODUCT LINES	DESCRIPTION	RANGES OF LIST PRICES
Right-angle and in-line shut-off valves	High vacuum rapid action poppet valves	\$ 300 - \$5,550
Vapor sublimation traps	Contaminant particle trap	\$1,800 - \$4,550
Other vacuum components	Flanges, fittings, valves and heated lines	\$ 50 - \$3,150

MARKETS AND APPLICATIONS

We estimate that approximately two-thirds of our sales in 1999 were made to the semiconductor industry. Our products are also used in other markets and applications including the manufacture of, among other things:

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

We sell our products primarily through our direct sales force in 22 offices in France, Germany, Japan, Korea, The Netherlands, Singapore, Taiwan, the United Kingdom and the United States. This direct sales force is supplemented by sales representatives and agents in Canada, China, India, Israel, and Italy and in select U.S. cities. The major markets for our products include:

Semiconductor Manufacturing

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

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

Our products are also used for process facility applications such as gas distribution, pressure control and vacuum distribution in clean rooms where semiconductor manufacturing takes place. 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, the major semiconductor capital equipment manufacturers are concentrated in the United States, Japan and Europe.

Optical Filters, Optical Fibers and Other Optical Coating

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

manufacturing. Optical filter, optical fiber and other optical thin-film processing are concentrated in the United States, Japan and Europe.

Flat Panel Displays

Our products are used in the manufacture of flat panel displays, which require the same or similar fabrication processes as semiconductor manufacturing. We sell our products both to flat panel original equipment manufacturers and to end-users in the flat panel display market. The transition to larger panel size and higher definition is driving the need for defect reduction which requires tighter process controls. The major manufacturers for flat panel displays and flat panel display equipment are concentrated in Japan.

Magnetic and Optical Storage Media

Our products are used in the manufacture of:

- magnetic storage media which store and read data magnetically;
- optical storage media which store and read data using laser technology;
- compact disks;
- hard disks;
- data storage devices; and
- digital video or versatile disks.

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

Other Coating Markets

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

We estimate that the flat panel display, magnetic and optical storage media, optical filter and fiber, optical coating markets and other coating markets combined, accounted for approximately 14% of net sales for 1998 and 11% of net sales for 1999.

Other Markets

Our products are used in plasma processes used to sterilize medical instruments, in vacuum freeze drying of pharmaceuticals, foods and beverages, and in vacuum processes involved in light bulb and gas laser manufacturing. Our products are also sold to government, university and industrial laboratories for vacuum applications involving research and development in materials science, physical chemistry and electronics materials. The major equipment and process providers and research laboratories are concentrated in the United States, Japan and Europe.

CUSTOMERS

Our largest customers are leading semiconductor capital equipment manufacturers such as Applied Materials, Lam Research, Novellus and Tokyo Electron, semiconductor device manufacturers such as Motorola, and specialty gas providers such as Air Products and Chemicals. Sales to our top ten customers accounted for approximately 37% of our net sales in 1997, 29% in 1998 and 39% in 1999. International sales represented approximately 27% of our net sales in 1997, 32% in 1998 and 31% in 1999. During 1999,

Applied Materials accounted for approximately 22% of our net sales. Applied Materials purchases products from us under the terms of an agreement, with no minimum purchase requirements, that expires in 2000.

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. On December 31, 1999, we had 126 sales employees in 22 offices in France, Germany, Japan, Korea, The Netherlands, Singapore, Taiwan, the United Kingdom and the United States. This direct sales force is supplemented by sales representatives and agents in Canada, China, India, Israel, and Italy and in select U.S. cities. We maintain a marketing staff to identify customer requirements, assist in product planning and specifications and to focus on future trends in the semiconductor and other markets.

As semiconductor device manufacturers have become increasingly sensitive to the significant costs of system downtime, they have required that suppliers offer comprehensive local repair service and close customer support. Manufacturers require close support to enable them to repair, modify, upgrade and retrofit their equipment to improve yields and adapt new materials or processes. To meet these market requirements, we maintain a worldwide sales and support organization with offices in 22 locations. Technical support is provided by applications engineers located at offices in Arizona, California, Colorado, Massachusetts, Oregon and Texas, as well as Canada, France, Germany, India, Israel, Italy, Japan, Korea, The Netherlands, Singapore, Taiwan and the United Kingdom. Repair and calibration services are provided at 14 service depots located worldwide. We provide warranties from one to three years, depending upon the type of product. In addition, we offer training programs for our customers in a wide range of vacuum and gas processing technologies.

MANUFACTURING

We believe that the ability to manufacture reliable gas management instruments and components in a cost-effective manner is critical to meeting the demanding requirements of semiconductor capital equipment manufacturers and semiconductor device manufacturers. We monitor and analyze product lead times, warranty data, process yields, supplier performance, field data on mean time between failures, inventory turns, repair response time and other indicators so that we may continuously improve our manufacturing processes. We have adopted a total quality management process. Our manufacturing facilities in the United States, the United Kingdom and Germany are ISO 9001 certified.

We are devoting significant financial and management resources to maintain and expand our worldwide production and service capabilities to meet the global demand for gas management instruments and components. We believe that the ability to manufacture reliable instruments and components in a cost-effective manner is critical to meet the demanding just-in-time delivery requirements of semiconductor capital equipment manufacturers and semiconductor device manufacturers. Due to the short time between the receipt of orders and shipments, we normally operate with a level of backlog that is not significant. We currently manufacture our products at nine facilities in the United States and abroad.

Our principal manufacturing activities consist of precision assembly, test and calibration. We subcontract a portion of our assembly, machining and printed circuit board assembly and testing. Critical assembly activities are performed in cleanroom environments at our facilities.

RESEARCH AND DEVELOPMENT

Our research and development efforts are directed toward developing and improving our gas management instruments and components for semiconductor and advanced thin-film processing applications and identifying and developing products for new applications for which gas management plays a critical role. 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. These relationships help us identify

and define future technical needs on which to focus our research and development efforts. In addition, we participate in the Semiconductor Industry Suppliers Association, a consortium of semiconductor equipment suppliers, to assist in product development and standardization of product technology, and we support research at academic institutions targeted at advances in materials science and semiconductor process development.

As of December 31, 1999, we employed a research and development staff of 110 employees. Our research and development expenditures were approximately \$14.7 million in 1997, \$12.1 million in 1998 and \$13.2 million in 1999, representing approximately 7.8% of net sales in 1997, 8.7% in 1998 and 7.1% in 1999.

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.

While 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 each of our product lines from a number of competitors, although no one competitor competes with us across all product lines. Certain of our competitors have greater financial and other resources than we have. In some cases, the competitors are smaller than us, but well-established in specific product niches. Millipore Corporation offers products that compete with our pressure and flow products. Aera Corporation, STEC and Unit Instruments each offer products that compete with our mass flow control products. Nor-Cal Products, Inc. and MDC Vacuum Products, Inc. each offer products that compete with our vacuum components. Leybold-Inficon, Inc. offers products that compete with our vacuum measuring and gas analysis products. Helix Technology Corporation offers products that compete with our vacuum gauging products. Spectra International LLC offers products that compete with our gas analysis products.

In some cases, particularly with respect to mass flow controllers, semiconductor device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier's product in their equipment. Accordingly, our success depends in part on our ability to have semiconductor device manufacturers specify that our products be used at their fabrication facilities and 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. There can be no assurance that competitors will not develop products that offer price or performance features superior to those of our 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, 1999, we had 55 U.S. patents and 13 pending U.S. patent applications. Foreign counterparts of certain of these applications have been filed or may be filed at the appropriate time. While we believe that certain patents may be important for certain aspects of our business, we believe that our success depends more upon close customer contact, innovation, technological expertise, responsiveness and worldwide distribution.

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 our proprietary information and to assign to us all inventions made while they are employed by us.

We are not engaged in any material disputes with other parties with respect to the ownership or use of our proprietary technology. However, there can be no assurance that other parties will not assert technology infringement claims or other claims against us in the future. The litigation of such a claim may involve significant expense and management time. In addition, if any such claim were successful, we could be required to pay monetary damages and may also be required to either refrain from distributing the infringing product or obtain a license from the party asserting the claim (which license may not be available on commercially reasonable terms).

EMPLOYEES

As of December 31, 1999, we employed 1,006 persons. Management believes that our ongoing success depends upon our continued ability to attract and retain highly skilled employees. None of our employees is represented by a labor union or party to a collective bargaining agreement. We believe that our employee relations are good.

FACILITIES

We sell our products primarily through our direct sales force in 22 offices in France, Germany, Japan, Korea, The Netherlands, Singapore, Taiwan, the United Kingdom and the United States. The direct sales force is supplemented by sales representatives and agents in Canada, China, India, Israel, and Italy and in select U.S. cities. Our corporate headquarters are located in Andover, Massachusetts. Manufacturing and other operations are conducted in a number of locations worldwide. We believe that the current facilities will be adequate and suitable to meet our needs for the foreseeable future. The following table provides information as of March 24, 2000 concerning our principal and certain other owned and leased facilities:

LOCATION	SQ. FT.	ACTIVITY	PRODUCTS MANUFACTURED	LEASE EXPIRES
Andover, Massachusetts...	82,000	Headquarters, Manufacturing, Customer Support and Research & Development	Pressure Measurement and Control Products	(1)
Austin, Texas.....	8,000	Sales, Customer Support and Service	Not applicable	1/30/03
Boulder, Colorado.....	86,000	Manufacturing, Customer Support, Service and Research & Development	Vacuum Products	(2)
Cheshire, U.K.....	2,000	Manufacturing, Sales, Customer Support and Service	Materials Delivery and Analysis Products	10/5/09
Lawrence, Massachusetts...	40,000	Manufacturing	Pressure Measurement and Control Products	(1)
Le Bourget, France.....	14,000	Sales, Customer Support and Service	Not applicable	(1)
Methuen, Massachusetts...	85,000	Manufacturing, Customer Support, Service and Research & Development	Pressure Measurement and Control Products; Materials Delivery and Analysis Products	(1)
Munich, Germany.....	14,000	Manufacturing, Sales, Customer Support, Service and Research & Development	Pressure Measurement and Control Products; Materials Delivery and Analysis Products	(1)

LOCATION	SQ. FT.	ACTIVITY	PRODUCTS MANUFACTURED	LEASE EXPIRES
Richardson, Texas.....	15,000	Manufacturing, Sales, Customer Support and Service	Pressure Measurement and Control Products; Materials Delivery and Analysis Products	8/31/01
Santa Clara, California...	13,000	Sales, Customer Support and Service	Not applicable	(3)
Seoul, Korea.....	5,000	Manufacturing, Sales, Customer Support and Service	Materials Delivery and Analysis Products	5/30/00*
Singapore.....	2,000	Sales, Customer Support and Service	Not applicable	3/25/01
Taiwan.....	2,000	Sales, Customer Support and Service	Not applicable	12/31/01
Tokyo, Japan.....	21,000	Manufacturing, Sales, Customer Support, Service and Research & Development	Materials Delivery and Analysis Products	(4)
Woburn, Massachusetts.....	3,000	Research and Development	Not applicable	8/10/03

* We have an option to extend this lease for a period of two years.

(1) This facility is owned by us.

(2) We lease one facility which has 39,000 square feet and a lease term which expires 10/31/01 and own a second facility with 28,000 square feet and third facility with 19,000 square feet.

(3) We lease one facility with 4,000 square feet on a month-to-month basis, a second facility of 4,000 square feet with a lease term which expires on 1/30/03. We own a third facility of 5,000 square feet.

(4) We lease a facility which has 14,000 square feet and a lease term which expires 4/30/01 and own another facility with 6,700 square feet.

In addition to manufacturing and other operations conducted at the foregoing leased or owned facilities, we provide 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."

LEGAL PROCEEDINGS

We are not a party to any material legal proceedings.

MANAGEMENT

EXECUTIVE OFFICERS AND DIRECTORS

Our executive officers and directors as of March 24, 2000 are as follows:

NAME ----	AGE ---	POSITION -----
John R. Bertucci.....	59	Chairman and Chief Executive Officer
Peter R. Younger.....	55	President and Chief Operating Officer
Ronald C. Weigner.....	54	Vice President and Chief Financial Officer
John J. Sullivan.....	64	Executive Vice President of Technology
Donald K. Smith.....	47	Chief Technical Officer
William D. Stewart.....	55	Corporate Vice President and General Manager, Vacuum Products
Joseph A. Maher, Jr.	52	Corporate Vice President and General Manager, Pressure Measurement and Control Products
Robert D. Klimm.....	49	Corporate Vice President and General Manager, Materials Delivery and Analysis Products
Leo Berlinghieri.....	46	Corporate Vice President, Customer Support Operations
Richard S. Chute.....	61	Director
Owen W. Robbins.....	70	Director
Robert J. Therrien.....	65	Director
Louis P. Valente.....	69	Director

Mr. Bertucci has served as a director since 1974 and has been Chairman of the board of directors and Chief Executive Officer since November 1995. From 1974 to 1999, he was President, and from 1970 to 1974 he was Vice President and General Manager. Mr. Bertucci has an M.S. in Industrial Administration and a B.S. in Metallurgical Engineering from Carnegie-Mellon University. Mr. Bertucci is also a director of Applied Science and Technology, Inc. and Intellisense Corporation.

Mr. Younger has served as our President and Chief Operating Officer since May 1999. From 1982 to 1999, he served in various management positions at Eaton's Semiconductor Equipment Operations, most recently as Vice President and General Manager. He is currently a board member of Semiconductor Equipment and Materials Information (SEMI), a global association of approximately 2,200 member companies in the semiconductor equipment and materials industry, and was the organization's chairman from 1997 to 1998. In addition, he served on the board of directors for the North Shore Chamber of Commerce from 1993 to 1997. Mr. Younger holds an A.B. in Physics from Cornell University, and an M.A. and Ph.D. in Physics from Boston University.

Mr. Weigner has served as our Vice President and Chief Financial Officer since November 1995. From September 1993 until November 1995, he was Vice President and Corporate Controller, and from 1980 to 1993, he was Corporate Controller. Mr. Weigner is a certified public accountant and has a B.S. in Business Administration from Boston University.

Mr. Sullivan has served as our Executive Vice President of Technology since March 1995. From 1982 to March 1995, he was Vice President of Marketing, and from 1975 to 1982, he was Vice President of Sales and Marketing. Mr. Sullivan has an M.S. and a B.S. in Physics from Northeastern University.

Mr. Smith has served as Chief Technical Officer since March 10, 2000. He was President of Compact Instrument Technology, LLC from April 1999 until it was acquired by us in March 2000. From 1987 until 1999, he was Senior Vice President, Advanced Technology and a director of Applied Science and Technology. He joined the Massachusetts Institute of Technology as a research scientist in 1981. Mr. Smith holds an M.S. and a Ph.D. in engineering from the University of Wisconsin and a B.S. from Davidson College.

Mr. Stewart has served as our Corporate Vice President and General Manager of Vacuum Products since November 1997. From October 1986 to November 1997, he was President of HPS Vacuum Products group, which we acquired in October 1986. Mr. Stewart co-founded HPS in 1976. Mr. Stewart has an M.B.A. from Northwestern University and a B.S. in Business Administration from the University of Colorado. Mr. Stewart also serves on the board of directors of the Janus Fund.

Mr. Maher has served as our Corporate Vice President and General Manager of Pressure Measurement and Control Products since December 1999. From November 1997 to December 1999 he was Corporate Vice President and General Manager of Measurement and Control Products and from March 1997 through November 1997, he was Vice President of the Process Control Instrumentation Group. Mr. Maher was a Vice President of Lam Research Corporation from 1993 through 1996, and from 1980 through 1993, he was Executive Vice President of Drytek Corporation, which was purchased by Lam Research Corporation in 1993. Mr. Maher has a B.S. in Electrical Engineering from Northeastern University.

Mr. Klimm has served as Corporate Vice President and General Manager of the Materials Delivery and Analysis Products group since December 1999. From 1997 to 1999, he was Vice President and General Manager of the Factory Automation Division of PRI Automation. From 1990 to 1997, he held various positions at Eaton's Semiconductor Equipment Operations, culminating as General Manager of the Implant Systems Division. Mr. Klimm has an M.B.A. from the Sloan School at the Massachusetts Institute of Technology, an M.A. in Electrical Engineering from Northeastern University and a B.S. in Electrical Engineering from Lehigh University.

Mr. Berlinghieri has served as our Corporate Vice President, Customer Support Operations since November 1995. From 1980 to November 1995, he served in various management positions at MKS, including Manufacturing Manager, Production & Inventory Control Manager, and Director of Customer Support Operations. Mr. Berlinghieri is also Treasurer of the TQM-BASE Council, Inc., a non-profit quality management consortium comprised of semiconductor capital equipment manufacturers located in and around Boston, Massachusetts.

Mr. Chute has served as a member of our board of directors since 1974. He has been a member of the law firm of Hill & Barlow, a professional corporation, since November 1971.

Mr. Robbins has served as a member of our board of directors since February 1996. He was Executive Vice President of Teradyne, Inc., a manufacturer of electronic test systems and backplane connection systems used in the electronics and telecommunications industries from March 1992 to May 1997, and its Chief Financial Officer from February 1980 to May 1997. Mr. Robbins has served on the board of directors of Teradyne, Inc. since March 1992 and was its Vice Chairman from January 1996 to May 1997.

Mr. Therrien has served as a member of our board of directors since February 1996. He has been President and Chief Executive Officer of Brooks Automation, Inc., a manufacturer of semiconductor processing equipment, since 1989.

Mr. Valente has served as a member of our board of directors since February 1996. He has been Chairman and Chief Executive Officer of Palomar Medical Technologies, Inc., a company which designs, manufactures and markets cosmetic lasers, since September 1997. He has been a director of Palomar Medical Technologies, Inc. since February 1997 and was its President and Chief Executive Officer from May 1997 to September 1997. Mr. Valente was a Senior Vice President of Acquisitions, Mergers and Investments of EG&G, Inc. from 1991 until July 1995.

PRINCIPAL AND SELLING STOCKHOLDERS

The following table sets forth certain information regarding beneficial ownership of our common stock as of March 24, 2000, and as adjusted to reflect the sale of shares offered hereby, by (1) each of our directors, (2) each of our executive officers, (3) each person known to us to own beneficially more than 5% of our common stock and (4) all directors and executive officers as a group.

Unless otherwise indicated, each person named in the table has sole voting power and investment power or shares such power with his or her spouse with respect to all shares of capital stock listed as owned by such person. Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission and includes voting or investment power with respect to the securities. The number of shares of common stock outstanding used in calculating the percentage for each listed person includes any shares the individual has the right to acquire within 60 days of March 24, 2000.

NAME OF BENEFICIAL OWNER	SHARES BENEFICIALLY OWNED PRIOR TO OFFERING		NUMBER OF SHARES OFFERED	SHARES BENEFICIALLY OWNED AFTER OFFERING	
	NUMBER	PERCENT		NUMBER	PERCENT
EXECUTIVE OFFICERS AND DIRECTORS					
John R. Bertucci.....	15,997,777(1)	64.1%	1,000,000	14,997,777	55.6%
Peter R. Younger.....	30,700(2)	*	--	30,700	*
Ronald C. Weigner.....	128,609(3)	*	--	128,609	*
John J. Sullivan.....	297,510	1.2	--	297,510	1.1%
Donald K. Smith.....	40,813	*	--	40,813	*
William D. Stewart.....	128,609(3)	*	--	128,609	*
Joseph A. Maher, Jr.....	102,676(4)	*	--	102,676	*
Robert D. Klimm.....	--	*	--	--	*
Leo Berlinghieri.....	92,009(3)	*	--	92,009	*
Richard S. Chute.....	2,317,798(5)	9.3	200,000	2,117,798	7.8%
Owen W. Robbins.....	25,092(3)	*	--	25,092	*
Robert J. Therrien.....	25,092(3)	*	--	25,092	*
Louis P. Valente.....	25,092(3)	*	--	25,092	*
5% STOCKHOLDER					
Thomas H. Belknap.....	2,021,506(6)	8.1	200,000	1,821,506	6.8%
All executive officers and directors as a group (13 persons).....	16,919,071(7)	66.2%	1,000,000	15,919,071	57.8%

* Less than 1% of outstanding common stock.

- (1) Includes 5,764,716 shares held directly by Mr. Bertucci, 5,919,199 shares held directly by Mr. Bertucci's wife, and 4,313,862 shares held by Bertucci family trusts for which either Mr. or Mrs. Bertucci serves as a co-trustee.
- (2) Includes 30,000 shares subject to options exercisable within 60 days of March 24, 2000.
- (3) Consists of options exercisable within 60 days of March 24, 2000.
- (4) Includes 96,960 shares subject to options exercisable within 60 days of March 24, 2000.
- (5) Includes 2,292,706 shares held by certain of the Bertucci family trusts for which Mr. Chute serves as a co-trustee and 25,092 shares subject to options held by Mr. Chute exercisable within 60 days of March 24, 2000.

(6) Includes 2,021,156 shares held by certain of the Bertucci family trusts for which Mr. Belknap serves as a co-trustee and 350 shares held directly by Mr. Belknap.

(7) Includes 576,555 shares subject to options exercisable within 60 days of March 24, 2000.

UNDERWRITING

We and the selling stockholders are offering the shares of common stock described in this prospectus through a number of underwriters. Banc of America Securities LLC, CIBC World Markets Corp., Lehman Brothers Inc., Adams, Harkness & Hill, Inc. and Needham & Company, Inc. are the representatives of the underwriters. MKS and the selling stockholders have entered into a firm commitment underwriting agreement with the representatives. Under the terms and subject to the conditions contained in the underwriting agreement dated , 2000, we and the selling stockholders have agreed to sell to the underwriters, and each of the underwriters has agreed to purchase, the number of shares of common stock listed next to its name in the following table:

UNDERWRITER -----	NUMBER OF SHARES -----
Banc of America Securities LLC.....	
CIBC World Markets Corp.....	
Lehman Brothers Inc.	
Adams, Harkness & Hill, Inc.	
Needham & Company, Inc.	

Total.....	=====

The underwriting agreement is subject to a number of terms and conditions and provides that the underwriters must buy all of the shares if they buy any of them. The underwriters will sell the shares to the public when and if the underwriters buy the shares from us and the selling stockholders.

The underwriters initially will offer shares to the public at the price specified on the cover page of this prospectus. The underwriters may allow to some dealers a concession of not more than \$ per share. The underwriters also may allow, and any other dealers may reallow, a concession of not more than \$ per share to some other dealers. If all the shares are not sold at the public offering price, the underwriters may change the public offering price and the other selling terms. The common stock is offered subject to a number of conditions, including:

- receipt and acceptance of our common stock by the underwriters; and
- the right on the part of the underwriters to reject orders in whole or in part.

We and the selling stockholders have granted an option to the underwriters to buy up to 450,000 additional shares of common stock. These additional shares would cover sales of shares by the underwriters that exceed the number of shares specified in the table above. The underwriters have 30 days to exercise this option. If the underwriters exercise this option, they will each purchase additional shares approximately in proportion to the amounts specified in the table above. If purchased, such additional shares will be sold by the underwriters on the same terms as those on which the shares of common stock offered hereby are being sold.

The following table sets forth the per share and total underwriting discounts and commissions to be paid to the underwriters assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	NO EXERCISE -----	FULL EXERCISE -----
Per share.....	\$	\$
Total to be paid by us.....	\$	\$
Total to be paid by the selling stockholders.....	\$	\$

We estimate that expenses payable by us and the selling stockholders in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately \$.

We, our executive officers and directors, certain of our stockholders and each of the selling stockholders have entered into lock-up agreements with the underwriters. Under those agreements, we, our executive

officers and directors and the selling stockholders may not dispose of or hedge any shares of common stock or securities convertible into or exchangeable for shares of common stock. These restrictions will be in effect for a period of 90 days from the date of this prospectus. At any time and without notice, Banc of America Securities LLC may, in its sole discretion, release all or some of the securities from these lock-up agreements.

We and the selling stockholders will indemnify the underwriters against some liabilities, including some liabilities under the Securities Act. If we or the selling stockholders are unable to provide this indemnification, we and the selling stockholders will contribute to payments the underwriters may be required to make in respect of those liabilities.

The shares of common stock are quoted on the Nasdaq National Market under the symbol "MKSI."

In connection with this offering, the underwriters may purchase and sell shares of common stock in the open market. These transactions may include:

- short sales;
- stabilizing transactions; and
- purchases to cover positions created by short sales.

Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in this offering. Stabilizing transactions consist of bids or purchases made for the purpose of preventing or retarding a decline in the market price of the common stock while this offering is in progress.

The underwriters may also impose a penalty bid. This means that if the representatives purchase shares in the open market in stabilizing transactions or to cover short sales, the representatives can require the underwriters that sold those shares as part of this offering to repay the underwriting discount received by them.

The underwriters may engage in activities that stabilize, maintain or otherwise affect the price of the common stock, including:

- over-allotment;
- stabilization;
- syndicate covering transactions; and
- imposition of penalty bids.

As a result of these activities, the price of the common stock may be higher than the price that otherwise might exist in the open market. If the underwriters commence these activities, they may discontinue them at any time. The underwriters may carry out these transactions on the Nasdaq National Market, in the over-the-counter market or otherwise.

In connection with this offering, some underwriters and any selling group members who are qualified market makers on the Nasdaq National Market may engage in passive market making transactions in the common stock on the Nasdaq National Market in accordance with Rule 103 of Regulation M. Rule 103 permits passive market making during the period when Regulation M would otherwise prohibit market making activity by the participants in this offering. Passive market making may occur during the business day before the pricing of the offering, before the commencement of offers or sales of the common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as a passive market maker. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for the security. If all independent bids are lowered below the passive market maker's bid, however, the bid must then be lowered when purchase limits are exceeded. Net purchases by a passive market maker on each day are limited to a specified percentage of the passive market maker's average daily trading volume in the common stock during a specified period and must be discontinued when such limit is reached.

Underwriters and dealers are not required to engage in passive market making and may end passive market making activities at any time.

LEGAL MATTERS

The validity of the common stock offered hereby will be passed upon for MKS by Hale and Dorr LLP, Boston, Massachusetts. Certain legal matters in connection with this offering will be passed upon for the underwriters by Ropes & Gray, Boston, Massachusetts.

EXPERTS

The financial statements incorporated in this prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 1999 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, independent accountants, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

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's public reference room at Judiciary Plaza Building, 450 Fifth Street, N.W., Room 1024, 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>.

This prospectus is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's Internet site.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate" into this prospectus information that we file with the SEC in other documents. This means that we can disclose important information to you by referring to other documents that contain that information. The information incorporated by reference is considered to be part of this prospectus. Information contained in this prospectus and information that we file with the SEC in the future and incorporate by reference in this prospectus automatically updates and supersedes previously filed information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, prior to the sale of all the shares covered by this prospectus.

1. Our Annual Report on Form 10-K for the year ended December 31, 1999;
2. All of our filings pursuant to the Exchange Act after the date of filing the initial registration statement and prior to effectiveness of the registration statement; and
3. The description of our common stock contained in our Registration Statement on Form 8-A dated March 2, 1999.

You may request a copy of these documents, which will be provided to you at no cost, by contacting:

MKS Instruments, Inc.
Six Shattuck Road
Andover, MA 01810
Attention: Chief Financial Officer
Telephone: (978) 975-2350

The inside back cover graphically depicts MKS's message of being a worldwide provider of process control solutions. It is produced in four-color process. In the center of the page is a photo of the Earth, with the tag line "Providing Solutions Around the Process, Around the World" wrapping around the photo. The word "Solutions" is highlighted with slightly larger type size. The background of the page is dark, with the MKS logo appearing at the top right, knocking out to white. Photos of MKS's products surround the photo of the Earth and include MKS Baratron Capacitance Manometers, a Throttling Poppet Valve, a Pressure Controller, Mass Flow Controllers, an In-Situ Flow Verifier, a Direct Liquid Injection Subsystem and an ORION Process Monitor.

3,000,000 SHARES

[MKS LOGO]

MKS INSTRUMENTS, INC.

PROSPECTUS
, 2000

BANC OF AMERICA SECURITIES LLC

CIBC WORLD MARKETS

LEHMAN BROTHERS

ADAMS, HARKNESS & HILL, INC.

NEEDHAM & COMPANY, INC.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION.

Estimated expenses payable in connection with the sale of the common stock offered hereby are as follows:

SEC Registration Fee.....	\$ 44,973
NASD Filing Fee.....	\$ 17,536
Printing, Engraving and Mailing Expenses.....	\$100,000
Legal Fees and Expenses.....	\$100,000
Accounting Fees and Expenses.....	\$ 40,000
Blue Sky Fees and Expenses.....	\$ 10,000
Transfer Agent and Registrar Fees.....	\$ 10,000
Miscellaneous.....	\$ 27,491

Total.....	\$350,000
	=====

- -----
The Company will bear all expenses shown above.

ITEM 15. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

Section 67 of Chapter 156B of the Massachusetts General Laws provides that a corporation may indemnify its directors and officers to the extent specified in or authorized by (1) the articles of organization; (2) a by-law adopted by the stockholders; or (3) a vote adopted by the holders of a majority of the shares of stock entitled to vote on the election of directors. In all instances, the extent to which a corporation provides indemnification to its directors and officers under Section 67 is optional. In its Amended and Restated Articles of Organization (the "Articles of Organization"), the Registrant has elected to commit to provide indemnification to its directors and officers in specified circumstances. Generally, Article 6 of the Registrant's Articles of Organization provides that the Registrant shall indemnify directors and officers of the Registrant against liabilities and expenses arising out of legal proceedings brought against them by reason of their status as directors or officers or by reason of their agreeing to serve, at the request of the Registrant, as a director or officer with another organization. Under this provision, a director or officer of the Registrant shall be indemnified by the Registrant for all costs and expenses (including attorneys' fees), judgments, liabilities and amounts paid in settlement of such proceedings, even if he is not successful on the merits, if he acted in good faith in the reasonable belief that his action was in the best interests of the Registrant. The Board of Directors may authorize advancing litigation expenses to a director or officer at his request upon receipt of an undertaking by any such director or officer to repay such expenses if it is ultimately determined that he is not entitled to indemnification for such expenses.

Article 6 of the Registrant's Articles of Organization eliminates the personal liability of the Registrant's directors to the Registrant or its stockholders for monetary damages for breach of a director's fiduciary duty, except to the extent Chapter 156B of the Massachusetts General Laws prohibits the elimination or limitation of such liability.

The Underwriting Agreement, a form of which is filed at Exhibit 1.1 to this Registration Statement on Form S-3 (the "Underwriting Agreement"), provides that the underwriters are obligated under certain circumstances to indemnify directors, officers and controlling persons of the Registrant against certain liabilities, including liabilities under the Securities Act of 1933, as amended (the "Securities Act"). Reference is made to the form of Underwriting Agreement.

The Company has obtained directors and officers liability insurance for the benefit of its directors and certain of its officers.

ITEM 16. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES.

(a) Exhibits:

EXHIBIT NO.	DESCRIPTION
1.1*	Form of Underwriting Agreement
3.1**	Amended and Restated Articles of Organization
3.2**	Amended and Restated By-laws
4.1**	Specimen certificate representing the common stock
5.1*	Opinion of Hale and Dorr LLP
23.1*	Consent of Hale and Dorr LLP (contained in Exhibit 5.1)
23.2	Consent of PricewaterhouseCoopers LLP
24	Power of Attorney (included on Page II-3)

* To be filed by amendment.

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

(b) Financial Statements Schedules

See Item 14(a)(2) to our Annual Report on Form 10-K for the year ended December 31, 1999, which is incorporated by reference into this registration statement.

ITEM 17. UNDERTAKINGS.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer and controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the questions whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of a registration statement in reliance upon Rule 430A and contained in the form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offer therein, and this offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

The undersigned registrant hereby further undertakes to provide to the underwriters at the closing specified in the underwriting agreements, certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the town of Andover, Commonwealth of Massachusetts, on this 3rd day of April, 2000.

MKS INSTRUMENTS, INC.

By: /s/ JOHN R. BERTUCCI

John R. Bertucci
Chairman of the Board
and Chief Executive Officer

II-3

SIGNATURES AND POWER OF ATTORNEY

We, the undersigned officers and directors of MKS Instruments, Inc., hereby severally constitute and appoint John R. Bertucci, Ronald C. Weigner and Mark G. Borden, and each of them singly, our true and lawful attorneys with full power to any of them, and to each of them singly, to sign for us and in our names in the capacities indicated below the Registration Statement on Form S-3 filed herewith and any and all pre-effective and post-effective amendments to said Registration Statement and generally to do all such things in our name and behalf in our capacities as officers and directors to enable MKS Instruments, Inc. to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the Securities and Exchange Commission, hereby ratifying and confirming our signatures as they may be signed by our said attorneys, or any of them, to said Registration Statement and any and all amendments thereto.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

SIGNATURES -----	TITLE -----	DATE ----
/s/ JOHN R. BERTUCCI ----- John R. Bertucci	Chairman of the Board and Chief Executive Officer (Principal Executive Officer)	April 3, 2000
/s/ RONALD C. WEIGNER ----- Ronald C. Weigner	Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	April 3, 2000
/s/ RICHARD S. CHUTE ----- Richard S. Chute	Director	April 3, 2000
/s/ OWEN W. ROBBINS ----- Owen W. Robbins	Director	April 3, 2000
/s/ ROBERT J. THERRIEN ----- Robert J. Therrien	Director	April 3, 2000
/s/ LOUIS P. VALENTE ----- Louis P. Valente	Director	April 4, 2000

EXHIBIT INDEX

EXHIBIT NO. -----	DESCRIPTION -----
1.1*	Form of Underwriting Agreement
3.1**	Amended and Restated Articles of Organization
3.2**	Amended and Restated By-Laws
4.1**	Specimen certificate representing the common stock
5.1*	Opinion of Hale and Dorr LLP
23.1*	Consent of Hale and Dorr LLP (contained in Exhibit 5.1)
23.2	Consent of PricewaterhouseCoopers LLP
24	Power of Attorney (included on Page II-3)

* To be filed by amendment.

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

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in this Registration Statement on Form S-3 (File No. 333-) of our report dated January 28, 2000 relating to the financial statements, which appears in the 1999 Annual Report to Shareholders, which is incorporated by reference in MKS Instruments, Inc.'s Annual Report on Form 10-K for the year ended December 31, 1999. We also consent to the incorporation by reference of our report dated January 28, 2000 relating to the financial statement schedule, which appears in such Annual Report on Form 10-K. We also consent to the references to us under the headings "Experts" and "Selected Financial Data" in such Registration Statement.

/s/ PRICEWATERHOUSECOOPERS LLP

PRICEWATERHOUSECOOPERS LLP

Boston, Massachusetts
April 7, 2000