

AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON JULY 14, 2000

REGISTRATION NO. 333-34450

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 SECURITIES AND EXCHANGE COMMISSION  
 WASHINGTON, D.C. 20549  
 -----

AMENDMENT NO. 1

TO

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)  
 -----

COPY TO:

MARK G. BORDEN, ESQ.  
 HALE AND DORR LLP  
 60 STATE STREET  
 BOSTON, MASSACHUSETTS 02109  
 (617) 526-6000  
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APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC: As soon  
 as practicable after the effective date hereof.

If the only securities being registered on this form are being offered  
 pursuant to dividend or interest reinvestment plans, check the following  
 box. [ ]

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, other than securities offered only in connection with dividend or interest  
 reinvestment plans, check the following box. [X]

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.

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THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED. 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 IT IS NOT SOLICITING AN OFFER TO BUY THESE SECURITIES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

SUBJECT TO COMPLETION, DATED JULY 14, 2000

PROSPECTUS

3,000,000 SHARES

[MKS LOGO]

COMMON STOCK

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MKS Instruments, Inc. may offer from time to time 2,000,000 shares of our common stock, and the selling stockholders may offer from time to time an additional 1,000,000 shares of our common stock. We will not receive any of the proceeds from the sale of shares by the selling stockholders. MKS and the selling stockholders will offer the common stock in amounts, at prices and on terms to be determined at the time of the offering.

Our common stock is listed for trading on the Nasdaq Stock Market's National Market under the symbol "MKSI." The last reported sale price of our common stock on the Nasdaq Stock Market's National Market on July 13, 2000 was \$32.38 per share.

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We will provide the specific terms of the offering in supplements to this prospectus. You should read this prospectus and any supplement carefully before you invest. This prospectus may not be used to offer and sell our common stock unless accompanied by a prospectus supplement.

INVESTING IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE 6.

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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.

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The date of this prospectus is \_\_\_\_\_, 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-Flow, 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.

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## ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission under a "shelf" registration process. This prospectus provides you with a general description of the offered common stock. Each time we offer common stock, we will provide a prospectus supplement and, if applicable, a pricing supplement that will describe the specific terms of the offering. The prospectus supplement and any pricing supplement may also add to, update or change the information contained in this prospectus. Please carefully read this prospectus, the prospectus supplement and any pricing supplement, in addition to the information contained in the documents we refer to under the heading "Where You Can Find More Information."

YOU SHOULD RELY ONLY ON THE INFORMATION CONTAINED IN THIS PROSPECTUS, THE PROSPECTUS SUPPLEMENT AND ANY PRICING SUPPLEMENT. WE HAVE NOT AUTHORIZED ANYONE TO PROVIDE YOU WITH INFORMATION DIFFERENT FROM THAT CONTAINED IN THOSE DOCUMENTS. WE MAY BE 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).

ABOUT 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.

## 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 an offering in which they sell all of their offered shares, John R. Bertucci, our Chairman and Chief Executive Officer, and members of his family will, in the aggregate, beneficially own approximately 55.4% 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.

## 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

Unless we inform you otherwise in a prospectus supplement or any pricing supplement, we expect to use the net proceeds from an offering 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. We will not receive any of the proceeds from the sale of shares by the selling stockholders.

## PLAN OF DISTRIBUTION

MKS and the selling stockholders may sell the offered common stock in and outside the United States by one or more of, or a combination of, the following methods:

- through underwriters, dealers or agents;
- purchases by a broker-dealer as principal and resale by such broker-dealer for its own account pursuant to this prospectus;
- ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- block trades in which the broker-dealer so engaged will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- an over-the-counter distribution in accordance with the rules of the Nasdaq National Market;
- in privately negotiated transactions; and
- in options transactions.

In addition, any shares that qualify for sale pursuant to Rule 144 may be sold under Rule 144 rather than pursuant to this prospectus.

To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution. At the time a particular offer of shares is made, if required, a prospectus supplement will be distributed that will set forth the number of shares being offered and the terms of the offering, including the name of any underwriter, dealer or agent, the purchase price paid by any underwriter, any discount, commission and other item constituting compensation, any discount, commission or concession allowed or reallowed or paid to any dealer, and the proposed selling price to the public.

If MKS and the selling stockholders use underwriters in the sale, the underwriters will acquire the common stock for their own account. The underwriters may resell the common stock from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Underwriters may offer common stock to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless we inform you otherwise in the prospectus supplement, the obligations of the underwriters to purchase the common stock will be subject to conditions, and the underwriters will be obligated to purchase all the offered common stock if they purchase any of the offered common stock. The underwriters may change from time to time any public offering price and any discounts or concessions allowed or reallocated or paid to dealers.

During and after an offering through underwriters, the underwriters may purchase and sell the common stock in the open market. These transactions may include overallotment and stabilizing transactions and purchases to cover syndicate short positions created in connection with the offering. The underwriters may also impose a penalty bid, in which selling concessions allowed to syndicate members or other broker-dealers for the offered common stock sold for their account may be reclaimed by the syndicate if the offered

common stock is repurchased by the syndicate in stabilizing or covering transactions. These activities may stabilize, maintain or otherwise affect the market price of the offered common stock, which may be higher than the price that might otherwise prevail in the open market. If commenced, these activities may be discontinued at any time.

If MKS and the selling stockholders use dealers in the sale of common stock, they will sell the common stock to the dealers as principals. They may then resell that common stock to the public at varying prices determined by the dealers at the time of resale. The dealers participating in any sale of our common stock may be deemed to be underwriters within the meaning of the Securities Act of 1933 with respect to any sale of that common stock.

#### DIRECT SALES AND SALES THROUGH AGENTS

MKS and the selling stockholders may sell the common stock directly. In that event, no underwriters or agents would be involved. MKS and the selling stockholders may also sell the common stock through agents we designate from time to time. In the prospectus supplement, we will name any agent involved in the offer or sale of the offered common stock, and we will describe any commissions payable by us or the selling stockholders to the agent. Unless we inform you otherwise in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

MKS and the selling stockholders may sell the common stock directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act of 1933 with respect to any sale of that common stock.

#### DELAYED DELIVERY CONTRACTS

If we so indicate in the prospectus supplement, MKS and the selling stockholders may authorize agents, underwriters or dealers to solicit offers from selected types of institutions to purchase common stock from us at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. The contracts would be subject only to those conditions described in the prospectus supplement.

#### GENERAL INFORMATION

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of MKS and the selling stockholders and their affiliates. In addition, we will make copies of this prospectus available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act.

The distribution of the shares may be effected from time to time in one or more transactions at a fixed price or prices, which may be changed, or at market prices prevailing at the time of sale, at prices relating to such prevailing prices, or at negotiated prices.

MKS and the selling stockholders may have agreements with the agents, dealers and underwriters to indemnify them against civil liabilities, including liabilities under the Securities Act of 1933, or to contribute with respect to

payments that the agents, dealers or underwriters may be required to make. Agents, dealers and underwriters may engage in transactions with us or may perform services for us in the ordinary course of their businesses.

#### SELLING STOCKHOLDERS

The following table sets forth certain information regarding beneficial ownership of our common stock as of June 30, 2000, and as adjusted to reflect the sale of shares offered hereby, by the selling stockholders.

Unless otherwise indicated, the 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 the selling stockholders includes any shares the individual has the right to acquire within 60 days of June 30, 2000.

NAME -----	SHARES BENEFICIALLY OWNED PRIOR TO OFFERING -----		NUMBER OF SHARES OFFERED -----	SHARES BENEFICIALLY OWNED AFTER OFFERING -----	
	NUMBER	PERCENT		NUMBER	PERCENT
John R. Bertucci.....	15,997,777(1)	63.7%	1,000,000	14,997,777	55.4%

-----  
 (1) Includes 5,779,281 shares held directly by Mr. Bertucci, 5,928,909 shares held directly by Mr. Bertucci's wife, and 4,289,587 shares held by Bertucci family trusts for which either Mr. or Mrs. Bertucci serves as a co-trustee. The Bertucci family trusts are the selling stockholders.

## LEGAL MATTERS

The validity of the common stock offered hereby will be passed upon for MKS by Hale and Dorr LLP, 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. Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2000;
3. Our Current Report on Form 8-K dated June 28, 2000;
4. All of our other filings pursuant to the Securities Exchange Act of 1934 after the date of filing the initial registration statement and prior to effectiveness of the registration statement; and
5. 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]

COMMON STOCK

-----  
PROSPECTUS  
-----

, 2000

-----  
-----

## 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
	=====

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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 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 -----
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

\* 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.

\*\* Previously filed.

## ITEM 17. UNDERTAKINGS.

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933, as amended (the "Securities Act");

(ii) To reflect in the prospectus any facts or event arising after the effective date of the registration statement (or the most recent post-effective amendment hereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided however, that the undertakings set forth in paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act") that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a

new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act that is incorporated by reference into the registration statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act 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 Securities 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 Securities Act and will be governed by the final adjudication of such issue.

(d) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, 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, 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 amendment to the Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the town of Andover, Commonwealth of Massachusetts, on this 14th day of July, 2000.

MKS INSTRUMENTS, INC.

By: /s/ JOHN R. BERTUCCI

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

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## SIGNATURES

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)	July 14, 2000
/s/ RONALD C. WEIGNER* ----- Ronald C. Weigner	Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	July 14, 2000
/s/ RICHARD S. CHUTE* ----- Richard S. Chute	Director	July 14, 2000
/s/ OWEN W. ROBBINS* ----- Owen W. Robbins	Director	July 14, 2000
/s/ ROBERT J. THERRIEN* ----- Robert J. Therrien	Director	July 14, 2000
/s/ LOUIS P. VALENTE* ----- Louis P. Valente	Director	July 14, 2000
*By: /s/ JOHN R. BERTUCCI ----- John R. Bertucci Attorney-in-fact		

## EXHIBIT INDEX

EXHIBIT NO.	DESCRIPTION
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

\* 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.

\*\* Previously Filed.

HALE AND DORR LLP  
COUNSELLORS AT LAW

WWW.HALEDORR.COM  
60 STATE STREET -- BOSTON, MA 02109  
617-526-6000 -- FAX 617-526-5000

July 13, 2000

MKS Instruments, Inc.  
Six Shattuck Road  
Andover, MA 01810

Re: REGISTRATION STATEMENT ON FORM S-3  
-----

Ladies and Gentlemen:

This opinion is furnished to you in connection with a Registration Statement on Form S-3 (File No. 333-34450) (the "Registration Statement") filed with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), for the registration of an aggregate of 3,000,000 shares of Common Stock, no par value per share (the "Shares"), of MKS Instruments, Inc., a Massachusetts corporation (the "Company"), of which (i) 3,000,000 Shares will be issued and sold by the Company and (ii) the remaining 1,000,000 Shares will be sold by certain stockholders of the Company (the "Selling Stockholders").

We are acting as counsel for the Company in connection with the registration of the Shares for sale by the Company and the Selling Stockholders. We have examined signed copies of the Registration Statement as filed with the Commission. We have also examined and relied upon minutes of meetings of the stockholders and the Board of Directors of the Company as provided to us by the Company, stock record books of the Company as provided to us by the Company, the Certificate of Incorporation and By-Laws of the Company, each as restated and/or amended to date, and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal competence of all signatories to such documents.

Our opinion in clause (ii) below, insofar as it relates to the Selling Stockholders' Shares being fully paid, is based solely on a certificate of the Chief Financial Officer of the Company confirming the Company's receipt of the consideration called for by the applicable resolutions authorizing the issuance of such shares.

BOSTON                      WASHINGTON, DC                      NEW YORK                      RESTON                      LONDON\*

-----  
Hale and Dorr LLP Includes Professional Corporations  
\*an independent joint venture law firm  
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MKS Instruments, Inc.  
July 13, 2000  
Page 2

We assume that the appropriate action will be taken, prior to the offer and sale of the Shares, to register and qualify the Shares for sale under all applicable state securities or "blue sky" laws.

We express no opinion herein as to the laws of any state or jurisdiction other than the state laws of the Commonwealth of Massachusetts and the federal laws of the United States of America.

Based upon and subject to the foregoing, we are of the opinion that (i) the Shares to be issued and sold by the Company have been duly authorized for issuance and, when such Shares are issued and paid for, such Shares will be validly issued, fully paid and nonassessable and (ii) the Shares to be sold by the Selling Stockholders have been duly authorized and are validly issued, fully paid and nonassessable.

It is understood that this opinion is to be used only in connection with the offer and sale of the Shares while the Registration Statement is in effect.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act and to the use of our name therein and in the related Prospectus under the caption "Legal Matters." In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Hale and Dorr LLP  
-----  
Hale and Dorr LLP

## CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in this Amendment No. 1 to the Registration Statement on Form S-3 (File No. 333-34450) 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" in such Registration Statement.

/s/ PRICEWATERHOUSECOOPERS LLP

Boston, Massachusetts  
July 13, 2000