

NOVA MEASURING INSTRUMENTS LTD
Form 20-F/A
June 12, 2006

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

**Form 20-F/A
Amendment No. 1**

☐ REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) or (g)
OF THE SECURITIES EXCHANGE ACT OF 1934

OR

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2004

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 or 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934
for the transition period from _____ to _____

Commission File Number 0-030668

NOVA MEASURING INSTRUMENTS LTD.

(Exact name of Registrant as specified in its charter)

Nova Measuring Instruments Ltd. **Israel**
(Translation of Registrant's name into English) (Jurisdiction of incorporation or organization)

Weizmann Science Park, Building 22, 2nd Floor, Ness-Ziona 76100, Israel
(Address of principal executive offices)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

<u>Title of each class</u>	<u>Name of each exchange on which registered</u>
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None	None
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Securities registered or to be registered pursuant to Section 12(g) of the Act:

Ordinary Shares, nominal value NIS 0.01 per share

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:

None

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Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report:

15,308,544 Ordinary Shares, NIS 0.01 nominal (par) value per share, as of December 31, 2004

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark which financial statement item the registrant has elected to follow:

Item 17 ☐ Item 18 ☒

EXPLANATORY NOTE

Nova Measuring Instruments Ltd. (the "Company") is filing this Amendment No. 1 (the "Amendment") to its Annual Report on Form 20-F for the year ended December 31, 2004, which was originally filed on June 28, 2005 (the "Original Filing"), to reflect the amendment and restatement of its financial statements for the year ended December 31, 2004. The Company has amended and restated its financial statements for the year ended December 31, 2004 with respect to revenues recognized in connection with the sale of NovaScan systems which included an option to upgrade the systems' capabilities and the sale of NovaScan systems which included a trade-in option. As explained more fully in Note 15 to our Consolidated Financial Statements contained elsewhere in this report, after filing the Original Filing, the Company determined that the recognition of revenues relating to these systems was not consistent with generally accepted accounting principles. The primary effects of the restatement are to reduce the Company's 2004 revenues to \$36.8 million from previously reported revenues of \$40.9 million and to reduce the Company's previously reported net profit for 2004 of \$1.5 million to a net loss of \$1.4 million. Accordingly, to reflect the effects of the restatement, information in the following sections of this report has been revised: Part I, Item 3, Key Information; Part I, Item 4, Information on the Company; Part I, Item 5, Operating and Financial Review and Prospects; and Part I, Item 8, Financial Information. In addition, the information under Part II, Item 15 has been revised as a result of management's re-evaluation of the Company's disclosure controls and procedures.

Except as required to reflect the effects of the restatement for the items above, the Company has not made any modifications or updates to the Original Filing on Form 20-F. Information not affected by the restatement remains unchanged and reflects the disclosures made at the time of the Original Filing. This Amendment does not describe other events occurring after the Original Filing, including exhibits, or modify or update those disclosures affected by subsequent events. This Amendment should be read in conjunction with the Company's filings made with the SEC subsequent to the filing of the Original Filing, as information in such reports and documents may update or supersede certain information contained in this Amendment. Accordingly, this Amendment only amends and restates Part I, Items 3, 4, 5, 8 and Part II, Item 15 of the Original Filing, in each case, solely as a result of, and to reflect, the restatement, and no other information in the Original Filing is amended hereby. We have, however, also revised and expanded our discussion of our revenue recognition policies. In addition, currently dated certificates of the Company's President and Chief Financial Officer have been attached as Exhibits 12.1, 12.2, 13.1 and 13.2. The entire Original Filing, excluding exhibits other than 12.1, 12.2, 13.1 and 13.2, has been refilled on this Form 20-F/A.

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Introduction

In this Annual Report, the "Company," "Nova," "we" or "our" refers to Nova Measuring Instruments Ltd. and its consolidated subsidiaries, when the context requires.

The consolidated financial statements and selected consolidated financial data as of December 31, 2000, 2001, 2002, 2003 and 2004 and for each of the years in the five-year period ended December 31, 2004 (the Consolidated Financial Statements), included in this Annual Report have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP).

Our Functional Currency

Unless otherwise indicated, all amounts herein are expressed in United States dollars ("U.S. dollars," "dollars," "USD," "US\$" or "\$").

The currency of the primary economic environment in which we operate is the U.S. dollar, since substantially all our revenues to date have been denominated in U.S. dollars and over 50% of our expenses are in U.S. dollars or in New Israeli Shekels linked to the dollar. Transactions and balances denominated in dollars are presented at their original amounts. Non-dollar transactions and balances have been re-measured into dollars as required by the principles in Statement No. 52 of the Financial Accounting Standards Board (FASB) of the United States of America. All exchange gains and losses from such re-measurement are included in the net financial income when they arise.

Cautionary Statement Regarding Forward-Looking Statements

Certain information contained herein, which does not relate to historical financial information, may be deemed to constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The words or phrases "will likely result," "are expected to," "will continue," "is anticipated," "estimate," "project," "believe," "plan," or similar expressions identify forward looking statements. Such statements are subject to certain risks and uncertainties that could cause actual results to differ materially from historical results and those presently anticipated or projected. We wish to caution readers not to place undue reliance on any such forward-looking statements, which speak only as of the date made. We undertake no obligation to release publicly any revisions to these forward looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. Among the factors that could cause our actual results in the future to differ materially from any opinions or statements expressed with respect to future periods are competitive industry conditions and the ability to forecast the needs of the semiconductor industry with respect to the very cyclical nature of the industry and the very fast pace of technology evolutions. Various other factors that could cause our actual results to differ materially are set forth in "Risk Factors" starting on page 3 and elsewhere herein.

PART I

Item 1. Identity of Directors, Senior Management and Advisors

Not applicable.

Item 2. Offer Statistics and Expected Timetable

Not applicable.

Item 3. Key Information**Selected Financial Data**

The following selected consolidated financial data as of December 31, 2003 and 2004 and for the years ended December 31, 2002, 2003 and 2004 have been derived from our audited Consolidated Financial Statements included with this report. These financial statements have been prepared in accordance with U.S. GAAP. The consolidated financial data with respect to 2004 set forth below have been restated to reflect adjustments to our consolidated financial statements contained in our Annual Report on Form 20-F for the year ended December 31, 2004 filed with the United States Securities and Exchange Commission on June 28, 2005. *See* Note 15 to our Consolidated Financial Statements elsewhere in this report for further detail. The consolidated selected financial data as of December 31, 2000, 2001 and 2002 and for the years ended December 31, 2000 and 2001 have been derived from other consolidated financial statements not included in this Form 20-F that were also prepared in accordance with U.S. GAAP and audited by an independent registered public accounting firm. The selected consolidated financial data set forth below should be read in conjunction with and are qualified by reference to Item 5, Operating and Financial Review and Prospects and the Consolidated Financial Statements and notes thereto and other financial information included elsewhere in this Form 20-F/A.

Summary of Consolidated Financial Data

	Year ended December 31,				
	2000	2001	2002	2003	2004
					(As restated)
(in thousands, except per share data)					
Consolidated Statement of Operations Data:					
Revenues	\$ 48,463	\$ 21,171	\$ 20,371	\$ 26,688	\$ 36,806
Cost of revenues	23,478	16,470	13,353	16,535	21,111
Gross profit	24,985	4,701	7,018	10,153	15,695
Operating expenses:					
Research and development expenses, net	13,878	13,253	9,894	8,561	8,665
Sales and marketing expenses	7,998	6,852	6,950	6,534	6,647
General and administrative expenses	3,186	3,032	1,797	1,898	2,331
Other operating expenses (income)	-	1,025	1,478	(2,203)	-
Total operating expenses	25,062	24,162	20,119	14,790	17,643
Operating loss	(77)	(19,461)	(13,101)	(4,637)	(1,948)
Financing income, net	2,858	2,587	144	425	528
Other expenses					
Net loss	\$ 2,781	\$ (16,874)	\$ (12,957)	\$ (4,212)	\$ 1,420
Earnings (loss) per share:					
Basic earnings (loss) per share	\$ 0.20	\$ (1.16)	\$ (0.88)	\$ (0.28)	\$ (0.09)

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	Year ended December 31,				
Diluted earnings per share	\$ 0.19	-	-	-	
Shares used in calculation of basic earnings (loss) per share	13,580	14,578	14,786	14,994	15,259
Shares used in calculation of diluted earnings per share	14,691				

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December 31,					
2000	2001	2002	2003	2004	
					(As restated)
(in \$ thousands)					

Consolidated Balance Sheet Data:

Working capital	61,270	45,529	34,574	30,350	25,709
Total assets	81,825	59,564	49,008	47,918	49,966
Shareholders' equity	62,619	47,006	35,677	32,336	31,581

Risk Factors**Risks Related to Our Business and Our Industry**

Because substantially all our current sales are dependent on a single product line, factors that adversely affect the pricing and demand for this product line could substantially reduce our sales.

Although we have expanded our product offering, we are still currently dependent on a single integrated process control product line targeting the chemical mechanical polishing market. We expect revenues from this product line to continue to account for a substantial portion of our revenues for at least the next year. As a result, factors adversely affecting the pricing of or demand for integrated process controls for the chemical mechanical polishing equipment field, such as competition and technological change, would substantially reduce our sales.

The markets we target are highly cyclical and it is difficult to predict the length and strength of any downturn or expansion period.

The semiconductor capital equipment market and industries are highly cyclical and in 2004 experienced significant expansion. During the first quarter of 2005, however, the market and industries changed direction and exhibited the first signs of a downturn. Although we rely on market research companies, we cannot predict the length and strength of this downturn or any other downturn or expansion. We have only a limited ability to reduce expenses during any industry downturn because of the need for significant ongoing expenditures related to engineering, research and development and worldwide customer service and support operations. Accordingly, we incurred losses in the first quarter of 2005 during this current downturn and we may incur losses during future downturns.

Our inability to reduce spending during a protracted slowdown in the semiconductor industry could reduce our prospects of sustaining profitability.

Historically, we have derived all of our revenues, and we expect to continue to derive all of our revenues, from sales of our products and related services to the semiconductor industry. Our business depends in large part upon capital expenditures by semiconductor manufacturers, which in turn depend upon the current and anticipated demand for semiconductors. The semiconductor industry has experienced severe and protracted cyclical downturns, characterized by slowing product demand, inventory surpluses, accelerated erosion of average selling prices and production overcapacity. These downturns, including the current one, have materially reduced demand for the type of capital equipment and process technology that we offer and our sales and revenues have declined. In addition, our ability to reduce expenses in response to any downturn or slowdown in the rate of capital investment by manufacturers in these industries may be limited because of:

- our continuing need to invest in research and development,
- our capital equipment requirements, and
- our extensive ongoing customer service and support requirements worldwide.

If we do not respond effectively and on a timely basis to rapid technological change, our ability to attract and retain customers could be diminished, which would hurt our sales and ability to remain competitive.

The semiconductor manufacturing industry is characterized by rapid technological change, new product introductions and enhancements and evolving industry standards. Our ability to remain competitive and generate sales revenue will depend in part upon our ability to develop new and enhanced systems at competitive prices in a timely and cost-effective manner and to accurately predict technology transitions. Because new product development commitments must be made well in advance of sales, new product decisions must anticipate the future demand for products. If we fail to correctly anticipate future demand for products, our sales and competitive position would suffer. In addition, the development of new measurement technologies, new product introductions or enhancements by our competitors could cause a decline in sales or loss of market acceptance of our existing products.

We may not be able to develop or market new products, which could slow or prevent our growth.

Our business plan requires the introduction of several new product lines. Our plans to introduce process control products for photolithography, etch and other processes will require development of new capabilities. Some of these projects are in the early stages of development, and we cannot be certain that we will be able to develop or bring to market these new product lines or, if we do, that these products will be well received or profitable. If we are unable to successfully introduce new product lines, our future growth could be adversely affected.

New product lines that we may introduce in the future may contain defects, which will require us to allocate time and financial resources to correct.

Our new product lines may contain defects when first introduced. If there are defects, we will need to divert the attention of our personnel from our product development efforts to address the detection and correction of the defects. In the past, no liability claims have been filed against us for damages related to product defects, and we have not experienced any material delays as a result of product defects. However, we cannot assure you that we will not incur these costs or liabilities or experience these lags or delays in the future. Moreover, the occurrence of such defects, whether caused by our products or the products of another vendor, may result in significant customer relations problems and injury to our reputation and may impair the market acceptance of our products.

We have had a history of losses and may incur future losses.

Since our inception in 1993, we have incurred net losses in every year other than in 1998 and 2000 and may incur a net loss in 2005 or in future years. As of December 31, 2004, we had an accumulated deficit of \$41.8 million and incurred a loss of \$3.8 million in the first quarter of 2005 due to a significant reduction in sales volumes. We plan to continue similar levels of our aggregate product development, sales and marketing and administrative expenses over the next 12 months. Accordingly, to achieve profitability in 2005, we will need to significantly increase our sales. In the future, our sales may not grow and we may not achieve profitability.

Because we have a limited operating history with one product line, our historical results may not be indicative of our future results, and it is difficult to evaluate our business and prospects.

Our first system for chemical mechanical polishing applications was developed and introduced to the market in October 1995. Because this is the only product line with which we have significant manufacturing and marketing experience and because of our focus on the development and introduction of new products, our past operating results may not be indicative of our future results. Companies in an early stage of product development frequently have higher risks and encounter unexpected expenses and difficulties. These risks, expenses and difficulties apply particularly to us because the semiconductor manufacturing business is a rapidly evolving market characterized by technological advances. The uncertainty of our future performance increases the risk that the value of your investment will decline.

Our dependence on a single manufacturing facility magnifies the risk of an interruption in our production capabilities.

We have only one manufacturing facility, which is located in Ness-Ziona, Israel. Any event affecting this site, including natural disaster, labor stoppages or armed conflict, may disrupt or indefinitely discontinue our manufacturing capabilities and could significantly impair our ability to fulfill orders and generate revenues, thus negatively impacting our business.

We experience quarterly fluctuations in our operating results, which may adversely impact our stock price.

Our quarterly operating results have fluctuated significantly in the past, and we expect this trend to continue. A principal reason is that we derive a substantial portion of our revenue from the sale of a relatively small number of systems to a relatively small number of customers. As a result, our revenues and results of operations for any given quarter may decrease due to factors relating to the timing of orders by, and shipments of systems to, significant customers. Furthermore, our quarterly results are affected by the highly cyclical nature of the semiconductor capital equipment market and industries.

We also have a limited ability to predict revenues for future quarterly periods and face risks of revenue shortfalls due to our limited sales backlog in current periods. If the number of systems we actually ship, and thus the amount of revenues we are able to record in any particular quarter, is below our expectations, the adverse effect may be magnified by our inability to adjust spending quickly enough to compensate for the revenue shortfall.

We may not be able to expand our manufacturing capacity or marketing efforts quickly enough to support our future growth.

Because of our small size and our business strategy to aggressively increase our sales, we anticipate an increased demand on all of our resources. If we do not accurately estimate our need for personnel, manufacturing capacity or marketing and customer support, we may not be able to support our future growth.

We depend on a small number of large customers, and the loss of one or more of them would lower our revenues.

Our customer base is highly concentrated among a limited number of large customers, primarily because the semiconductor industry is dominated by a small number of large companies. We anticipate that our revenues will continue to depend on a limited number of major customers, although the companies considered to be our major customers and the percentage of our revenue represented by each major customer may vary from period to period. The loss of any of one of our major customers would adversely affect our sales and revenues. Furthermore, if any of our customers become insolvent or have difficulties meeting their financial obligations to us for any reason, we may suffer losses.

We operate in an extremely competitive market, and if we fail to compete effectively, our revenues and market share will decline.

Although the market for integrated process control systems used in semiconductor manufacturing is currently concentrated and characterized by relatively few participants, the semiconductor capital equipment industry is intensely competitive. We compete with Nanometrics Inc., Therma-Wave Inc. and Rudolph Technologies Inc., which manufacture and sell integrated process control systems. In addition, we compete with established manufacturers of conventional stand-alone measurement equipment, such as KLA-Tencor Corp., and original semiconductor equipment manufacturers, such as Tokyo Electron Ltd. Established companies, both domestic and foreign, compete with our product line, and new competitors are entering our market. Many of our competitors have greater financial, engineering, manufacturing and marketing resources than we do. If a particular customer selects a competitor's capital equipment, we expect to experience difficulty in selling to that customer for a significant period of time. A substantial investment is required by customers to evaluate, test, select and integrate capital equipment into a production line. As a result, once a manufacturer has selected a particular vendor's capital equipment, we believe that the manufacturer generally relies upon that equipment for the specific production line application and frequently will attempt to consolidate its other capital equipment requirements with the same vendor. We believe that our ability to compete successfully depends on a number of factors both within and outside of our control, including:

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the contribution of our equipment to our customers' productivity;

our product quality and performance;

our global technical service and support;

the return on investment (ROI) of our equipment and its cost of ownership;

the breadth of our product line; and

our success in developing and marketing new products.

If we fail to compete in a timely and cost-effective manner against current or future competitors, our revenues and market share will decline.

The ongoing consolidation in our industry may harm us if our competitors are able to offer a broader range of products and greater customer support than we can offer.

We believe that the semiconductor capital equipment market is undergoing consolidation. A number of suppliers have been acquired by larger equipment manufacturers. For example, in 2001 Therma-Wave Inc. acquired Sensys Instruments Corp., in 2002 Rudolph Technologies Inc. acquired ISOA Inc. and in 2003 Applied Materials acquired Boxer Cross Inc. In the first quarter of 2005, our primary competitor, Nanometrics Inc., entered into a merger agreement with August Technologies Inc. We believe that similar acquisitions and business combinations involving our competitors and customers may occur in the future. These acquisitions could adversely impact our competitive position by enabling our competitors and potential competitors to expand their product offerings and customer service, which could provide them an advantage in meeting customers' needs, particularly with those customers that seek to consolidate their capital equipment requirements with a smaller number of vendors. The greater resources, including financial, marketing and support resources, of competitors involved in these acquisitions could permit them to accelerate the development and commercialization of new competitive products and the marketing of existing competitive products to their larger installed bases. Accordingly, such business combinations and acquisitions by competitors or customers could jeopardize our competitive position.

Because we are small, we depend on a small number of employees who possess both executive and technical expertise, and the loss of any of these key employees would hurt our ability to implement our strategy and to compete effectively.

Because of our small size and our reliance on employees with both executive and advanced technical skills, our success depends significantly upon the continued contributions of our officers and key personnel. All of our key management and technical personnel have expertise, which is in high demand among our competitors, and the loss of any of these individuals could cause our business to suffer. We do not maintain life insurance policies for our officers and directors.

Our lengthy sales cycle increases our exposure to customer cancellations or delays in orders, which may result in obsolete inventory and volatile quarterly revenues.

Sales of our systems depend, in significant part, upon our customers adding new manufacturing capacity or expanding existing manufacturing capacity, both of which involve a significant capital commitment. We may experience delays in finalizing sales following initial system qualification while a customer evaluates and approves an initial purchase of our systems. In general, for new customers or applications, our sales cycle takes between 3 and 24 months to complete. During this time, we may expend substantial funds and management effort. Lengthy sales cycles subject us to a number of significant risks, including inventory obsolescence and fluctuations in operating results, over which we have little or no control.

Because of the technical nature of our business, our intellectual property is extremely important to our business, and our inability to protect our intellectual property would harm our competitive position.

As of December 31, 2004, we had obtained 40 U.S. patents and had 23 U.S. patent applications pending. In addition, we had obtained 19 foreign patents and had more than 70 foreign patent applications pending.

We cannot assure you that:

pending patent applications will be approved;

any patents will be broad enough to protect our technology, will provide us with competitive advantages or will not be challenged or invalidated by third parties; or

the patents of others will not have an adverse effect on our ability to do business.

We also cannot assure you that others will not independently develop similar products, duplicate our products or, if patents are issued to us, design around these patents. Further, because patents may afford less protection under foreign law than is available under U.S. law, we cannot assure you that any foreign patents issued to us will adequately protect our proprietary rights.

In addition to patent protection, we also rely upon trade secret protection, employee and third-party nondisclosure agreements and other intellectual property protection methods to protect our confidential and proprietary information. Despite these efforts, we cannot be certain that others will not otherwise gain access to our trade secrets or disclose our technology.

There has been significant litigation involving intellectual property rights in the semiconductor and related industries and similar litigation involving Nova could force us to divert resources to defend against this litigation or deter our customers from purchasing our systems.

We have been, and may in the future be, notified of allegations that we may be infringing intellectual property rights possessed by others. In addition, we may be required to commence legal proceedings against third parties, which may be infringing our intellectual property, in order to defend our intellectual property. In the future, protracted litigation and expense may be incurred to defend ourselves against alleged infringement of third party rights or to defend our intellectual property against infringement by third parties. Adverse determinations in that type of litigation could:

result in our loss of proprietary rights;

subject us to significant liabilities, including treble damages in some instances;

require us to seek licenses from third parties, which licenses may not be available on reasonable terms or at all; or

prevent us from selling our products.

Any litigation of this type, even if we are ultimately successful, could result in substantial cost and diversion of time and effort by our management, which by itself could have a negative impact on our profit margin, competitive position and ability to develop and market new and existing products. For additional information on our intellectual property, including information regarding a civil action we recently commenced against Nanometrics Inc., see Intellectual Property starting on page 23 of this report.

We depend on a limited number of suppliers, and in some cases a sole supplier. Any disruption or termination of these supply channels may adversely affect our ability to manufacture our products and to deliver them to our customers.

We purchase components, subassemblies and services from a limited number of suppliers and occasionally from a single source. Disruption or termination of these sources could occur, and these disruptions could have at least a temporary adverse effect on our operations. To date, we have not experienced any material disruption or termination of our supply sources. A prolonged inability on our part to obtain components included in our systems on a cost-effective basis could adversely impact our ability to deliver products on a timely basis, which could harm our sales and customer relationships.

We are dependent on international sales, which expose us to foreign political and economic risks that could impede our plans for expansion and growth.

Our principal customers are located in the United States, Japan, Taiwan and South Korea and we produce our products in Israel. International operations expose us to a variety of risks that could seriously impact our financial condition and impede our growth. For instance, trade restrictions, changes in tariffs and import and export license requirements could adversely affect our ability to sell our products in the countries adopting or changing those restrictions, tariffs or requirements. This could reduce our sales by a material amount.

Because we derive a significant portion of our revenues from sales in Asia, our sales could be hurt by the instability of Asian economies.

A number of Asian countries have experienced political and economic instability. For instance, Taiwan and China have had a number of disputes, as have North and South Korea, and Japan has for a number of years experienced significant economic instability. We have a subsidiary in Taiwan and we have significant customers in Japan and South Korea. An outbreak of hostilities or other political upheaval or economic downturns in these or other Asian countries would likely harm the operations of our customers in these countries, causing our sales to suffer.

A large number of our ordinary shares continue to be owned by a relatively small number of shareholders, whose future sales of our stock, if substantial, may depress our share price.

If our principal shareholders sell substantial amounts of our ordinary shares, including shares issued upon the exercise of outstanding options, the market price of our ordinary shares may fall. As of December 31, 2004 we had 15,308,544 ordinary shares outstanding, of which 10,216,270 shares were held by nine shareholders.

Because five of our shareholders control approximately 54% of our ordinary shares, they can control the outcome of matters submitted to a vote of our shareholders, including the election of directors.

As of April 30, 2005, five of our shareholders controlled approximately 8.3 million, or 54%, of our ordinary shares. As a result, and although we are currently not aware of any voting agreement between such shareholders, if these shareholders voted together or in the same manner, they would have the ability to control the outcome of corporate actions requiring shareholder approval. Even if these five shareholders do not vote together, each has the ability to influence the outcome of corporate actions requiring shareholder approval. For additional information on our major shareholders, see Major shareholders on page 46.

Risks Related to Operations in Israel

Potential political, economic and military instability in Israel may adversely affect our growth and revenues.

Our principal offices and manufacturing facilities and many of our suppliers are located in Israel. Although most of our sales are currently being made outside Israel, political, economic and military conditions in Israel directly affect our operations. Since the establishment of the State of Israel in 1948, a number of armed conflicts have taken place between Israel and its Arab neighbors. Conflicts between Israel and Palestinian militant groups have been ongoing. A state of hostility, varying in degree and intensity, has led to security and economic problems for Israel. The resumption of hostilities in the region, and the on-going tension in the region, have a negative effect on the stability of the region which might have negative effect on our business and harm our growth and revenues. For further detail see Political and economic conditions in Israel starting on page 38.

Our operations may be disrupted by the obligation of key personnel to perform military service.

Some of our executive officers and employees in Israel are obligated to perform up to 36 days of military reserve duty annually. This time-period may be extended by the Minister of Defense or in the event of a declared national emergency. Our operations could be disrupted by the absence for a significant period of one or more of our executive officers or key employees due to military service. To date, our operations have not been materially disrupted as a result of these military service obligations, and no executive officer or key employee was recruited for any significant time period. Any disruption in our operations due to such obligations would adversely affect our ability to produce and market our existing products and to develop and market future products.

Because most of our revenues are generated in U.S. dollars, but a significant portion of our expenses is incurred in New Israeli Shekels, our profit margin may be seriously harmed by inflation and currency fluctuations.

We generate most of our revenues in U.S. dollars, but incur a significant portion of our expenses in New Israeli Shekels, commonly referred to as NIS. As a result, we are exposed to risk to the extent that the rate of inflation in Israel exceeds the rate of devaluation of the NIS in relation to the dollar or if the timing of this devaluation lags behind inflation in Israel with respect to such expenses that might increase as a result of inflation in Israel. In that event, the dollar cost of our operations in Israel will increase and our dollar measured results of operations will be adversely affected. Our operations also could be adversely affected if we are unable to hedge against currency fluctuations in the future. Accordingly, we may enter into currency hedging transactions to decrease the risk of financial exposure from fluctuations in the exchange rate of the dollar against the NIS. These measures, however, may not adequately protect us from material adverse effects due to the impact of inflation in Israel.

We participate in government programs under which we receive tax and other benefits. These programs impose restrictions on our ability to use the technologies developed under these programs. In addition, the reduction or termination of these programs would increase our costs.

We receive conditional grants from the Office of the Chief Scientist of the Israeli Ministry of Industry and Trade for research and development programs that meet specified criteria. We are also eligible to receive tax benefits under Israeli law for capital investments that are designated as "approved enterprises". To maintain our eligibility for these programs and tax benefits, we must continue to meet certain conditions, including paying royalties related to grants received and making specified investments in fixed assets. Some of these programs also restrict our ability to manufacture particular products and transfer particular technology, which was developed as part of the "approved enterprises", outside of Israel, by requiring approval of the research and development committee nominated by the Office of the Chief Scientist of the Israeli Ministry of Industry and Trade under applicable law. Such approval may be given only if the recipient abides by all the provisions of the law and related regulations. Approval to manufacture products outside of Israel or consent to the transfer of technology, if requested, might not be granted.

If we fail to comply with these conditions in the future, the benefits received could be cancelled. We could also be required to pay increased taxes or refund any benefits previously received, adjusted for inflation and interest. In 2003 and 2004, we recorded an aggregate of \$2.3 million and \$1.9 million, respectively, in conditional grants under Israeli government programs. As of December 31, 2004, our contingent liability to the Office of the Chief Scientist for grants received was approximately \$4.0 million. See also Note 7A to our consolidated financial statements contained elsewhere in this report. From time to time, we submit requests for new grants from the Office of the Chief Scientist and for expansion of our approved enterprise programs. These requests might not be approved. The Israeli government has reduced the benefits available under these programs in recent years and has indicated that it may reduce or eliminate these benefits in the future. The termination or reduction of these grants and tax benefits could harm our business, financial condition and results of operations. In addition, if we increase our activities outside Israel due to, for example, future acquisitions, our increased activities generally will not be eligible for inclusion in Israeli tax benefit programs. Accordingly, our effective corporate tax rate could increase significantly in the future.

Any shareholder with a cause of action against us as a result of purchasing our ordinary shares, or as a result of buying, selling or holding our ordinary shares may have difficulty asserting a claim under U.S. securities laws or enforcing a U.S. judgment against us or our officers, directors or Israeli auditors.

We are organized under the laws of the State of Israel, and we maintain most of our operations in Israel. Most of our officers and directors as well as our Israeli auditors reside outside of the United States and a substantial portion of our assets and the assets of these persons are located outside the United States. Therefore, if you wish to enforce a judgment obtained in the United States against us, or our officers, directors and auditors, you will probably have to file a claim in an Israeli court. Additionally, you might not be able to bring civil actions under U.S. securities laws if you file a lawsuit in Israel. We have been advised by our Israeli counsel that Israeli courts generally enforce a final executory judgment of a U.S. court for liquidated amounts in civil matters after a hearing in Israel. If a foreign judgment is enforced by an Israeli court, it will be payable in Israeli currency. However, payment in the local currency of the country where the foreign judgment was given shall be acceptable, subject to applicable foreign currency restrictions.

Our shares are listed for trade on more than one stock exchange, and this may result in price variations.

Our ordinary shares are listed for trading on the Nasdaq National Market and on the Tel Aviv Stock Exchange. This may result in price variations. Our ordinary shares are traded on these markets in different currencies, U.S. dollars on the Nasdaq and New Israeli Shekels on the Tel Aviv Stock Exchange. These markets have different opening times and close on different days. Different trading times and differences in exchange rates, among other factors, may result in our shares being traded at a price differential on these two markets. In addition, market influences in one market may influence the price at which our shares are traded on the other. While our ordinary shares are listed for trading on the Tel Aviv Stock Exchange, there has been no trading of our shares on that exchange since the fourth quarter of 2002. We believe that there has not been any trading on the Tel Aviv Stock Exchange since fourth quarter of 2002 as a result of the belief of buyers and sellers that the Nasdaq market offers greater liquidity and, generally, more favorable prices. We are unable to predict whether there will be trading on the Tel Aviv exchange in the future.

We may be classified as a passive foreign investment Company and, as a result, our U.S. shareholders may suffer adverse tax consequences.

Generally, if for any taxable year 75% or more of our gross income is passive income, or at least 50% of our assets are held for the production of, or produce, passive income, we may be characterized as a passive foreign investment company for U.S. federal income tax purposes. Our passive income would not include income derived from the sale of our products, but would include amounts derived by reason of a temporary investment of any cash amounts. This characterization could result in adverse U.S. tax consequences to our shareholders, including having gain realized on the sale of our shares be treated as ordinary income, as opposed to capital gain income, and having potentially punitive interest charges applied to such sales proceed. U.S. shareholders should consult with their own U.S. tax advisors with respect to the U.S. tax consequences of investing in our ordinary shares.

We believe that in 2004 we were not a passive foreign investment company and currently we expect that we will not be a passive foreign investment company in 2005. However, passive foreign income company status is determined as of the end of the full tax year and is dependent on a number of factors, including the value of a corporation's assets in the amount and type of its gross income. Therefore, there can be no assurances that we will not become a passive foreign investment company for the current fiscal year ending on December 31, 2004 or any future year. For a discussion on how we might be characterized as a passive foreign investment company and related tax consequences, please see the section of this annual report entitled "U.S. Taxation - Passive Foreign Investment Companies."

Item 4. Information on the Company

History and Development of the Company

Nova Measuring Instruments Ltd. was incorporated in May 1993 under the laws of the State of Israel. We commenced operations in October 1993 to design, develop and produce integrated process control systems for use in the manufacture of semiconductors, also known as integrated circuits or chips. In October 1995, we began manufacturing and marketing systems for chemical mechanical polishing processes. We have since expanded our product offering to include systems designed for chemical vapor deposition, lithography and etch, and are continuing to develop new products and additional applications for our current products.

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In April 2000, we conducted an initial public offering pursuant to which we sold 3,000,000 ordinary shares for consideration of \$54 million and net proceeds of \$49.2 million. In connection with the public offering, our shares were listed for trading on the Nasdaq National Market.

In June 2002, we listed our shares in the Tel-Aviv Stock Exchange in Israel, pursuant to legislation which enables Israeli companies whose shares are traded on certain stock exchanges outside of Israel to be registered on the Tel Aviv Stock Exchange, while reporting, in substance, according to the provision of the relevant foreign securities law applicable to the company. The Israeli securities laws prescribe that as condition precedent to a company being eligible to register its shares for trade on the Tel Aviv Stock Exchange, the company's capital must consist of a single class of shares with equal voting rights with respect to their par value. Accordingly, all of our series E shares were converted into ordinary shares in May 2002. This conversion was approved by the Tel Aviv District Court on May 2002 and our Articles of Association were amended accordingly.

We have four wholly owned subsidiaries in the U.S., Japan, Taiwan and Netherlands. These subsidiaries are engaged in marketing activities and provide technical support to our customers.

Our main office, research and development and production facilities are located in Israel at the Weizmann Science Park, Building 22, 2nd Floor, Ness-Ziona. Our telephone number at our main office is +1-972-8-938-7505. Our agent for service of process in the U.S. is David Gitlin, of Wolf, Block, Schorr and Solis-Cohen LLP, 1650 Arch Street, 22nd Floor, Philadelphia, PA 19103.

Overview

We are a worldwide leading designer, developer and producer of integrated process control metrology systems used in the manufacture of semiconductors and a leading designer, manufacturer and producer of stand-alone process control metrology systems. Metrology systems measure various thin film properties, critical circuit dimensions and layer-to-layer circuit alignment, known as overlay, during various steps in the semiconductor manufacturing process, allowing semiconductor manufacturers to increase quality, productivity and yields, lower their manufacturing costs and increase their profitability. We supply our metrology systems to major semiconductor manufacturers worldwide, either directly or through process equipment manufacturers. Of the 20 semiconductor manufacturers that had the highest capital equipment expenditures in 2004, 18 use our systems, including Intel, Samsung, TSMC, UMC, IBM, AMD and Micron Technology. Process equipment manufacturers that purchase our metrology systems include Applied Materials, Ebara, Novellus and Lam Research. Our systems were first installed in 1995 and, since that time, we have sold more than 1,250 metrology systems.

The semiconductor manufacturing process starts with a silicon wafer that has been highly polished on one side to a mirror finish, upon which circuits are constructed. To construct the circuits, a series of layers of thin films that act as conductors, semiconductors or insulators are applied to the polished side of the wafer. During the manufacturing process, these film layers are subjected to processes which remove portions of the film layers, create circuit patterns and perform other functions. The semiconductor manufacturing process requires exacting steps and strict control of equipment performance and process sequences. Tight control can be achieved through monitoring silicon wafers and measuring relevant parameters after each process step with metrology tools such as those we produce.

Prior to the introduction of our integrated metrology systems, process control was achieved through stand-alone measurement equipment. Stand-alone measurement equipment requires semiconductor manufacturers to interrupt the manufacturing process sequence, remove sample silicon wafers from the process equipment and place the silicon wafers on the stand-alone measuring or inspection tool. In contrast, our integrated metrology approach is based upon patented measuring methods that enable us to produce optical measuring systems that are small enough to be integrated directly inside many types of semiconductor process equipment. Our integrated approach offers considerable advantages over the conventional stand-alone approach to metrology control, enabling manufacturers using our integrated equipment to reduce costs and to improve production efficiency, yield and quality.

We have emphasized our integrated metrology solutions in the past and intend to continue to do so. However, we also produce stand-alone metrology systems. We plan to leverage our technology, methods, metrology expertise and market position in the integrated metrology field to expand our offerings of stand-alone metrology systems. Our long-term strategy is focused on advanced metrology and process control solutions where our integrated process control products and stand alone products are compatible or complementary.

Demand for metrology systems, whether integrated or stand-alone, is driven by capital equipment purchases by semiconductor manufacturers, which in turn are driven by worldwide demand for semiconductors. Industry data indicates that the worldwide demand for semiconductors is growing. We believe that this growth in demand will drive demand for process control equipment, including metrology systems, as semiconductor manufacturers add capacity. Demand for metrology systems will also be driven by the increasing cost to manufacture semiconductors, which are becoming larger and more complex, and the demands of semiconductor manufacturers for process equipment that provides better film uniformity, increased dimensional control, tool-to-tool matching and within-tool uniformity.

Our Market

Growth of the Semiconductor Industry and the Metrology Market

The use of semiconductor devices continues to increase. Semiconductors are no longer used solely in personal computers and computer systems, but also in wireless communications, Internet infrastructure, Internet access devices, automobiles, portable electronic devices and other advanced consumer electronics. As a result of the increasing demand for semiconductors, the semiconductor industry has experienced significant growth over the past eight to 10 years, despite a severe downturn between 2000 and 2003. According to the Semiconductor Industry Association, worldwide sales of semiconductors decreased from \$223 billion in 2000 to \$178 billion in 2003, and then increased to \$220 billion in 2004. Over the past decade, the increased use of semiconductors has driven demand for additional semiconductor manufacturing capacity. In turn, the addition of semiconductor manufacturing capacity, whether through new construction or refurbishment of existing manufacturing facilities, has been a driver of demand for metrology systems such as those we produce.

The increased use of semiconductors has been accompanied by an increase in their complexity. Due to the creation of new applications and markets for semiconductors, suppliers and manufacturers are faced with an increasing demand for new products that provide greater functionality and higher performance at lower prices. As a result, many new complex materials, structures and processes are being introduced to semiconductor manufacturing. New materials include copper, low- and high-k dielectrics, silicon-on-insulator, silicon-germanium, strained silicon, raised source/drain. New processes include chemical mechanical polishing (CMP), electro chemical plating (ECP) and atomic layer deposition (ALD). Manufacturers are also increasingly moving toward 300 mm silicon wafers from 200 mm silicon wafers. While 300 mm wafers can yield up to twice as many integrated circuits as 200 mm wafers, larger wafers increase manufacturing challenges. For example, because 300 mm wafers can bend or bow more than twice as much as 200 mm wafers, they are more susceptible to damage. The larger area of 300 mm wafers also makes it more difficult to maintain film uniformity across the entire wafer. Semiconductors also continue to move toward smaller feature sizes and more complex multi-level circuitry. The increase in complexity of semiconductors and the resulting increase in the complexity and cost of the semiconductor manufacturing process has also been a driver of demand for metrology systems.

The ever-increasing level of complexity and the decrease in feature sizes has also significantly increased the cost and performance requirements of semiconductor fabrication equipment. The cost of wafer fabrication equipment is also increased due to the higher levels of automation being utilized by manufacturers. Thus, semiconductor manufacturers must increase their investment in capital equipment in order to sustain technological leadership, to expand manufacturing capacity and maintain profitability. According to published reports by an industry market research firm, the cost of building a state-of-the-art semiconductor manufacturing facility has grown from approximately \$200 million in 1983 to over \$3 billion today. Capital equipment, which includes metrology systems, accounts for 65% to 75% of this sum, according to industry data. We believe that the process control equipment market, which includes the metrology segment, in the future will grow at a rate greater than the overall process equipment market since process control equipment is expected to consume a larger portion of the overall costs of semiconductor manufacturing equipment.

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While we expect that the demand for semiconductors will increase and the market for semiconductor process control equipment will expand, we cannot assure you that either will occur, that we will benefit from any increase in demand or expansion of the process control market, or that our products will be accepted in the market place. Our industry is intensively competitive and if we fail to compete effectively our revenues and market share will decline. In addition, the semiconductor industry, and the semiconductor capital equipment market in particular, are highly cyclical. Therefore, while we anticipate demand for semiconductors will increase and the market for semiconductors capital equipment will expand, it is likely that there will be periodic downturns which may be severe and protracted.

The Semiconductor Manufacturing Process

Semiconductors typically consist of transistors or other components connected by an intricate system of circuitry on flat silicon discs known as wafers. Integrated circuit manufacturing involves hundreds of individual steps, some of which are repeated several times, through which numerous copies of an integrated circuit are formed on a single silicon wafer. Typically, up to 30 very thin patterned layers are created on each wafer during the manufacturing process. At the end of the manufacturing process, the wafer is cut into individual chips or die. Because semiconductor specifications are extremely exacting, and integrated circuits are becoming more complex, requiring ever more sophisticated manufacturing processes, the process steps are constantly monitored, and critical parameters are measured at each step using metrology equipment.

Many of the manufacturing steps involve the controlled application or removal of layers of materials to or from the wafer. The application of materials to the wafer, known as deposition, involves the layering of extremely thin films of electrically insulating, conducting or semi-conducting materials. These layers can range from one-thousandth to less than one-hundred-thousandth of a millimeter in thickness and create electrically active regions on the wafer and its surface. A wide range of materials and deposition processes are used to build up thin film layers on wafers to achieve specific performance characteristics. One of the principal methods of thin film layer deposition is chemical vapor deposition (CVD). In CVD, a chemical is introduced into the chamber where the wafer is being processed and is deposited using heat and a chemical reaction to form a layer of solid material on the surface of the silicon wafer. Metrology systems monitor the thickness and uniformity of thin film layers during the deposition process.

Once the thin film has been deposited on the wafer to form a solid material, circuit patterns are created using a process known as photolithography. During this process, a light-sensitive coating called photoresist is applied to the wafer, which is then exposed to intense light through a patterned, opaque piece of glass. For the photolithography process to work properly, the thickness of the photoresist must be precise and uniform. In addition, to control the photolithography process, the film thickness, reflectivity, overlay registration and critical dimensions are all measured and verified. The exposed photoresist is developed when it is subjected to a chemical solution. The developed wafer is then exposed to another chemical solution, or plasma, that etches away any areas not covered by the photoresist to create the structure of the integrated circuit. Semiconductor manufacturers use metrology systems to verify the removal of material through the etch process and the critical dimensions of the structures created.

To meet the processing challenges posed by ever smaller feature sizes and because of the use of new materials such as copper in the manufacture of integrated circuits, manufacturers are increasingly using a process technology known as chemical mechanical polishing. Chemical mechanical polishing, or CMP, removes uneven film material deposited on the surface of the wafer from processes such as CVD and photolithography by carefully sanding the wafer with abrasives and chemicals, creating an extremely flat and even surface for the patterning of subsequent film layers. Metrology systems are used to control and verify the results of the CMP process by measuring the thin film layer to determine when the correct thickness has been achieved.

The processes described above are repeated in sequence until the last layer of structures on the wafer has been completed. Each integrated circuit on the wafer is then inspected and its functionality tested before shipment. Measurements taken by metrology systems during the manufacturing process help insure process uniformity and help semiconductor manufacturers avoid costly rework and mis-processing, thereby increasing efficiency and profitability.

The Need for Greater Overall Equipment Efficiency

According to SEMATECH, the industry consortium for semiconductor manufacturers, one of the major challenges to achieving improvements in cost productivity is the ability to maintain continuous improvements in equipment productivity. Overall equipment efficiency, that is, the percentage of time that processing equipment is utilized to produce wafers, is used as a metric to quantify the productivity of a processing tool. The major factors affecting productivity are equipment downtime, qualification time, misprocessing and operator skills. We believe it is imperative that semiconductor manufacturers find ways to improve overall equipment efficiency in order to improve cost productivity and earn an acceptable return on their investment in capital equipment and to meet the demand for improved semiconductor device performance.

Process Control. The steps used to create semiconductors are an exacting processes that require strict control of equipment performance and process sequences for the resulting semiconductors to function properly. Tight control is achieved through monitoring of the in-process wafers and by measuring relevant parameters after each process step. These procedures are usually carried out on a small sample of the wafers. The monitoring may include measurement of several parameters, such as the thickness of the layers of thin film deposited, the sizes of the features that are patterned through the photolithography process, as well as the registration or alignment between two consecutive layers, known as overlay. Monitoring also includes inspection of the wafer for irregularities, defects or scratches. If parameters are out of specification or if defects or contamination are present, the manufacturer adjusts the process and measures another sample of wafers thereby allowing manufacturers to reduce costs and improve device performance.

Traditional Stand-Alone Process Control and Its Limitations. In the standard approach to semiconductor manufacturing, process control is a stand-alone operation. Stand-alone process control systems, however, impose a number of limitations on the semiconductor manufacturer. The semiconductor manufacturer must interrupt the process sequence and add extra steps in order to remove sample wafers from the fabrication process equipment and put them on a stand-alone measuring or inspection tool. The conventional stand-alone approach necessitates redundant robotic wafer handling hardware and software in both the process equipment and the stand-alone process monitoring tools, as well as additional wafer transferring automation systems between the two pieces of equipment, resulting in decreased factory efficiency and reduced productivity. In addition, removing the wafer samples from the process equipment to the metrology tool increases the risk of contamination or damage. As this removal significantly detracts from useable process time, it is not practical to make a large number of measurements, thereby compromising the accuracy of the measurement of process deviations and trends. If a measurement indicates that the process has been out of specification, the wafers made since the sample wafers were removed for inspection may have to be discarded or re-worked, actions that are increasingly costly for the manufacturer.

The Need for More Effective Process Control Tools. In addition to the inherent limitations of stand-alone process control systems, a number of technical and operational trends within the semiconductor manufacturing industry are strengthening the need for more effective process control solutions. These trends include:

Development of smaller semiconductor features. The development of smaller features, now as small as 90 nm in production, enables semiconductor manufacturers to produce larger numbers of circuits per wafer and to achieve higher circuit performance. As feature geometries decrease, manufacturing yields become increasingly sensitive to processing deviations and defects, as more integrated circuits are lost with every discarded wafer. In addition, the increased complexity and number of layers of the integrated circuits increase the chance of error during the manufacture of the wafer.

Shortening of technology life cycles. The technology life cycle of integrated circuits continues to shorten as semiconductor manufacturers strive to adopt new processes that allow a faster transition to smaller, faster and more complex devices. In the past, the technology life cycle was approximately three years; it is now only two years. The accelerating rate of obsolescence of technology makes early achievement of enhanced productivity and high manufacturing yields an even more critical component of a semiconductor manufacturer's profitability.

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Transition to copper and other new materials. Copper metal layers and other new materials such as low and high k-dielectrics and silicon on insulator are increasingly replacing aluminum for advanced integrated circuits in order to increase performance and reduce the cost of integrated circuits. Copper and low-K materials make it possible to build higher speed devices using fewer layers. The use of copper and other new materials, requires new processing and metrology equipment and thus represents challenging developments for the semiconductor manufacturing industry.

Change to 300-millimeter wafers. The transition in wafer size from 200-millimeter diameter to 300-millimeter diameter that began in 1999 more than doubles the number of integrated circuits per wafer. Maintaining process uniformity across these larger wafers is more difficult. Processing larger wafers also increases the cost of mistakes caused by both the larger number of integrated circuits per wafer and the greater complexity (and, therefore, cost) of processing larger wafers. Thus, with 300 mm wafers, the need for effective metrology to quickly detect and correct errors in the manufacturing process has increased. In addition, new metrology equipment is needed to accommodate the larger wafer size.

Increase in foundry manufacturing. As a result of the rising investment for semiconductor production and the proliferation of different types of semiconductors, semiconductor manufacturing is increasingly being outsourced to large semiconductor contract manufacturers, or foundries. A foundry typically runs several different processes and makes hundreds to thousands of different semiconductor product types in one facility, making the maintenance of a constant high production yield and overall equipment efficiency more difficult to achieve.

Increase in Automation. In an effort to achieve greater operating efficiencies, semiconductor manufacturers are increasingly relying upon automation. Automation represents the fastest growing segment of the semiconductor manufacturing industry.

In order to address the increasing costs associated with these trends, we believe semiconductor manufacturers must enhance manufacturing productivity. One way to enhance productivity is through improvements in process control, with a greater emphasis on metrology as part of process control. As part of this emphasis on metrology, manufacturers are taking more measurements to characterize each step of the semiconductor manufacturing process, new and enhanced measurement techniques are being used to provide meaningful data and the data provided is being used in new ways to enhance the manufacturing process. Furthermore, as circuits and materials become more complex, measurement techniques must become more sophisticated, requiring a deeper understanding of the interaction of the various components of the metrology process. Complex automation in the manufacturing process also makes measurement more expensive.

Conventional stand-alone process control systems limit productivity and overall equipment efficiency. As the cost of capital equipment continues to increase as semiconductor manufacturing becomes more complex, manufacturers demand greater productivity and efficiency, which integrated metrology systems can provide. We believe that the demand for advanced process control systems that address the evolving needs of semiconductor manufacturers will continue to drive the growth in the market for integrated process control systems.

We believe integrated metrology systems provide semiconductor manufacturers with the greatest opportunity to increase the productivity and yields of their equipment, thereby increasing their profitability. Therefore, we anticipate that we will continue to focus on the integrated metrology market. However, recognizing that a significant number of semiconductor manufacturers will continue to rely upon stand-alone equipment, we intend to leverage our market leading position in the integrated metrology market and our metrology expertise to deepen our penetration of the stand-alone metrology market. Furthermore, the technological and operational trends within the semiconductor manufacturing industry that are strengthening the need for more effective process control solutions can also be addressed through the use of stand-alone metrology equipment, although, we believe, that greater efficiency can be achieved through the use of integrated metrology systems.

The Nova Approach

Integrated Metrology

Our integrated metrology systems provide semiconductor manufacturers with more effective and efficient process control by measuring wafers and their properties without removing the wafer from the process equipment. Our products use our patented measuring methods that enable us to produce optical measuring systems that are small enough to be incorporated directly inside many types of equipment used in semiconductor processing. Integrated systems measure the wafer within the actual process environment, reducing labor and wafer handling as well as the risk of contamination of or damage to the wafer. In addition, we believe that our systems deliver significant increases in overall equipment efficiency through advanced process control, along with improving wafer-to-wafer uniformity, all with minimal operator intervention.

We provide our customers with flexible integrated process control solutions by offering systems that meet thin film measurement needs in critical applications in the fabrication process. Our integrated process control platform can be deployed to multiple processes and applications of semiconductor manufacturing.

Our systems can be installed directly in new equipment or used to upgrade existing equipment with minimal integration costs, extending the useful life of existing process equipment and saving significant capital costs. To our knowledge, only our metrology systems can be used to retrofit older 200 mm semiconductor manufacturing equipment, giving us a unique opportunity as manufacturers seek to increase production quickly to meet the increasing demand for semiconductors. Our pioneering approach, centered around our NovaReady integration package, later adopted by the process equipment manufacturers, allows process equipment manufacturers to prepare their equipment to accept our measurement and inspection systems, which can then be integrated with a simple plug-and-play installation.

We believe our integrated process control systems provide several important advantages to semiconductor manufacturers, enabling manufacturers to:

- utilize the process equipment wafer handling system to allow measurement of the sample wafers while processing other wafers;

- perform the measurements without removing the wafer from the process equipment, increasing the efficiency of the process and decreasing the risk of contamination;

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reduce capital costs of the fabrication facility by increasing overall equipment efficiency and reducing labor costs and necessary clean room area;

reduce the amount of time required to qualify process equipment that is usually idle during qualification steps, thus, minimizing costly equipment down-time;

reduce the number of test wafers; and

detect processing errors more quickly.

We believe that as semiconductor manufacturers demand greater efficiency from their manufacturing equipment, process equipment manufacturers will increasingly seek to offer their customers integrated metrology in their tools to lower costs and increase overall efficiency. In addition, as semiconductor manufacturers seek to increase production, we believe they will seek to increase the efficiency of older equipment by retrofitting older equipment with new metrology systems. We believe the drive toward more efficient manufacturing operations in the face of increasing complexity will accelerate the adoption of integrated metrology solutions such as those we offer.

Stand-alone Metrology

We believe that our integrated metrology systems offer significant advantages over traditional stand-alone systems. We do, however, believe that a significant number of semiconductor manufacturers will continue to use stand-alone metrology equipment for all or a portion of their manufacturing equipment. In order to be able to serve all the metrology needs of our customers, whether integrated or stand-alone, we plan to leverage our position in integrated metrology to increase our offerings and market penetration for stand-alone systems.

As a result of the ever changing semiconductor manufacturing process and accompanying process control needs, we have begun to develop a new process control equipment concept. Under this concept, the same basic metrology will be used in different configurations, depending upon customer demands. For example, the same metrology module could be used as an integrated system inside the process equipment, as stand-alone systems or in metrology cluster tools. This would allow for easy customization of metrology solutions for any given process and would allow multiple metrology solutions to be combined in a single platform to answer all process needs. As we envision it, this new concept will allow semiconductor manufacturers unparalleled flexibility, upgradeability and affordability in both stand-alone and integrated forms. As technology life cycles continue to decrease, flexibility and upgradeability will become even more important. While we have not yet fully developed our new process equipment concept, we anticipate that we will begin offering new products based on the concept within the next 12 months. We cannot assure you, however, that we will be able to meet this anticipated schedule or that, if introduced, these products will be accepted by the market and purchased by customers in amounts sufficient to generate significant revenues or any profits.

Our Strategy

Our strategy is to continually strengthen our leading position in the semiconductor process control market by providing innovative and superior products and solutions that generate sustainable growth and profitability. The key elements of our strategy are:

Technological leadership in metrology. We intend to continue our aggressive investment in research and development to allow us to continue to provide superior leading-edge technology and metrology solutions to the semiconductor manufacturing industry on a timely basis. We believe that our proprietary and patented technology and our extensive expertise in integrated metrology, optics, software, and systems integration provide us with significant advantages over our competitors. We intend to leverage our existing intellectual property and experience and expertise to maintain technological leadership.

Maintain our open architecture policy that enables us to provide process control solutions that are integrate-able into many different brands of process equipment. Our open architecture policy enables us to integrate our systems into many different brands of process equipment, thereby offering our end user and process equipment manufacturer customers maximum flexibility. In addition, this policy allows our products to be installed directly in new equipment, whether by the process equipment manufacturer or the end user, or retrofitted in older equipment in order to extend the productive and technological life of older equipment. Through our open architecture policy, we have established original equipment manufacturer partnerships with the major CMP tool manufacturers. Under our NovaReady concept, equipment manufacturers can prepare their equipment to accept our integrated metrology systems with relative ease by finding on-tool space and providing wafer handling access and minimal wiring for our integrated metrology systems, which are a little larger than a wafer, with a small optical head that scans the wafers. Most CMP equipment manufacturers such as Applied Materials, Ebara, Nikon, Novellus, Strasbaugh, and others are using our NovaScan systems. We are strongly committed to our multi-vendor policy and are establishing relationships with different process equipment manufacturers for our new developments.

Focus on customer needs. Process equipment manufacturers and end users are our customers and we will continue to focus on them as we develop the next generation of metrology products, including products based on our new process equipment concept. In addition, we plan to continue to strengthen our relationships with our process equipment and end user customers by seeking opportunities for collaborative development of products and new service opportunities. We also intend to focus on increasing our penetration with respect to existing customers by continuing to seek opportunities to offer our metrology solutions across their entire manufacturing facility and to continue to provide excellent service and the highest quality products to our customers.

Continue to market our pioneering NovaReady concept. Under our NovaReady concept, we work with process equipment manufacturers so that they can prepare their equipment to accept our integrated metrology systems with a simple plug-and-play installation. We also work directly with semiconductor manufacturers to understand their needs, provide solutions to meet those needs and metrology systems that can be easily integrated into their new or existing manufacturing equipment. By working directly with both process equipment manufacturers and semiconductor manufacturers, we believe our NovaReady concept allows us to create a long-term, three-way relationship among the process equipment manufacturer, the semiconductor manufacturer that is the end-user customer and Nova, encompassing sales, training and on-going support. We plan to continue to market and promote our NovaReady concept, which we believe is unique and allows us to establish strong and long-term relationships with our customers.

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Continue to expand our worldwide sales and marketing efforts and provide worldwide support. We plan to focus our marketing efforts on acquiring new key customers around the world. To further these efforts, we continue to expand our global presence with sales and service centers in Europe, Israel, Japan, Korea, Singapore, Taiwan and the U.S. Our global presence allows us to provide the end users with direct service and application support, thereby decreasing tool downtime and providing us opportunities to promote additional uses of our products throughout the fabrication process. We plan to expand into additional territories as customer needs dictate.

Further penetrate the installed base of process equipment that can be upgraded with our integrated process control products. We plan to continue to market to the large installed base of existing process equipment that can be retrofitted with our integrated process control products. We believe this represents a large and under-penetrated market segment for our integrated process control products. This opportunity is especially attractive because we believe that we are the only integrated metrology solution provider that can retrofit older systems.

Establish and maintain strategic relationships with key technology and market partners. We have established strategic relationships with Applied Materials relating to the development of integrated metrology solutions for copper CMP processing and with Lucent Technologies Inc. and Agere Systems Guardian Corporation to gain access to certain technology we hope will allow us to develop new metrology products and technologies for the semiconductor industry. Going forward, we plan to continue to seek strategic partners that can provide us with access to technologies or markets that will allow us to accelerate our creation of new metrology products and to further penetrate the metrology market.

Develop and mature the architecture and platform of the new metrology systems, which will offer significant improvements in metrology performance together with the flexibility of fast incorporation of different metrology modules. We have established a development program that we anticipate will allow us to introduce to the market our first product based upon our new process control equipment concept, the next generation (NG), in early 2006. Our intention is that the NG and subsequent related products will allow relatively fast and cost effective introduction of new metrology modules.

Our Technology

We believe that our technological and engineering expertise and research and development capabilities allow us to develop and offer new products and technologies to meet the ever-changing demands of the semiconductor industry. We have applied our technological and engineering expertise to develop a wide range of integrated and stand-alone products for the CMP, copper CMP, etch and lithography processes. Because of our open architecture policy, our integrated metrology solutions can work with all models of CMP and etch tools made by the major process equipment manufacturers, for both 200 mm and 300 mm applications. In addition, to our knowledge, only our integrated metrology systems can be used to retrofit existing 200 mm process equipment, giving us a significant advantage over our competitors.

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Our suite of technological capabilities includes:

Laser ellipsometry. Ellipsometry is a non-contact, non-destructive optical measuring technique used to measure very accurately the thickness and other properties of transparent thin films. When a surface is exposed to a polarized light laser, ellipsometers measure the change in the reflected light's polarization. By using multiple light angles and multiple wavelengths, ellipsometry can provide accurate and reliable measurement of a wide range of film thicknesses, film materials and film stacks.

Broadband spectrophotometry. Our broadband spectrophotometry capabilities range from deep ultraviolet to near infrared. This technology enables fast, accurate and small spot size film thickness measurement in large range of applications on a very cost effective basis, both as an integrated system and as a stand-alone system.

Scatterometry. Our scatterometry systems are based on our broadband spectrophotometry. These systems use fully polarized deep ultraviolet to near-infrared spectral light source. This technology enables fast and cost effective system development. Scatterometry provides two and three dimensional characterization of very fine geometries on patterned product wafers. These profiling and critical dimension capabilities are key enablers of advanced process control, allowing almost real time metrology of the most advanced design rule, down to 65 nm and below.

Imaging and image processing. This technology has three different applications: 1) navigating on product wafers to perform measurement on selected very small sites; 2) detecting defects on product wafers after critical process steps, such as lithography and etch; and 3) measurement of the accuracy of registration between two layers (overlay measurement), mostly used in lithography.

Mass spectrometry. This technology, which we acquired from Lucent Technologies Inc. and Agere Systems Guardian Corporation, will be developed to help minimize particle contamination on product wafers during processing. We anticipate that the system we are developing will allow to identify contaminating events as soon as they happen. Currently particle detection is performed in an off-line mode, at least after a whole lot has been processed.

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Generally, we develop our own technologies. However, we also directly acquire technology from others and seek strategic partners that can provide us access to new technologies. In February 2002, we signed a joint development agreement with Applied Materials relating to integrated metrology for copper chemical mechanical polishing processing. Pursuant to this agreement, we developed copper chemical mechanical polishing monitoring capabilities using the NovaScan 2020/3030 Cu, which could be sold exclusively to Applied Materials and its customers. At the end of 2003, this exclusivity agreement expired and was not extended. Consequently, we sell our copper chemical mechanical polishing products to and through all equipment manufacturers, yet the majority are still sold through and with Applied Materials. In February 2002, we also signed a licensing agreement with Lucent Technologies Inc. according to which we were licensed the rights to certain of Lucent's patents, software and technical information. In connection with the agreement entered into with Lucent, we also signed an agreement with Agere Systems Guardian Corporation according to which we were granted a license to a patent owned by Agere. Pursuant to this agreement, as well as the agreement entered into with Lucent, we hope to develop new metrology products and technologies for the semiconductor industry. Going forward, we plan to continue to seek strategic partners that can provide us with access to technologies or markets that will allow us to accelerate our creation of new metrology products and to further penetrate the metrology market.

The measurement channels that we use in our metrology products are unique and protected by patented intellectual property. Our measurement channels include: polarized normal incidence spectral reflectometer/ellipsometer; multi-angle oblique incidence spectral ellipsometer; and multi-focal image overlay microscope. In addition, we are developing additional measurement channels including: multi-angle, multi-wavelength, null ellipsometer; eddy current micro-probe and phase imaging profilometer. In addition to these proprietary measurement channels, we are also seeking to acquire new measurement channels from third parties, including: black beam scanning imaging; x-ray fluorescence spectrometer; macroinspection; and other technologies.

Throughout our history, we have been a technological leader in the integrated metrology field. We were the first to offer integrated metrology solutions for semiconductor manufacturers and are the only provider of integrated metrology solutions that can measure wafers in water, which allows for more efficient and accurate metrology. Furthermore, because our systems are small enough to fit inside wafer fabrication equipment, to our knowledge, only our metrology solutions can be used to retrofit older 200 mm systems. Our systems have also been recognized by the industry. In 2004, we received the prestigious Editors' Choice Best Product Award from Semiconductor International magazine for our NovaScan 2020Cu, 3030Cu Copper CMP process monitoring.

Products

Our products include metrology systems for thin film measurement in chemical mechanical polishing and chemical vapor deposition applications; optical topography systems for use in post-copper chemical mechanical polishing applications; optical critical dimension systems for lithography and etch; and overlay systems for lithography and etch applications. Our integrated thickness monitoring system for chemical mechanical polishing processing control enables wafer-to-wafer closed loop control. We offer several models of this integrated thickness monitoring systems, depending on polisher type and end-user requirements. These metrology systems address a broad range of metrology requirements of our end-user and process equipment manufacturer customers. Both our integrated and stand-alone systems incorporate patented optical scanning, dynamic auto-focus, unique pattern recognition for arbitrarily oriented wafers and proprietary algorithms for in-water measuring of two layers simultaneously. We offer several different product models that are tailored to both conventional chemical mechanical polishing equipment as well as to newer, high throughput polishers. Following is a summary of our products.

Thin Film Process Control

The NovaScan 840 combines high-speed measurement and effective handling, enabling measurement of wafers both before and after polishing. While we no longer market this system, this system and prior generations were our main revenue source in 2001 and prior years.

The NovaScan 2020 and 2040 are the second generation of integrated thickness monitoring systems with enhanced spectral range, responding to the needs of the industry for emerging chemical mechanical polishing high-end applications of thin films and complex layer stacks. The 2020 model was introduced to the market in the end of 2000, and since then has replaced the NovaScan 840 and accounted for the major portion of our sales for 200 mm production lines. The NovaScan 2040 was introduced in 2002 and is the fastest integrated film thickness 200 mm measurement system in the market today.

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The NovaScan 3030 and 3060 are the second generation of the 300 mm measuring system, with improved optics and motion system enabling high speed measurement, and with broad spectral range (ultraviolet to infrared) allowing accurate measurements on complex structures and thin film layers. The 3030 model was introduced to the market in 2001 and since then has replaced the NovaScan 3000 and accounts for the major portion of our sales for 300 mm production lines. The NovaScan 3060 was introduced in 2002 and is the fastest integrated film thickness 300 mm measurement system in the market today.

The NovaScan 2020Cu has the same basic platform as the NovaScan 2040, with additional hardware and software improvements, enabling the system to answer the unique requirements of copper chemical mechanical polishing monitoring. The system went through several beta tests during 2001 and 2002 and was released for sale in the beginning of 2003. This product did not generate significant revenues in 2004, and we do not expect it to generate significant revenues in the following years.

The NovaScan 3030Cu has same basic platform as the NovaScan 3030, with additional hardware and software improvements, enabling the system to answer the unique requirements of 300 mm copper CMP monitoring. The system went through field-testing during 2002 and was released for sale in the beginning of 2003. This product did not generate significant revenues in 2004, and we do not expect it to generate significant revenues in the following years.

A closed loop control option for the NovaScan systems delivers reliable, highly automated wafer-to-wafer uniformity over chemical mechanical polishing manufacturing processes. The thickness data of every processed wafer is obtained and process parameters are fed back to adjust the next wafer polish.

NovaNet is a highly sophisticated computer network, connecting all NovaScan systems on a factory floor. The network is managed by a dedicated server, running with proprietary software developed by Nova, and insuring safe recipe distribution and recipe integrity across the factory. The NovaNet also includes a report generator (NSA) that allows the creation of reports from all the systems connected and allows programmable cross sections.

The NovaScan 840CVD system is a 200 mm integrated metrology vacuum chemical vapor deposition measurement system, measuring different layers in the chemical vapor deposition process. Data can be fed forward to the chemical mechanical polishing process tool. Integration solutions were developed for different process equipment. The system was introduced to the market in the end of 2000 and several units have been sold. However, we do not expect to sell a significant number of these systems in the future.

The NovaScan 3060CD system is a scatterometry-based system for measuring the critical dimensions (CD) and profiling lines and trenches on 200 mm and 300 mm wafers. The system went through field-testing during 2002 and was released for sale in 2003. The systems are sold as integrated metrology systems on Lam Research Inc. etch systems and as stand-alone systems with automation modules acquired from different suppliers, such as Integrated Dynamics Engineering and Brooks Automation.

Photolithography Process Control

The NovaTrack 2020 and 3030 systems are a dual-purpose integrated metrology and stand-alone systems for overlay registration measurement and macro defect inspection in the photolithography process. The systems are designed for integration on a photoresist track and as a stand-alone system. Both stand-alone and integrated models of the NovaTrack 2020 finished beta testing in 2003 and have been released for sale. Currently the need for these integrated overlay solutions is very limited. These products are currently not being promoted in the market due to this low market potential. We believe that our next generation of systems currently under development will meet 65 nm and below technology nodes and will have a rather high integrated metrology potential.

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While we continue to emphasize our integrated metrology solutions, we offer our products as stand-alone equipment as well, thereby significantly expanding our potential customer base. Revenues from stand alone systems were not a significant portion of our revenues in 2004. A significant portion of our revenues are derived from our CMP product line, and we are substantially dependent on this product line.

Research and Development

We have assembled a core team of experienced scientists and engineers who are highly skilled in their particular field or discipline. Our research and development core competencies, technologies and disciplines are comprised of thin film measurement, image acquisition, pattern recognition, inspection and automatic defect classification. Our management and research and development staff consists of 64 highly skilled members, including independent contractors. Our staff includes 25 scientists holding Ph.D. degrees and 24 persons holding M.S. degrees. In June 2003, our research and development operations received the ISO9001/2000 quality mark from an international certification institution.

The process control market is characterized by continuous technological development and product innovations. We believe that the rapid and ongoing development of new products and enhancements to our existing product line is critical to our success. Accordingly, we devote a significant portion of our technical, management and financial resources to developing new applications and emerging technologies. In 2002, 2003 and 2004, our research and development expenses, net of participation by the Office of the Chief Scientist, were \$9.9 million, \$8.6 million and \$8.7 million, respectively, representing 49%, 32%, and 24% of our respective total revenues for those years. We anticipate that our research and development expenses, net, will be \$9.8 million in 2005, representing an increase of 13% over 2004.

Our research and development policy is based on a structured process of initiating new projects and on-going review of existing development projects. Our vision is to continue to be a market leader in the semiconductor process control market and our research and development policies and activities are designed to support this vision. Our launch of new development projects is based on market requirement specifications, generated through our marketing activities and research on customer needs, followed by a proposed detailed business plan, a detailed development plan with milestones, risk analysis, profit and loss model goals and required budget. Each development project is monitored through a structured process, including design reviews and project management reviews.

Intellectual Property

Our success depends in part upon our ability to protect our intellectual property. We, therefore, have an extensive program devoted to seeking patent protection for our inventions and discoveries that we believe will provide us with competitive advantages. We have been granted 44 U.S. patents and 25 non-U.S. patents and hold an exclusive license to one U. S. patent. The U.S. patents we hold have expiration dates ranging from 2014 to 2023. We also have 24 U.S. patent applications pending and more than 70 applications pending in other countries. Our patents and applications principally cover various aspects of optical methods, optomechanical and mechanical algorithms, and integrated process control implementation concepts.

To protect our proprietary rights, we also rely on a combination of copyrights, trademarks, trade secret laws, contractual provisions and licenses. Our copyrights include software copyrights. We also enter into confidentiality agreements with our employees and some of our consultants and customers, and seek to control access to and distribution of our proprietary information, such as our proprietary algorithms.

While we attempt to protect our intellectual property through patents, copyrights and non-disclosure and confidentiality agreements, we may not be able to adequately protect our technology. Competitors may be able to develop similar technology independently or design around our patents and, despite our efforts, our trade secrets may be disclosed to others. Furthermore, the laws of countries other than the U.S. may not protect our intellectual property to the same extent as the laws in the U.S. We also cannot assure that: (i) our pending patent applications will be approved; (ii) any patents granted will be broad enough to protect our technology or provide us with competitive advantages or will not be successfully challenged or invalidated by third parties; or (iii) that the patents of others will not have an adverse effect on our ability to do business. We may also have to commence legal proceedings against third parties to protect our intellectual property, as we have done recently.

In March 2005, we filed a civil action in the United States District Court for the Northern District of California against Nanometrics Inc. seeking to enforce our United States Patent No. 6,752,689. This patent relates to an optical measuring system. In the civil action, we seek an injunction against Nanometrics and its officers, employees, agents, subsidiaries, representatives, distributors, dealers and all persons acting in concert and participation with any of them from infringing patent No. 6,752,689, an accounting of any and all infringing sales, monetary damages and costs and expenses. Nanometrics has filed a counterclaim seeking judgment declaring the patent invalid and that Nanometrics does not infringe the patent and awarding Nanometrics costs and fees. While we believe the patent is valid and enforceable, if the patent is invalidated, our competitors will likely be able to freely use the technology subject to the patent and our competitive position would be harmed. This litigation is in the very early stages and we cannot predict the outcome or the extent of any harm we may suffer if the patent is declared invalid. Furthermore, while we have not as of this time incurred any material litigation costs in connection with this litigation, it is likely that we will incur substantial costs in the future which may be material. In addition, the litigation may divert management's time and attention from other matters.

From time to time, we receive communications from others asserting that our products infringe or may infringe their intellectual property rights. Typically, our in-house patent counsel investigates these matters and, where appropriate, retains outside counsel to provide assistance. Presently, we are not involved in any material legal proceedings in which a third party has asserted that we have violated their intellectual property rights. If, however, we become involved in any such litigation and its outcome is adverse to us, it may result in a loss of proprietary rights, subject us to significant liabilities, including treble damages in some instances, require us to seek licenses from third parties which may not be available on reasonable terms or at all, or prevent us from selling our products. Furthermore, any litigation relating to intellectual property, even if we are ultimately successful, could result in substantial costs and diversion of time and effort by our management. This in and of itself could have a negative impact on us.

While we are not currently involved in any material legal proceedings in which a third party has asserted that we have violated their intellectual property rights, we have become aware of a United States patent held by a competitor, which may be interpreted to cover some aspects of the products we sell in the United States. Nonetheless, we have not received any indications of intention to enforce this patent or any notice from the competitor with respect to this patent. In addition, the patent is being reexamined by the United States Patent and Trademark Office (USPTO), is unenforceable at this time, and may or may not survive the reexamination. If the USPTO decides to allow the patent to stand in some reexamined form, it is possible that the competitor could seek to enforce the patent rights against certain of our products sold in the United States, seeking damages, an injunction, or requiring us to pay royalties for a license. While we believe that we would be successful in any litigation seeking to enforce those patent rights, the ultimate outcome of any litigation or other legal proceedings cannot be predicted.

For additional information regarding our intellectual property, *See* Our Technology starting on page 19.

Our Customers, Sales and Marketing

Our two pronged, integrated sales and marketing strategy involves marketing our products directly to semiconductor manufacturers in addition to process equipment manufacturers in order to create demand for our products. We believe that the pricing structure of our NovaReady integration package enables process equipment manufacturers to increase their margins, and that the quality of our systems can improve equipment yields, creating an incentive for process equipment manufacturers to promote our products to semiconductor manufacturers. At the same time, we believe that semiconductor manufacturers, eager to improve their own margins through increased factory throughput and yield improvements, will demand that the equipment they employ incorporate or use our metrology systems. We believe that by marketing directly to end users as well as to process equipment manufacturers, we are able to ensure that both parties are aware of the wide range of benefits that our products can deliver.

To further enhance our marketing efforts, we have established a system of integrated sales and support activities with key process equipment manufacturers, including Applied Materials, Ebara and Lam Research. This allows us to provide comprehensive and long-term application support directly to semiconductor manufacturers. We expect to continue to add new process equipment manufacturers to our roster as we introduce new integrated process control systems that can be integrated with different types of equipment.

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We also seek to establish and maintain close and mutually beneficial relationships with our customers by consistently providing them with a high level of service, support and new capabilities. We have established a global network of direct sales and marketing, customer service and applications support offices. We maintain sales, service or applications offices in Europe, Israel, Japan, Korea, Singapore, Taiwan, and the U.S., with a total staff of 70 people. These offices provide highly qualified application support specialists, training to process equipment manufacturer customers and end users, marketing, demonstrations and evaluations, spare parts hubs and sales and support engineers.

The table below lists some of the largest semiconductor manufacturers who have multiple installations of our systems in one or more sites. These users purchase our products either directly from us or from process equipment manufacturers.

Elpida	TSMC
Infineon	Intel
Micron	STMicroelectronics
Texas Instruments	Samsung

Most of these large semiconductor manufacturers using our systems have placed repeat orders for our systems, which we attribute to the productivity improvements experienced by the semiconductor manufacturers using our equipment, our on-site support of our equipment and the advantages to semiconductor manufacturers of using equipment supplied by the same vendor.

Our customer base is also diverse in terms of both geographic location and types of integrated circuits manufactured by those customers. Our end user and process equipment manufacturer customers are located in different countries, including Japan, Korea, Singapore, Taiwan, the U.S. and various European countries.

The table below describes the distribution of our total revenues, from systems and services, according to the geographic location of the actual installation of our systems in end-user sites:

	Year ended December 31,		
	2002	2003	2004
			(As restated)
	(in thousands)		
U.S.	\$ 11,057	\$ 9,422	\$ 15,134
Europe	4,678	5,360	4,441
Japan	1,131	5,953	5,414
Other	3,505	5,953	11,817
Total	\$ 20,371	\$ 26,688	\$ 36,806

The semiconductor industry is dominated by a small number of large companies. As a result, while our overall customer base is diverse, our sales are highly concentrated among a relatively small number of customers. The following table indicates the percentage of our total revenues derived from sales to our five largest customers and the range of these revenues from these customers for the periods indicated.

	Year ended December 31,			
	2001	2002	2003	2004
				(As restated)
Total revenues from five largest customers	81%	86%	87%	82%
Range of revenues from five				

	Year ended December 31,			
largest customers	2%-33%	4%-30%	3%-47%	3%-45%
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We anticipate that our revenues will continue to depend on a limited number of major customers, although the companies considered to be our major customers and the percentage of our revenue represented by each major customer may vary from year to year. As our customer base is highly concentrated, if any of our customers becomes insolvent or has difficulties meeting its financial obligations to us, we may suffer losses that may be material in amount. A loss of any of our major customers may likewise cause us to suffer a material decrease in sales and revenue.

Our Competition

The market for semiconductor capital equipment is highly competitive. Competitive factors in the market for integrated process control systems include technological leadership, system performance, ease of use, reliability, cost of ownership, technical support and customer relationships. For integrated process control, an adequate business model, internal organization and unique process equipment manufacturer agreements and partnerships are also significant factors. We believe we compete favorably on the basis of these factors in the markets we serve.

Our current integrated products compete with products manufactured by Nanometrics Inc. We believe that Dai Nippon Screen has ceased its activities in integrated metrology and Sensys, which had been acquired by Therma Wave in 2002, has reduced its integrated metrology activity to a minimum (selling a small number of optical critical dimension systems to Tokyo Electron). Nanometrics had and an exclusive agreement with Applied Materials, which we believe prevented Nanometrics from selling to other customers and had expired in 2002. We currently sell more systems to Applied Materials than Nanometrics. However, since the expiration of its exclusive agreement with Applied Materials, Nanometrics has started to work with other CMP equipment manufacturers, such as Ebara. In the last year, we have lost significant market share to our competitor with respect to three major end-users customers. We believe we lost these sales mainly due to delays in introducing our new deep ultraviolet capabilities. We introduced our deep ultraviolet system in the first quarter of 2005. We expect our integrated products to face intense competition in the coming years.

In the scatterometry field, which is a new application field in the semiconductor industry, we have intense competition in both integrated and stand-alone metrology. Our primary competitors in this area are KLA-Tencor, Therma Wave, Nanometrics and Accent. Nanometrics is our main competitor in this area as well because it provides optical critical dimension systems, which have characteristics similar to our systems. In the software aspects of scatterometry, which is a significant portion of the optical critical dimension business, Timbre (a Tokyo Electron subsidiary), which provides optical critical dimension software only, is a significant competitor that may also become a customer for our critical dimension hardware.

Since we have decided to put on hold our development and marketing efforts for overlay measurement and macro inspection products, the competitive environment in the photolithography metrology market is less important to us. The principal main system suppliers in this market include KLA-Tencor, Accent, August and Rudolph Technologies. Although we have not yet entered this market, we believe our overlay system being developed for the sub-65 nm technology node will be competitive. We anticipate introducing this system in 2006-7

Overall in the integrated metrology market segment, beyond our current market of thin film metrology, new market opportunities are evolving, and these are integrated metrology for copper CMP and integrated metrology for photolithography and etch. In the first segment, our main competitor is Nanometrics. Though currently our offering is unique, the competitor might gain some market share based on their current installed base and presence. For the Lithography and etch process segments, the integrated metrology is based on a new and emerging technology scatterometry. These offerings are based on combined stand-alone and integrated offering. Competition is described above.

Manufacturing

In order to leverage the relatively high volume of integrated systems we manufacture and to decrease production costs, we continue to focus our internal manufacturing activities on processes that add significant value or require unique technology or specialized knowledge and outsource others. Our manufacturing operations received the ISO 9002 quality mark by an international certification institute in October 1999. We have upgrade our quality systems to conform to ISO 9001/2000 requirements.

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Our principal manufacturing activities include assembly, integration, final testing and calibration. Our production activities are conducted in our manufacturing and service facility in Israel. We rely and expect to continue to rely on subcontractors and turnkey suppliers to fabricate components, build assemblies and perform other non-core activities in a cost-effective manner. While we use standard components and subassemblies wherever possible, most mechanical parts, metal fabrications and critical components used in our products are engineered and manufactured to our specifications. A small portion of these components and subassemblies are obtained from a limited group of suppliers, and occasionally from a single source supplier.

We have the capacity to produce up to 80 systems per quarter in our current facilities. Currently, we are operating at approximately 50% of that capacity.

We have only one manufacturing facility, which is located in Ness-Ziona, Israel. Any event affecting this facility, including natural disaster, labor stoppages or armed conflict, may disrupt or indefinitely discontinue our manufacturing capabilities and could significantly impair our ability to fulfill orders and generate revenues.

Our Subsidiaries

Our subsidiaries and the countries of their incorporation are as follows:

<u>Name of subsidiary</u>	<u>Country of incorporation</u>
Nova Measuring Instruments Inc.	Delaware, USA
Nova Measuring Instruments K.K	Japan
Nova Measuring Instruments Taiwan Ltd.	Taiwan
Nova Measuring Instruments Netherlands B.V	Netherlands

Capital Expenditures

Our capital expenditures are primarily for network infrastructure, computer hardware and software, leasehold improvements of our facilities and system demonstration tools. None of these assets are held as collateral or guarantee other obligations. For additional information on our capital expenditures, see [Liquidity and Capital Resources](#) starting on page 35.

Our Properties and Equipment

In January 2002, we relocated our main office, research and development and production facilities. These facilities, located in Ness-Ziona, Israel, occupy approximately 5,000 square meters, including: approximately 800 square meters of production facilities, approximately 3,000 square meters of research and development offices (including approximately 300 square meters of laboratories) and approximately 1,200 square meters of headquarters, sales and marketing, service and support and administration facilities. Originally, the new facilities were planned to be approximately 8,000 square meters, however, due to the change in market conditions, we reduced this office space. Due to the breach of part of our lease commitments associated with the move to the new building, we incurred costs of approximately \$1 million, charged to operations in 2001. Our current lease commitment relating to the new building is until the end of 2007.

Our U.S. subsidiary leases approximately 400 square meters in Arizona and 200 square meters in Santa Clara for use as a pre sale and support facility. Our Japanese, Netherlands & Taiwan subsidiaries lease approximately 100, 200, 300 square meters for use as a service and pre sale facility, respectively.

We believe that our facilities and equipment are in good operating condition and adequate for their present usage.

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Government Regulation

For information relating to the impact of certain government regulations on our business, *See* Conditional Grants from the Office of the Chief Scientist starting on page 37.

Item 5. Operating and Financial Review and Prospects

Information in this Operating Review and Financial Prospects Section should be read in conjunction with our Consolidated Financial Statements and notes thereto which are included elsewhere in this report.

As discussed elsewhere in this report, we have restated our Consolidated Financial Statements for the year ended December 31, 2004 and the following Operating and Financial Review and Prospects gives effect to the restatement. For additional detail on the restatement, see Note 15 to our Consolidated Financial Statements contained elsewhere in this report.

Executive Overview

We are a worldwide leading designer, developer and producer of integrated metrology system