AMTECH SYSTEMS INC
Form 10-K
December 21, 2006

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended: September 30, 2006

OR

o **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: 0-11412

AMTECH SYSTEMS, INC.

(Exact name of registrant as specified in its charter)

Arizona	**86-0411215**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
131 South Clark Drive, Tempe, Arizona	**85281**
(Address of principal executive offices)	**(Zip Code)**

Registrant s telephone number, including area code: 480-967-5146

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

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

Common Stock, $0.01 Par Value

(Title of Class)

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

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

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. x Yes o No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant s knowledge in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of accelerated filer and large accelerated filer in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer o Accelerated filer o Non- accelerated filer x

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

As of March 31, 2006, the aggregate market value of the voting stock held by non-affiliates of the registrant was approximately $23,244,000, based upon the closing sales price reported by the NASDAQ Global Market on that date.

As of December 8, 2006, the registrant had outstanding 3,476,042 shares of Common Stock, $0.01 par value.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Definitive Proxy Statement related to the registrant s 2006 Annual Meeting of Shareholders, which Proxy Statement will be filed under the Securities Exchange Act of 1934, as amended, within 120 days of the end of the registrant s fiscal year ended September 30, 2006, are incorporated by reference into Item 14 of Part III of this Form 10-K.

AMTECH SYSTEMS, INC. AND SUBSIDIARIES
Table of Contents

Part I

Part II

Part III

Part IV

FORWARD-LOOKING STATEMENTS

Certain information contained or incorporated by reference in this Annual Report on Form 10-K is forward-looking in nature. All statements included or incorporated by reference in this Annual Report on Form 10-K, or made by management of Amtech Systems, Inc. and its subsidiaries (Amtech), other than statements of historical fact, are hereby identified as forward-looking statements (as such term is defined in Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended). Examples of forward-looking statements include statements regarding Amtech s future financial results, operating results, business strategies, projected costs, products under development, competitive positions and plans and objectives of the Company and its management for future operations. In some cases, forward-looking statements can be identified by terminology such as may, will, should, would, expects, plans, anticipates, inte believes, estimates, predicts, potential, continue, or the negative of these terms or other comparable terminology. Any expectations based or these forward-looking statements are subject to risks and uncertainties and other important factors, including those discussed in the section entitled Item 1A. Risk Factors. These and many other factors could affect Amtech s future operating results and financial condition, and could cause actual results to differ materially from expectations based on forward-looking statements made in this document or elsewhere by Amtech or on its behalf.

All references to we, our, us, or Amtech refer to Amtech Systems, Inc. and its subsidiaries.

PART I

ITEM 1. BUSINESS

Amtech was incorporated in Arizona in October 1981, under the name Quartz Engineering & Materials, Inc. We changed to our present name in 1987. We conduct operations through three wholly-owned subsidiaries: Tempress Systems, Inc., a Texas corporation with all of its operations in the Netherlands, acquired in 1994 (Tempress Systems or Tempress); P.R. Hoffman Machine Products, Inc., an Arizona corporation based in Carlisle, Pennsylvania, acquired in July 1997 (P.R. Hoffman); and Bruce Technologies, Inc., a Massachusetts corporation based in Billerica, Massachusetts, acquired in July 2004 (Bruce Technologies). See Exhibit 21 Subsidiaries for a complete list of our subsidiaries.

We are a leading supplier of horizontal diffusion furnace systems used for semiconductor and solar (photovoltaic) cell manufacturing and recognized in the markets that we serve for our technology and our brands. We operate in two business segments: semiconductor equipment and polishing supplies. Our semiconductor equipment is sold under the well-known and respected brand names of Tempress Systems and Bruce Technologies. Our semiconductor segment has customers in both the semiconductor industry and the solar industry. Within the semiconductor industry, we serve a market focused on manufacturers of analog, power, automotive and microcontroller chips with geometries greater than 0.3 microns, denoted as µ, which we believe minimizes direct competition with significantly larger suppliers of semiconductor equipment. Within the solar industry, we provide diffusion and automation equipment to solar cell manufacturers. Under the P.R. Hoffman brand, we are also a leading supplier of insert carriers to manufacturers of silicon wafers, and provide lapping and polishing consumable products as well as equipment used in various industries.

We have been providing manufacturing solutions to the semiconductor industry for over 30 years and are leveraging our technology and industry presence in an effort to expand our penetration into the solar industry. Our customers use our furnaces to manufacture semiconductors, solar cells, silicon wafers and microelectromechanical systems, or MEMS, which are used in end markets such as telecommunications, consumer electronics, computers, automotive, hand-held devices and solar industry products. To complement our research and development efforts, we also sell our furnaces to research institutes and universities.

Driven by internal and external growth, our net revenue increased 45% year over year in both fiscal 2005 and 2006 to $27.9 million and $40.4 million, respectively. During the fourth quarter of fiscal 2004, we acquired the Bruce Technologies horizontal furnace product line, significantly contributing to the increase in net revenue for fiscal 2005. During fiscal 2006, net revenue increased primarily because of higher capital investment by our semiconductor customers driven by the growth in worldwide demand for electronic products and integrated circuits, as well as the increased demand for solar industry products. Our fiscal 2006 net revenue included a multi-furnace order of approximately $5.2 million from one customer. While we expect follow-on orders from this customer, we do not anticipate receiving an order of this magnitude in fiscal 2007 and, therefore, expect our sales to the semiconductor industry over the near term to be flat or slightly decrease.

We expect, however, our sales to solar cell manufacturers to increase in fiscal 2007. As of September 30, 2006, our backlog from solar industry orders, which we expect to ship in fiscal 2007, was $7.6 million generated from $8.0 million in orders in fiscal 2006. Orders generated in fiscal 2005 were $3.8 million. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for succeeding periods, nor is backlog any assurance that we will realize profit from completing these orders. Net revenue from solar industry sales were $2.8 million and $1.4 million in fiscal 2006 and 2005, respectively. We expect the solar industry to continue to grow as a result of greater interest in environmentally friendly energy alternatives, increased costs of fossil fuels, increased global demand for electricity, solar industry efforts to reduce manufacturing costs and concern over the United States dependence on foreign oil. We plan to continue capitalizing on this trend by improving our existing products and processes for the solar industry, by increasing our solar sales and marketing activities and by acquiring or developing additional products for that industry.

For information regarding net revenue, operating income or loss and identifiable assets attributable to each of our two business segments, see Note 10 of the Notes to Consolidated Financial Statements included herein and Item 7 of this Annual Report. For information on the products of each segment, see Semiconductor Equipment Segment Products and Polishing Supplies Segment Products within Item 1. Business.

COMPETITIVE STRENGTHS

We believe that we are a leader in the markets we serve as a result of the following competitive strengths:

Leading Market Share and Recognized Brand Names. The Tempress, Bruce Technologies and P.R. Hoffman brands have long been recognized in our industry and identified with high-quality products, innovative solutions and dependable service. We believe that we hold the number one or number two market share with respect to the markets that we serve. Additionally, we believe that our brand recognition and experience will allow us to capitalize on the market opportunities that exist in the solar industry and realize greater demand for our products than most of our competitors.

We have been providing horizontal diffusion furnaces and polishing supplies and equipment to our customers for over 30 years. We have sold and installed over 900 horizontal furnaces worldwide and benefit from the largest installed customer base in the semiconductor industry, which leads to significant replacement and expansion demand. Customers that have purchased our furnaces can leverage their investment in training, spare parts inventory and other costs by acquiring additional equipment from us. We also have an extensive retrofit, parts and service business, which typically generates higher margins than our equipment business.

Experienced Management Team. We are led by a highly experienced management team. Our CEO has over 33 years of industry experience, including 25 years with our company. Our three general managers have an average of over 19 years of semiconductor industry experience and an average of 17 years with our company (including predecessor companies).

Established, Diversified Customer Base. We have long-standing relationships with many of our top customers, which we believe remain strong. We maintain a broad base of customers, including leading semiconductor and wafer manufacturing companies, as well as solar cell manufacturers. In fiscal 2006, our largest customer accounted for approximately 17% of our net revenue, and our top 10 customers collectively represented approximately 58% of our net revenue. In fiscal 2005, no single customer accounted for more than 10% of our net revenue. In fiscal 2004, our largest customer accounted for approximately 10% of our net revenue. Our largest customer has been different in each of the last three fiscal years.

Proven Acquisition Track Record. Over the last twelve years we have developed a successful acquisition program and have completed the acquisition and integration of three significant businesses. In 1994, we acquired certain assets of Tempress and hired Tempress s engineers to develop our first models of the Tempress horizontal diffusion furnaces for production in The Netherlands. In July 1997, we acquired substantially all of the assets of P.R. Hoffman. This acquisition enabled us to offer new products, including lapping and polishing carriers, polishing templates, lapping and polishing machines and related consumable and spare parts, to our existing customer base as well as to target new customers. In July 2004, we acquired the Bruce Technologies line of semiconductor horizontal furnace operations, product lines and other assets from Kokusai Semiconductor Equipment Corporation (Kokusai), a wholly owned subsidiary of Hitachi, and its affiliate, Kokusai Electric Europe, GmbH. Each of the above acquisitions has contributed to our growth in net revenue and profitability.

Technical Expertise. We have highly trained and experienced mechanical, chemical, environmental, electronic, hardware and software engineers and support personnel. Our engineering group possesses core competencies in product applications and support systems, sophisticated controls, chemical vapor deposition, diffusion and pyrogenic processes, robotics, vacuum systems, ultra clean applications and software driven control packages. We believe this expertise enables us to design, develop and deliver high-quality, technically-advanced integrated product solutions for semiconductor and solar cell manufacturing customers.

Leading Technology Solutions and New Product Development. We pursue a partnering-based approach, in which our engineering and development teams work closely with our customers to ensure our products are tailored to meet our customers specific requirements. We believe this approach enables us to more closely align ourselves with our customers and provide superior systems.

We believe our line of horizontal diffusion furnaces, which allow high wafer-per-hour throughput, is more technologically advanced than most of our competitors equipment. The design of our furnace allows high wafer-per-hour throughput and increases reliability. In addition, the processing and temperature control systems within the furnace provide diverse proven process capabilities, enabling the application of high-quality films onto silicon wafers.

We recently developed a small batch vertical furnace jointly with a major European customer and are currently developing five different thin film processes for use with this furnace. We retain full ownership of this technology. We shipped two of these systems in fiscal 2005 and one in fiscal 2006. We anticipate that this system will have much of the same process capability as other vertical furnaces in the marketplace, but with a lower cost than that of our competitors. In addition, in 2006, we internally developed a machine to produce precision thickness wafer carriers, which we intend to sell as a premium product and which we expect will increase our sales to the carrier market.

Geographically Diverse Customer Base. We believe that our geographically diverse revenue stream helps to minimize our exposure to fluctuations in any one market and maximize our access to potential customers relative to our competitors with geographically concentrated operations. The geographic distribution of our net revenues from fiscal 2004 through 2006 were as follows:

	2006	2005	2004
Asia	41%	36%	33%
North America	35%	40%	36%
Europe	24%	24%	31%

GROWTH STRATEGY

We intend to leverage our competitive strengths through a combination of internal and external growth strategies.

Internal Growth

Our strategy for internal growth includes: expanding on growth opportunities in the solar industry and the Asia-Pacific market; accelerating new product and technology development; enhancing our sales and marketing capabilities; and leveraging our installed base.

Expanding on Growth Opportunities in the Solar Industry. We have had recent success in increasing our sales to the solar industry, which resulted in $10 million in solar orders between September 1, 2005 and September 30, 2006. The increase in orders from solar cell manufacturers is due to our focused product development and marketing efforts, as well as to growth in the solar industry. We believe the growth in the solar industry is primarily attributable to: greater interest in environmentally friendly energy alternatives; increased costs of fossil fuels; increased global demand for electricity; solar industry efforts to reduce manufacturing costs; and global concern over dependence on politically unstable countries for oil.

Global demand for electricity is expected to increase from 14.8 trillion kilowatt hours in 2003 to 27.1 trillion kilowatt hours in 2025, according to the U.S. Department of Energy. However, the ability of conventional sources of electricity to meet the rapidly expanding global demand could be limited by supply constraints, rising prices, dependence on politically volatile countries for oil and environmental concerns. Worldwide, annual installations by the photovoltaic industry grew from 0.3 gigawatts of power, or GWP, in 2001 to 1.5 GWP in 2005, representing a compound average annual growth rate, or CAGR, of 50%. Looking forward, according to *Photon International*, total solar cell production is expected to increase from 1,700 megawatts of power, or MWp, in 2005 to 10,400 MWp in 2010 for a CAGR of 44%**.** We believe this growth will drive significant demand for our products in the future.

Expanding on Growth Opportunities in the Asia-Pacific Market. With our extensive global knowledge and experience, we intend to further leverage our established sales channels in the Asia-Pacific market. Asia continues to be an important and expanding market for us, particularly because of the continued migration of semiconductor and solar cell manufacturing to countries in that region. According to *Solar Plaza*, total solar cell production in China is expected to grow from 600 MWp in 2005 to 2,200 MWp in 2010 for a CAGR of 30%. Our sales into Asia increased over 60% in fiscal 2006 compared to fiscal 2005 and we expect continued growth in this market.

Accelerating New Product and Technology Development. We are focused on developing new products across our business in response to customer needs in various markets.

Small Batch Vertical Furnace. At $1.5 billion annually, the vertical furnace market is much larger than the horizontal furnace market that we have served historically. Our entry product into the vertical furnace market is a two-tube small batch vertical furnace for wafer sizes of up to 200mm, with each tube having a small flat zone capable of processing 25-50 wafers per run. We anticipate that this system will have much of the same process capability as other vertical furnaces in the marketplace, but with a lower cost than most of our competitors. We are targeting small batch niche applications in the vertical furnace market first, since the competition in the large batch vertical furnace market is intense and our competitors are much larger and have substantially greater financial resources, processing knowledge and advanced technology. We believe our large installed customer base increases the market to which we can sell these small batch vertical furnaces and other new products.

Precision Thickness Wafer Carrier. Wafer carriers are work holders into which silicon wafers or other materials are inserted for the purpose of holding them securely in place during the lapping and polishing processes. Many customers thin their wafer carriers to precise tolerances to meet their various applications. In 2006, we developed a machine to produce precision thickness wafer carriers, which we expect will increase our sales to the carrier market.

Enhancing our Sales and Marketing Capabilities. In order to increase sales and improve customer service globally, we intend to integrate our Bruce Technologies and Tempress sales and marketing teams and transition them from being product oriented to being regionally focused. We also intend to hire additional senior management to expand our existing solar sales and marketing efforts.

Leveraging our Installed Base. We intend to continue to leverage our relationships with our customers to maximize parts, system, service and retrofit revenue from the large installed base of Bruce Technologies and Tempress brand horizontal diffusion furnaces. We intend to accomplish this by meeting these customers needs for replacement systems and additional capacity, including equipment and services in connection with a customer s relocation to or expansion in Asia.

External Growth

We intend to selectively seek strategic growth opportunities through acquisitions, joint ventures, geographic expansion and the development of additional manufacturing capacity.

Pursuing Strategic Acquisitions that Complement our Strong Platform. Over the last twelve years, we have developed a successful acquisition program and have completed the acquisition and integration of three significant businesses.

In 1994, we acquired certain assets of Tempress and hired Tempress s engineers to develop our first models of the Tempress horizontal diffusion furnaces for production in The Netherlands.

In 1997, we acquired substantially all of the assets of P.R. Hoffman Machine Products Corporation. This acquisition enabled us to offer new consumable products, including lapping and polishing carriers, polishing templates, lapping and polishing machines and related consumable and spare parts to our existing customer base as well as to target new customers.

During the period between 1999 and 2003, we evaluated and negotiated numerous acquisition opportunities that we ultimately declined to consummate because of what we believed to be inflated market prices.

In 2004, we acquired certain semiconductor horizontal diffusion furnace operations, product lines and other assets from Kokusai, a wholly owned subsidiary of Hitachi, and its affiliate, Kokusai Electric Europe, GmbH. We continue to market the horizontal furnace product line under the name, Bruce Technologies. Bruce Technologies has a large installed base, including several large semiconductor manufacturers.

Each of the above acquisitions has contributed to our growth in net revenue and profitability. Based on a disciplined acquisition strategy, we continue to evaluate potential technology, product and business acquisitions or joint ventures that will increase our existing market share in the solar industry and expand the number of front-end semiconductor processes addressed by our products. In evaluating these opportunities, our objectives include: enhancing our earnings and cash flows, adding complementary product offerings, expanding our geographic footprint, improving production efficiency and growing our customer base.

SEMICONDUCTOR AND SOLAR INDUSTRIES

Our company provides products and services primarily to two industries: the semiconductor industry and the solar industry.

Semiconductor Industry

Semiconductors control and amplify electrical signals and are used in a broad range of electronic products, including consumer electronic products, computers, wireless telecommunication devices, communications equipment, automotive electronic products, major home appliances, industrial automation and control systems, robotics, aircraft, space vehicles, automatic controls and high-speed switches for broadband fiber optic telecommunication networks. Semiconductors, or semiconductor chips, solar cells and optical components are manufactured primarily on a silicon wafer and are part of the circuitry or electronic components of many of the products referred to above.

The semiconductor industry has experienced significant growth since the early 1990s. This growth is primarily attributable to increased demand for personal computers, growth of the Internet, the expansion of the telecommunications industry, especially wireless communications, and the emergence of new applications in consumer electronics. Further fueling this growth is the rapidly expanding end-user demand for smaller, less-expensive and better-performing electronic products as well as traditional products with more intelligence. This demand has led to an increased number of semiconductor devices in electronic and other consumer products, including automobiles.

Although the semiconductor market has experienced significant growth over the past fifteen years, it remains cyclical by nature. The market is characterized by short-term periods of under or over supply for most semiconductors, including microprocessors, memory, power management chips, and other logic devices. When demand decreases, semiconductor manufacturers typically slow their purchasing of capital equipment. Conversely, when demand increases, so does capital spending. After the historical peak in 2000, the semiconductor industry experienced one of its most severe downturns in 2001 through the first half of 2003, resulting in a decline in revenue for most manufacturers of semiconductor chips and semiconductor equipment. During the latter part of 2003, the industry began to improve and continued to improve through 2006.

Solar Industry

Solar electricity is generated using either photovoltaic or solar thermal technology to extract energy from the sun. Photovoltaic electricity generating systems directly convert the sun s energy into electricity. Since 1985, the global market for solar power, as defined by shipments of solar power systems, has grown at a CAGR of over 20%, according to Strategies Unlimited. The global solar power market, as defined by installations of solar power systems, is expected to grow from $6.5 billion in revenue in 2004 to $18.5 billion by 2010 and, in terms of capacity, at an annual rate of 23% from 927 megawatts to 3.2 gigawatts during that same time-period, according to *SolarBuzz*.

Solar power systems are used for residential, commercial and industrial applications and for customers who either have access to or are remote from the electric utility grid. The market for on-grid applications, where solar power is used to supplement a customer s electricity purchased from the utility network, represents the largest and fastest growing segment of the market. Off-grid markets, where access to utility networks is not economical or physically feasible, and consumer markets both offer additional opportunities for solar technology. Off-grid industrial applications include road signs, highway call boxes and communications support along remote pipelines and telecommunications equipment, as well as rural residential applications. Consumer applications include outdoor lighting and handheld devices such as calculators.

Industry Manufacturing Processes

Semiconductor Front End Manufacturing Process Flow Chart

(*) Manufacturing process steps which involve the use of our products.

Most semiconductor chips are built on a base of silicon, called a wafer, and include multiple layers of circuitry that connect a variety of circuit components, such as transistors, capacitors and other components. To build a chip, the transistors, capacitors and other circuit components are first created on the surface of the wafer by performing a series of processes to deposit and remove selected film layers, including insulators. Similar processes are then used to build the layers of wiring structures on the wafer. These are all referred to as front-end processes. A simplified sequence of front-end processes for fabricating typical chips involves:

(1) forming an ingot by pulling molten silicon;

(2) slicing the silicon ingot into wafers of uniform thickness with a wire saw;

(3) lapping and polishing the silicon wafer to a mirror-like finish;

(4) cleaning the wafer;

(5) forming a thin film layer of silicon dioxide on the wafer in a diffusion furnace where oxygen, hydrogen or a combination of the two is introduced to cause a chemical reaction (oxidation) with the silicon wafer s surface;

(6) diffusing impurities (doping) in order to change the wafer s electrical properties.

(7) depositing insulating or conducting layers on the wafer surface, which sometimes is accomplished in a diffusion furnace via a chemical reaction called chemical vapor deposition;

(8) coating and baking a photosensitive material, called photoresist, on the wafer;

(9) creating circuit patterns by exposing the wafer to light directed through a mask with circuit patterns;

(10) removing the soluble portion of the photoresist by placing the wafer in a chemical solution, leaving only the desired pattern;

(11) etching away the exposed areas to create a dimensional pattern on the wafer surface;

(12) creating electrically charged conductive regions by driving ions into the exposed areas of the patterned wafer; and

(13) annealing the wafer through a high temperature process to relieve stress and drive the implanted ions deeper into the wafer.

The silicon wafer may be cycled ten to twenty-five times through these wafer-processing steps, starting each time at step (5) or (7) to form a number of chips on the wafer. The front-end process steps are followed by a number of back-end steps in which the wafers are sliced into individual chips that are then packaged to add connectors that are compatible with the end product in which the chip will be used.

Depending on the device, our polishing supplies segment s products may be used in lapping and polishing (step 3) and our semiconductor equipment segment s products may be used in forming silicon dioxide films (step 5), doping (step 6), depositing insulating and conducting layers (step 7) and the annealing processes (step 13).

Solar Cell Manufacturing Process Flow Chart

(*) Manufacturing process step which involves the use of our products.

The solar industry uses many of the same process steps used in semiconductor manufacturing in the high-volume production of solar cells:

(1) inspecting for resistivity and mechanical integrity and splitting wafers;

(2) etching away saw damage with sodium hydroxide and rinsing the wafer with water and concentrated sulphuric acid;

(3) diffusing oxygen and nitrogen to form a thin-film layer of phosphorous oxychloride on the wafer;

(4) etching the wafer with fluoric acid to remove the undiffused, phosphorus-silica-glass layer;

(5) coating through a chemical vapor deposition (CVD) or plasma enhanced CVD process;

(6) printing rear side contacts;

(7) drying to prevent condensation in the wafer area;

(8) printing aluminum and silver paste on the back surface field to prevent recombination of generated electrons and holes;

(9) drying;

(10) printing front side contacts;

(11) drying and then sintering the contact to form electrical conductive contacts; and

(12) testing and sorting the solar cells into electrical efficiency categories.

Most solar cell manufacturers sell their products to manufacturers of solar modules or solar panels. Others are vertically integrated and use their cells in the production of solar modules and panels. Solar cells are the critical component of solar modules and solar panels, which are sold to the end user and used in residential homes, industrial applications, remote pumping, lighting and heating uses and central power stations.

A part of our growth strategy involves evaluating opportunities to increase the number of process steps we serve in both the semiconductor and solar cell manufacturing processes by acquiring additional product lines.

SEMICONDUCTOR EQUIPMENT SEGMENT PRODUCTS

Our furnace and automation equipment is manufactured in our facilities in Massachusetts and The Netherlands. The following paragraphs describe the products that comprise our semiconductor equipment segment:

Horizontal Diffusion Furnaces. Through our subsidiaries, Tempress and Bruce Technologies, we produce and sell horizontal diffusion furnaces. Our horizontal furnaces currently address several steps in the semiconductor manufacturing process, including diffusion (step 5 in the semiconductor manufacturing process previously described, phosphorus tetrachloride doping ($POCl_3$) (step 6), low-pressure chemical vapor deposition (LPCVD) (step 7), and annealing (step 13).

Our horizontal furnaces generally consist of three large modules: the load station where the loading of the wafers occurs; the furnace section, which is comprised of one to four reactor chambers; and the gas distribution cabinet where the flow of gases into the reactor chambers is controlled, and often customized to meet the requirements of a customer s particular processes. The horizontal furnaces utilize existing industry technology and are sold primarily to customers who do not require the advanced automation of, or cannot justify the higher expense of, vertical furnaces for some or all of their diffusion processes. Our models are capable of processing all currently existing wafer sizes.

Small Batch Vertical Furnace. Our small batch, two-tube vertical furnace was developed internally with the active support from a large semiconductor manufacturer and long-term customer. The specifications for this furnace include a two-tube vertical furnace for wafer sizes of up to 200mm, with each tube having a small flat zone capable of processing 25-50 wafers per run. We anticipate that this system will have much of the same process capability as other vertical furnaces in the marketplace, but with a lower sales price than many of our competitors. The market for vertical furnaces is much larger than the total of all the other markets we currently serve. We are initially targeting niche applications, including research and development, while we continue to develop additional processes, since the competition in the large batch vertical furnace market is intense and our competitors are much larger and have substantially greater financial resources, processing knowledge and advanced technology. We shipped our first two vertical furnaces in fiscal 2005 and shipped another vertical furnace in fiscal 2006.

Conveyor Furnace. We produce conveyor furnaces used to manufacture thick films for the electronics industry. Conveyor furnaces provide for precision thermal processing of electronic parts for thick film applications, including annealing, sealing, soldering, silvering, curling, brazing, alloying, glass-metal sealing and component packaging.

Etch Systems. We manufacture and sell two models of etch systems. Our P2000 series is a fully automated single wafer plasma etch and deposition production system for front- and back-end processing of wafers up to 200mm. The system is used for semiconductor production applications. Etching of silicon, nitrides, oxides, polymers and metals is accomplished safely and reliably in this cost efficient, high performance system. Our PM2000 is a manually loaded small laboratory model that provides fast etch rates using solid state 600 watt generators and a unique chamber design. We acquired this product and process technology in 2004 for a nominal amount. We sold our first two etch systems in 2006.

Automation Products. Use of our automation products reduces human handling and, therefore, reduces exposure of wafers to particle sources during the loading and unloading of the process tubes and protects operators from heat and chemical fumes. Since the top reactor chamber of a horizontal furnace is as much as eight feet from the floor on which the operator stands when manually loading wafer boats, and typical boats of 150mm to 300mm wafers weigh three to six pounds, automating the wafer loading and unloading of a diffusion furnace improves employee safety and ergonomics in silicon wafer, semiconductor and solar cell manufacturing facilities.

E-300. Our most cost effective automation product is the E-300. This product is most suitable for the lower cost semiconductor devices, such as diodes and power management chips. The E-300 operates like an elevator and generally is used to raise wafer boats loaded with up to 300 wafers to one or both of the upper two reactor chambers of a diffusion furnace.

S-300. Our patented S-300 model provides a very efficient method of automatically transporting a full batch of up to 300 wafers to the designated tube level and automatically placing them directly onto the cantilever loader of a diffusion furnace at one time. This product is suitable for the production of nearly all semiconductors manufactured using a horizontal furnace. The S-300 can be used in conjunction with all current wafer sizes and is particularly well suited for manufacturers of 300mm wafers.

Atmoscan and Other Cantilevered Processing Systems. Our Atmoscan product is a controlled environment wafer processing system that includes a cantilever tube used to load silicon wafers into a horizontal diffusion furnace and through which a purging inert gas flows during the process of loading and unloading the reactor chamber. Among the major advantages afforded by the Atmoscan product is increased control of the environment surrounding the wafers during the gaseous and heating/cooling process, resulting in increased yields, decreased manufacturing costs and other economies in the manufacturing process.

POLISHING SUPPLIES SEGMENT PRODUCTS

The products of our polishing supplies segment are used primarily for lapping and polishing raw silicon wafers to a mirror-like finish. Depending on the cycle of the semiconductor industry, approximately two-thirds of this segment s products are sold to either semiconductor wafer manufacturers or specialty semiconductor fabricators. The products of our polishing supplies segment are also sold to fabricators of optics, quartz, ceramics and metal parts, and to manufacturers of medical equipment components and computer disks. We manufacture the products described below in Pennsylvania and sell them under our P.R. Hoffman brand name.

Wafer Carriers. Carriers are work holders into which silicon wafers or other materials are inserted for the purpose of holding them securely in place during the lapping and polishing processes. We produce carriers for our line of lapping and polishing machines, as well as for those machines sold by our competitors. Substantially all of the carriers we produce are customized for specific applications. Insert carriers, our most significant category of carriers, contain plastic inserts molded onto the inside edge of the work-holes of the carrier, which hold the wafers in place during processing. Although our standard steel carriers are preferred in many applications because of their durability, rigidity and precise dimensions, they are typically not suited for applications involving softer materials or when metal contamination is an issue. Insert carriers, however, are well suited for processing large semiconductor wafers, up to 300mm in diameter, and other fragile materials or where contamination is an issue, because they provide the advantages of steel carriers while reducing the potential for damage to the edges of such sensitive materials. Our insert carriers are used for double-sided lapping or polishing of semiconductor wafers up to 300mm in diameter. In 2007, we plan to begin selling precision-thickness insert carriers to further expand our offerings in this important market.

Semiconductor Polishing Templates. Our polishing templates are used to securely hold silicon wafers in place during single-sided polishing processes. Polishing templates are customized for specific applications and are manufactured to exacting tolerances. We manufacture polishing templates for most brands of tools and various processes. In addition to silicon wafers, these products are used in polishing silicon carbide wafers and sapphire crystals used in LEDs.

Double-Sided Planetary Lapping and Polishing Machines. Double-sided lapping and polishing machines are designed to process thin and fragile materials, such as semiconductor silicon wafers, precision optics, computer disk media and ceramic components for wireless communication devices, to exact tolerances of thickness, flatness, parallelism and surface finish. On average, our surface processing systems are priced lower than competing systems offered by our competitors and target the semiconductor, optics, quartz, ceramics, medical, computer disk and metal working markets. During fiscal 2004, we introduced and delivered our first Model 5400 lapping and polishing machine, capable of processing parts up to 19.5 inches in diameter, including 300mm wafers and higher capacities of smaller parts. This new machine is our largest and is superior to our previous model, because it uses servo motors rather than hydraulics and is equipped with a Windows Touch-screen interface, for better control of speeds and pressure, optional thickness control, and crash protection. We believe our 5400 model is especially well suited for thin and fragile materials. We also produce and sell a wide assortment of plates, gears, parts and wear items for our own machines and those sold by many of our competitors.

MANUFACTURING, RAW MATERIALS AND SUPPLIES

Our semiconductor equipment manufacturing activities consist primarily of engineering design, procurement and assembly of various commercial and proprietary components into finished diffusion furnace systems in Heerde, The Netherlands, and Billerica, Massachusetts. In 2006, we transferred the production of processing and automation systems to Billerica, Massachusetts from our Tempe, Arizona location to improve efficiencies. Nearly all of our fabricated parts for the semiconductor equipment segment are purchased from local suppliers. Our manufacturing activities in the polishing supplies and equipment segment include laser-cutting and other fabrication steps in producing lapping and polishing consumables, including carriers, templates, gears, wear items and spare parts in Carlisle, Pennsylvania, from raw materials manufactured to our specifications by our suppliers. Many items, such as proprietary components for our semiconductor equipment and lapping plates, are also purchased from suppliers who manufacture these items to our specifications. All final assembly and tests of our equipment and machines are performed within our manufacturing facilities. Quality control is maintained through inspection of incoming materials and components, in-process inspection during equipment assembly, testing of assemblies and final inspection and, when practical, operation of manufactured equipment prior to shipment. Since much of our polishing supplies segment s know-how relates to the manufacture of its products, this segment s facility is equipped to perform a significantly higher percentage of the fabrication steps required in the production of its products. However, injection molding for our insert carriers and the manufacture of raw cast iron plates are subcontracted out to various third parties. This segment relies on key suppliers for certain materials, including two steel mills in Germany and Japan, an injection molder, a single-sourced pad supplier from Japan and an adhesive manufacturer. In addition, with respect to sales to the solar industry, we rely upon a single vendor for certain automation components used in conjunction with our furnaces. Prior to the fourth quarter of fiscal 2004, we subcontracted the laser-cutting of carriers to third parties. Since then we have purchased an advanced laser-cutting tool which has increased our ability to compete based upon price, delivery lead-times and quality. To minimize the risk of production and service interruptions and/or shortages of key parts, we maintain appropriate inventories of key raw materials and parts. If for any reason we were unable obtain a sufficient quantity of parts in a timely and cost-effective manner to meet our production requirements, our results of operations would be materially and adversely affected.

BACKLOG

Our order backlogs as of September 30, 2006 and 2005 were $13.6 million and $14.4 million (including the $5.2 million multi-furnace order from a single customer previously discussed), respectively. Our backlog as of September 30, 2006 includes approximately $7.6 million of orders from our solar industry customers. The orders included in our backlog are generally credit approved customer purchase orders expected to ship within the next twelve months. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for succeeding periods, nor is backlog any assurance that we will realize profit from completing these orders. Our backlog also includes revenue deferred pursuant to our revenue recognition policy, derived from orders that have already been shipped, but which have not met the criteria for revenue recognition. The backlog as of September 30, 2006 and 2005 includes $0.9 million and $1.0 million of open orders or deferred revenue, respectively, on which we anticipate no gross margin.

RESEARCH, DEVELOPMENT AND ENGINEERING

The markets we serve are characterized by evolving industry standards and rapid technological change. To compete effectively in our markets, we must continually keep up with the pace of such change by improving our products and our process technologies and developing new technologies and products that compete effectively on the basis of price and performance and that adequately address current and future customer requirements. We continue to obtain as much customer cooperation and input as possible to increase the efficiency and effectiveness of our research and development efforts. While there can be no assurance that such relationships will continue or that others will be developed, such cooperative efforts are expected to remain a significant element in our future product and technology development projects.

During 2003, we received an order for a newly designed small batch vertical furnace. The specifications for this furnace include a two-tube vertical furnace for wafer sizes of up to 200mm, with each tube having a small flat zone capable of processing 25-50 wafers per run. We anticipate that this furnace will have much of the same process capability as other vertical furnaces in the marketplace, but with a lower cost than most of our competitors. Our first two small batch vertical furnaces were shipped in fiscal 2005 and a third in fiscal 2006. Two of these furnaces were accepted in fiscal 2006. We expect the other to be accepted in fiscal 2007; however, there can be no assurance that it will be accepted.

From time to time we add functionality to our products or develop new products during engineering and manufacturing to fulfill specifications in a customer s order, in which case the cost of development, along with other costs of the order, are charged to cost of sales. We periodically receive small research grants for research and development of products in The Netherlands, which are netted against our research and development costs. Our approach to such expenditures has allowed us to produce a number of new products while spending amounts that we believe are generally modest in relation to most semiconductor equipment manufacturers. Our expenditures that have been accounted for as research and development were $0.4 million (1.1% of net revenue) in fiscal 2006, $0.6 million (2.2% of net revenue) in 2005, and $0.5 million (2.6% of net revenue) in 2004. These amounts exclude those expenses incurred in connection with customer orders or supported by government grants.

PATENTS

The following table shows our material patents, the patents licensed by us, and the expiration date of each patent and license:

Product	Country	Expiration Date or Pending Approval
IBAL Model S-300	France, Germany, Italy, The Netherlands, United Kingdom	Pending
Atmospheric Pressure Control for Solar Furnace	Europe	Pending
Small Batch Furnace (SBVF)	Europe	Pending
Dual Cylinder Loadport for SBVF	Europe	Pending
Heating Element Wire Spacer	Europe	Pending
Photo CVD	United States	November 15, 2011
Potential Damage-free Asher	United States	September 8, 2018
IBAL Model S-300	United States	July 7, 2019
IBAL Model S-300	United States	July 26, 2019
IBAL Model E-300	United States	July 13, 2021
Boat Transfer and Queuing Furnace Elevator and Method	United States	June 16, 2007
Cross Flow Diffusion Furnace (**)	United States	November 2, 2007
Double Wall Fast Cool-Down Furnace (**)	United States	January 8, 2007
Fast, Safe, Pyrogenic External Torch Assembly (*)	United States	December 17, 2011
Movable Core Fast Cool-Down Furnace (**)	United States	January 8, 2007

(*) Patent is licensed from the patent holder or co-owner on a non-exclusive basis.
(**) Patent is licensed from the patent holder on an exclusive basis for horizontal furnaces.

To the best of our knowledge, there are no pending lawsuits against us regarding infringement of any existing patents or other intellectual property rights or any unresolved claims made by third parties that we are infringing the intellectual property rights of such third parties.

SALES AND MARKETING

Because of the highly technical nature of our products, we market our products primarily by direct customer contact through our sales personnel, and through a network of domestic and international independent sales representatives and distributors that specialize in semiconductor equipment and supplies. Our promotional activities include direct sales contacts, participation in trade shows, an internet website, advertising in trade magazines and the distribution of product brochures.

In order to increase sales and improve customer service globally, we intend to integrate our Bruce Technologies and Tempress sales and marketing teams and transition them from being product oriented to regionally focused. Additionally, we intend to hire additional senior management to expand our existing solar sales and marketing efforts.

Sales to distributors of both segments are generally on terms comparable to sales to end user customers, as our distributors generally quote their customers after first obtaining a quote from us and have an order from the end-user before placing an order with us. Our sales to distributors are not contingent on their future sales and do not include a general right of return. Historically, returns have been rare. Distributors of our semiconductor equipment segment products do not stock a significant amount of our products, as the inventory they do hold is primarily limited to parts needed to provide timely repairs to the customer.

Payment terms of our parts, service and retrofit sales, which usually comprise approximately 50-60% of consolidated net revenue, are generally net 30 days, F.O.B. shipping point or equivalent terms. The payment terms of equipment or systems sales vary depending on the size of the order and the size, reputation and creditworthiness of the customer. As a result, the financial terms of equipment sales can range from 80% due 30 days after shipment and 20% due 30 days after acceptance, to requiring a 30% customer deposit 30 days after order placement, 60% due 30 days after shipment and 10% net due 30 days after acceptance. Letters of credit are required of certain customers depending on the size of the order, creditworthiness of the customer and its country of domicile.

In fiscal 2006, net revenue was distributed among customers in different geographic regions as follows: North America 35% (including 34% in the United States), Asia 41% (including 13% in Malaysia) and Europe 24% (including 14% to Germany). One customer represented approximately 17% of net revenue in fiscal 2006. No customer represented greater than 10% of net revenue during fiscal 2005. One customer represented approximately 10% of net revenue during fiscal 2004. Our largest customer has been different in each of the last three fiscal years. For a more complete analysis of significant customers and sales to customers by geographic region, see Note 9 of the Notes to Consolidated Financial Statements included herein and Item 7 of this Annual Report. For information regarding revenue, operating profit or loss and identifiable assets attributable to each of our industry segments and financial information about foreign and domestic operations, see Note 10 of the Notes to Consolidated Financial Statements included herein and Item 7 of this Annual Report.

Our business is not seasonal in nature, but is cyclical based on the capital equipment investment patterns of semiconductor and solar cell manufacturers. These expenditure patterns are based on many factors, including anticipated demand for integrated circuits, the development of new technologies and global and regional economic conditions.

COMPETITION

We compete in several distinct markets including semiconductor devices, semiconductor wafer, solar cell, MEMS and the market for general industrial lapping and polishing machines and supplies. Each of these markets is highly competitive. Our ability to compete depends on our ability to continually improve our products, processes and services, as well as our ability to develop new products that meet constantly evolving customer requirements. Significant competitive factors for succeeding in the semiconductor manufacturing equipment market include the equipment s technical capability, productivity and cost-effectiveness, overall reliability, ease of use and maintenance, contamination and defect control and the level of technical service and support provided by the vendor. The importance of each of these factors varies depending on the specific customer s needs and criteria, including considerations such as the customer s process application, product requirements, timing of the purchase and particular circumstances of the purchasing decision.

The Semiconductor Devices, Semiconductor Wafer, Solar Cell and MEMS Markets. We believe our large installed base of horizontal diffusion furnaces provides a competitive advantage. We have sold and installed over 900 horizontal furnaces worldwide and, in our experience, our large installed customer base has led to significant replacement and expansion demand. Customers that have purchased our furnaces can leverage their investment in training, spare parts inventory and other costs by acquiring additional equipment from us. The Bruce Technologies product line had a 41% share of the horizontal diffusion furnace installed base in 1998 (the most recent year in which such information has been available) according to VSLI Research Data. We believe that we have maintained our market share and a relatively large installed base.

Our diffusion furnaces and automation processing equipment primarily compete with those produced by other domestic and foreign original equipment manufacturers, some of which are well-established firms that are much larger and have substantially greater financial resources than us. Some of our competitors have a diversified product line, making it difficult to quantify their sales of products that compete directly with our products. Competitors of our horizontal diffusion furnaces include Centrotherm GmbH, Koyo Systems Co. Ltd., MRL Industries, Inc., a subsidiary of Sandvik AB, CVD Equipment, Inc., Semco Engineering S.A., Expertech, Inc. and Tystar Corporation. Such competition could intensify in the future, if the industry trend to produce smaller chips on larger wafers accelerates, or the newer technology represented by vertical furnaces results in a material shift in the purchasing habits of our targeted customers. Our furnaces and lapping and polishing machines also face, to a limited, but increasing extent, competition from used equipment on the low-end of the price spectrum.

We intend to maintain or improve our competitive position for orders for our diffusion furnaces and automation products by leveraging our established brands. We also intend to expand our sales to the solar industry by focusing our sales and marketing efforts on the very large and stable middle semiconductor market, designing products to meet the customer s specific process requirements and providing competitive prices and product support service levels. With the addition of the Bruce Technologies product line we gained marketing synergies and believe we are more competitive at the upper end of our targeted market. We make purchases of our own brands of used diffusion furnaces at opportunistic prices, refurbish them, and then resell them with the original manufacturer s warranty, in an effort to better defend the lower end of our targeted market.

During fiscal 2005, we entered into a memorandum of understanding with a Chinese manufacturer of low cost horizontal furnaces in order to determine whether they can become a supplier and thereby help us to become more competitive in the lower-end market. While discussions with this manufacturer have been put on hold in order to pursue other higher priority activities, we still have an objective of securing a manufacturing source or capability in Asia. See Item 1A. Risk Factors for a discussion regarding the impact of the industry trend of producing smaller chips on larger wafers may have on our horizontal diffusion furnace sales.

We believe our automation products compete favorably with those of our primary competitors in semiconductor applications, which include Mactronics and Koyo Thermo Systems Co. Ltd. In that market, we believe that our S-300 and E-300 automation products require less of the expensive clean room floor space and are generally less expensive and easier to operate than those of our competitors. We believe that patents on the key features of our automation products provide us with a competitive advantage. We expect our automation product competitors to seek to continually improve the design and performance of their products and we can make no assurance that our automation competitors will not develop enhancements or acquire new technologies that will offer price or performance features superior to those that we offer. Our automation products are designed to target customers who want to improve employee safety and reduce scrap. The acquisition of the Bruce Technologies product line has provided increased sales opportunities and new customers for our automation products through introductions to the installed based of the users of the Bruce Technologies line of furnaces.

Despite competition from existing manufacturing products, we believe that our Atmoscan products provide better results in terms of more uniform wafer temperature and dispersion of heated gases in the semiconductor manufacturing process, less exposure of semiconductor wafers to contaminants and other technical advantages that afford to its users a higher yield. However, vertical furnaces provide the same benefits as our Atmoscan product to manufacturers that can justify the higher price.

General Industrial Lapping and Polishing Machines and Supplies Market. We experience price competition for wafer carriers produced by foreign manufacturers for which there is very little publicly available information. As a result, we are intensifying our efforts to reduce the cost of our carriers and will continue to compete with other manufacturers of carriers by continuing to update our product line to keep pace with the rapid changes in our customers requirements and by providing a high level of quality and customer service. During September 2004, we completed the installation and began producing steel carriers, including insert carriers, on a newly acquired advanced laser-cutting tool, which has reduced the costs and lead times of these products and increased our control over quality. Competitors of our lapping and polishing machines and carriers, other than insert carriers, include Speedfam-PW, a division of Novellus, among others. We have been able to capture a small share of the semiconductor polishing template market, which we believe to be dominated by Rodel, a division of Rohm and Haas. Our strategy to enhance our sales of wafer carriers includes developing additional niche markets for templates and providing a high level of customer support and products at a lower cost than our competitors.

EMPLOYEES

At September 30, 2006, we employed 153 people. Of these employees, 16 were based at our corporate offices in Tempe, Arizona; 28 were employed at our manufacturing plant in Carlisle, Pennsylvania; 31 at our manufacturing plant in Billerica, Massachusetts; 50 at our facilities in and near Heerde, The Netherlands; and 28 in our contract semiconductor manufacturing support services business located in Austin, Texas. Of the 28 people employed at our Carlisle, Pennsylvania facility, 17 were represented by the United Auto Workers Union Local 1443. We have never experienced a work stoppage or strike. We consider our employee relations to be good.

ITEM 1A. RISK FACTORS

Because of the following factors, as well as other variables affecting our operating results and financial condition, past performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods.

If demand declines for horizontal diffusion furnaces and related equipment, or for solar industry products, our financial position and results of operations could be materially adversely affected.

The revenue of our semiconductor equipment segment, which accounts for approximately 82% of our consolidated net revenue, is comprised primarily of sales of horizontal diffusion furnaces and our automation products. Our automation products are useable only with horizontal diffusion furnaces. There is a trend in the semiconductor industry, related to the trend to produce smaller chips on larger wafers, towards the use in semiconductor manufacturing facilities of newer technology, such as vertical diffusion furnaces. Vertical diffusion furnaces are more efficient than the horizontal diffusion furnaces in certain manufacturing processes for smaller chips on larger wafers. As early as 1994, we had expected that demand for our horizontal diffusion furnaces would decline as a result of this trend. We believe this trend has not yet adversely affected us to the extent originally expected. However, to the extent that the trend to use vertical diffusion furnaces over horizontal diffusion furnaces continues, our revenue may decline and our corresponding ability to generate income may be adversely affected.

Part of our growth strategy involves expanding our sales to the solar industry. The solar industry is subject to risks relating to industry shortages of polysilicon, the continuation of government incentives, the availability of specialized capital equipment, global energy prices and rapidly changing technologies offering alternative energy sources. If the demand for solar industry products declines, the demand by the solar industry for our products would also decline and our financial position and results of operations would be harmed.

The ongoing volatility of the semiconductor equipment industry may negatively impact our business and results of operations and our corresponding ability to efficiently budget our expenses.

The semiconductor equipment industry is highly cyclical. As such, demand for and the profitability of our products can change significantly from period to period as a result of numerous factors, including, but not limited to, changes in:

- global and regional economic conditions;
- changes in capacity utilization and production volume of manufacturers of semiconductors, silicon wafers, solar cells and MEMS;
- the shift of semiconductor production to Asia, where there often is increased price competition; and
- the profitability and capital resources of those manufacturers.

For these and other reasons, our results of operations for past periods may not necessarily be indicative of future operating results.

Since our business has historically been subject to cyclical industry conditions, we have experienced significant fluctuations in our quarterly new orders and net revenue, both within and across years. Demand for semiconductor and silicon wafer manufacturing equipment and related consumable products has also been volatile as a result of sudden changes in semiconductor supply and demand and other factors in both semiconductor devices and wafer fabrication processes. Our orders tend to be more volatile than our revenue, as any change in demand is reflected immediately in orders booked, which are net of cancellations, while revenue tends to be recognized over multiple quarters as a result of procurement and production lead times and the deferral of certain revenue under our revenue recognition policies. Customer delivery schedules on large system orders can also add to this volatility since we generally recognize revenue for new product sales on the date of customer acceptance or the date the contractual customer acceptance provisions lapse. As a result, the fiscal period in which we are able to recognize new products revenue is typically subject to the length of time that our customers require to evaluate the performance of our equipment after shipment and installation, which could cause our quarterly operating results to fluctuate.

The purchasing decisions of our customers are highly dependent on the economies of both their domestic markets and the worldwide semiconductor industry. The timing, length and severity of the up-and-down cycles in the semiconductor equipment industry are difficult to predict. The cyclical nature of our marketplace affects our ability to accurately budget our expense levels, which are based in part on our projections of future revenue.

When cyclical fluctuations result in lower than expected revenue levels, operating results may be adversely affected and cost reduction measures may be necessary in order for us to remain competitive and financially sound. During a down cycle, we must be able to make timely adjustments to our cost and expense structure to correspond to the prevailing market conditions. In addition, during periods of rapid growth, we must be able to increase manufacturing capacity and personnel to meet customer demand, which may require additional liquidity. We can provide no assurance that these objectives can be met in a timely manner in response to changes within the industry cycles. If we fail to respond to these cyclical changes, our business could be seriously harmed.

During the most recent down cycle, beginning in the first half of 2001, the semiconductor industry experienced excess production capacity that caused semiconductor manufacturers to decrease capital spending. We do not have long-term volume production contracts with our customers and we do not control the timing or volume of orders placed by our customers. Whether and to what extent our customers place orders for any specific products and the mix and quantities of products included in those orders are factors beyond our control. Insufficient orders would result in under-utilization of our manufacturing facilities and infrastructure and will negatively affect our financial position and results of operations.

The semiconductor equipment industry is competitive and we are relatively small in size and have fewer resources in comparison with our competitors.

Our industry includes large manufacturers with substantial resources to support customers worldwide. Our future performance depends, in part, upon our ability to continue to compete successfully worldwide. Some of our competitors are diversified companies having substantially greater financial resources and more extensive research, engineering, manufacturing, marketing and customer service and support capabilities than we can provide. We face competition from companies whose strategy is to provide a broad array of products, some of which compete with the products and services that we offer. These competitors may bundle their products in a manner that may discourage customers from purchasing our products. In addition, we face competition from smaller emerging semiconductor equipment companies whose strategy is to provide a portion of the products and services that we offer at often a lower price than ours, using innovative technology to sell products into specialized markets. Loss of competitive position could impair our prices, customer orders, revenue, gross margin and market share, any of which would negatively affect our financial position and results of operations. Our failure to compete successfully with these other companies would seriously harm our business. There is risk that larger, better-financed competitors will develop and market more advanced products than those that we currently offer, or that competitors with greater financial resources may decrease prices thereby putting us under financial pressure. The occurrence of any of these events could have a negative impact on our revenue.

We are dependent on key personnel for our business and product development and sales, and any loss of our key personnel to competitors or other industries could dramatically impact our ability to continue operations.

Historically, our product development has been accomplished through cooperative efforts with two key customers. Our relationship with one of these customers is substantially dependent on personal relations established by our President and Chief Executive Officer. Furthermore, our relationship with a major European customer that has been instrumental in the development of our small batch vertical furnace is substantially dependent upon our European General Manager. While there can be no assurance that such relationships will continue, such cooperation is expected to continue to be a significant element in our future development efforts thereby continuing our reliance on certain of our key personnel.

Amtech is the beneficiary of life insurance policies on the life of our President and Chief Executive Officer, Mr. J.S. Whang, in the amount of $2,000,000, but there is no assurance that such amount will be sufficient to cover the cost of finding and hiring a suitable replacement for Mr. Whang. It may not be feasible for any successor to maintain the same business relationships that Mr. Whang has established. If we were to lose the services of Mr. Whang for any reason, it could have a material adverse affect on our business.

We also depend on the management efforts of our officers and other key personnel and on our ability to attract and retain key personnel. We presently employ 3 engineers at our Tempe, Arizona location, including one with a Ph.D. We employ 10 engineers at our Billerica, Massachusetts plant. We employ 22 engineers, including two with Ph.D. s, at our operations in The Netherlands. These employees design and support the new small batch vertical furnace, horizontal diffusion furnace and conveyor furnace product lines manufactured in The Netherlands and the related automation products manufactured in Massachusetts. Two engineers are employed at our Carlisle, Pennsylvania operation. They design wafer lapping machines and carriers to meet customers processing requirements. During times of strong economic growth, competition is intense for highly skilled employees. There can be no assurance that we will be successful in attracting and retaining such personnel or that we can avoid increased costs in order to do so. There can be no assurance that employees will not leave Amtech or compete against us. Our failure to attract additional qualified employees, or to retain the services of key personnel, could negatively impact our financial position and results of operations.

We may not be able to keep pace with the rapid change in the technology we use in our products.

Success in the semiconductor equipment industry depends, in part, on continual improvement of existing technologies and rapid innovation of new solutions. For example, the semiconductor industry continues to shrink the size of semiconductor devices. These and other evolving customer needs require us to respond with continued development programs.

Technical innovations are inherently complex and require long development cycles and appropriate professional staffing. Our future business success depends on our ability to develop and introduce new products, or new uses for existing products, that successfully address changing customer needs, win market acceptance of these new products or uses and manufacture any new products in a timely and cost-effective manner. If we do not develop and introduce new products, technologies or uses for existing products in a timely manner and continually find ways of reducing the cost to produce them in response to changing market conditions or customer requirements, our business could be seriously harmed.

Acquisitions can result in an increase in our operating costs, divert management s attention away from other operational matters and expose us to other risks associated with acquisitions.

We continually evaluate potential acquisitions and consider acquisitions an important part of our future growth strategy. In the past, we have made acquisitions of, or significant investments in, other businesses with synergistic products, services and technologies and plan to continue to do so in the future. Acquisitions involve numerous risks, including, but not limited to:

- difficulties and increased costs in connection with integration of the personnel, operations, technologies and products of acquired companies;
- diversion of management s attention from other operational matters;
- the potential loss of key employees of acquired companies;
- lack of synergy, or inability to realize expected synergies, resulting from the acquisition;
- the risk that the issuance of our common stock, if any, in an acquisition or merger could be dilutive to our shareholders, if anticipated synergies are not realized; and
- acquired assets becoming impaired as a result of technological advancements or worse-than-expected performance of the acquired company.

Our financial position and results of operations may be materially harmed if we are unable to recoup our investment in research and development.

The rapid change in technology in our industry requires that we continue to make investments in research and development in order to enhance the performance and functionality of our products, to keep pace with competitive products and to satisfy customer demands for improved performance, features and functionality. There can be no assurance that revenue from future products or enhancements will be sufficient to recover the development costs associated with such products or enhancements, or that we will be able to secure the financial resources necessary to fund future development. Research and development costs are typically incurred before we confirm the technical feasibility and commercial viability of a product, and not all development activities result in commercially viable products. In addition, we cannot ensure that products or enhancements will receive market acceptance, or that we will be able to sell these products at prices that are favorable to us. Our business could be seriously harmed if we are unable to sell our products at favorable prices, or if our products are not accepted by the markets in which we operate.

If third parties violate our proprietary rights, in which we have made significant investments, or accuse us of infringing upon their proprietary rights, such events could result in a loss of value of some of our intellectual property or costly litigation.

Our success is dependent in part on our technology and other proprietary rights. We own various United States and international patents and have additional pending patent applications relating to some of our products and technologies. The process of seeking patent protection is lengthy and expensive, and we cannot be certain that pending or future applications will actually result in issued patents, or that, issued patents will be of sufficient scope or strength to provide meaningful protection or commercial advantage to us. Other companies and individuals, including our larger competitors, may develop technologies that are similar or superior to our technology or design around the patents we own or license. We also maintain trademarks on certain of our products and claim copyright

protection for certain proprietary software and documentation. However, we can give no assurance that our trademarks and copyrights will be upheld or successfully deter infringement by third parties. Recently, the patent covering technology that we license and use in our manufacture of insert carriers has expired, which may have the effect of diminishing or eliminating any competitive advantage we may have with respect to this manufacturing process.

While patent, copyright and trademark protection for our intellectual property is important, we believe our future success in highly dynamic markets is most dependent upon the technical competence and creative skills of our personnel. We attempt to protect our trade secrets and other proprietary information through confidentiality agreements with our customers, suppliers, employees and consultants and through other security measures. We also maintain exclusive and non-exclusive licenses with third parties for the technology used in certain products. However, these employees, consultants and third parties may breach these agreements, and we may not have adequate remedies for wrongdoing. In addition, the laws of certain territories in which we develop, manufacture or sell our products may not protect our intellectual property rights to the same extent as do the laws of the United States.

From time to time, we have received communications from other parties asserting the existence of patent rights or other intellectual property rights that they believe cover certain of our products, processes, technologies or information. In such cases, we evaluate our position and consider the available alternatives, which may include seeking licenses to use the technology in question on commercially reasonable terms or defending our position. Based on industry practice and prior experience, we believe that licenses or other rights, if necessary, will be available on commercially reasonable terms for existing or future claims. Nevertheless, we cannot ensure that licenses can be obtained, or if obtained will be on acceptable terms, or that litigation or other administrative proceedings will not occur. Defending our intellectual property rights through litigation could be very costly. If we are not able to negotiate the necessary licenses on commercially reasonable terms or successfully defend our position, our financial position and results of operations could be materially and adversely affected.

Our reliance on sales to a few major customers and granting credit to those customers places us at financial risk.

As of September 30, 2006, receivables from three customers comprised 19%, 13% and 12% of our accounts receivable, respectively. A concentration of our receivables from one or a small number of customers places us at risk. If any one or more of our major customers is unable to pay us it could adversely affect our financial position and results of operations. We attempt to manage this credit risk by performing credit checks, by requiring significant partial payments prior to shipment where appropriate and by actively monitoring collections. We also require letters of credit of certain customers depending on the size of the order, type of customer or its creditworthiness and its country of domicile.

If any of our customers cancel or fail to accept a large system order, our financial position and results of operations could be materially and adversely affected.

Our backlog includes orders for large systems, such as our diffusion furnaces, with system prices of up to $1.0 million depending on the system configuration, options included and any special requirements of the customer. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for succeeding periods, nor is backlog any assurance that we will realize profit from completing these orders. Our financial position and results of operations could be materially and adversely affected should any large systems order be cancelled prior to shipment, or not be accepted by the customer. We have experienced significant cancellations in the past, including $1.2 million in fiscal 1999, $3.5 million in fiscal 2001, and $1.2 million in 2002. We have not experienced any significant cancellations since 2002. Likewise, a significant change in the liquidity or financial position of any of our customers that purchase large systems could have a material impact on the collectibility of our accounts receivable and our future operating results. Our backlog does not provide any assurance that we will realize a profit from those orders or indicate in which period net revenue will be recognized.

Our business might be adversely affected by our dependence on foreign business.

During fiscal 2006, 65% of our net revenue came from customers outside of North America as follows:

Asia (including Korea, People s Republic of China, Taiwan, Japan, Singapore, Malaysia, Australia and India) 41% (includes 13% to Malaysia); and

Europe 24% (includes 14% to Germany).

Because of our significant dependence on revenue from international customers, our operating results could be negatively affected by a decline in the economies of any of the countries or regions in which we do business. Each region in the global semiconductor equipment market exhibits unique characteristics that can cause capital equipment investment patterns to vary significantly from period to period. Periodic local or international economic downturns, trade balance issues, political instability and fluctuations in interest and currency exchange rates could negatively affect our business and results of operations.

We recorded losses of $0.1 million in fiscal 2006, gains of $0.1 million in 2005 and losses of $0.1 million during 2004, as a result of foreign currency transactions. While our business has not been materially affected in the past by currency fluctuations, there is a risk that it may be materially adversely affected in the future. Such risk includes possible losses due to currency exchange rate fluctuations, possible future prohibitions against repatriation of earnings, or proceeds from disposition of investments, and from possible social and military instability in the case of India, South Korea, Taiwan and possibly elsewhere. Our wholly-owned subsidiary, Tempress Systems, has conducted its operations in the Netherlands since 1995 and during 2005 we established a subsidiary in Germany to conduct the European sales of our Bruce Technologies product line. As a result, such operations are subject to the taxation policies, employment and labor laws, transportation regulations, import and export regulations and tariffs, possible foreign exchange restrictions, international monetary fluctuations, and other political, economic and legal policies of that nation, the European Economic Union and the other European nations in which it conducts business. Consequently, we might encounter unforeseen or unfamiliar difficulties in conducting our European operations. Changes in such laws and regulations may have a material adverse effect on our revenue and costs.

If our critical suppliers fail to deliver sufficient quantities of quality product in a timely and cost-effective manner, it could negatively affect our business.

We use a wide range of materials and services in the production of our products including custom electronic and mechanical components, and we use numerous suppliers of materials. We generally do not have guaranteed supply arrangements with our suppliers. Because of the variability and uniqueness of customer orders, we try to avoid maintaining an extensive inventory of materials for manufacturing. Key suppliers include two steel mills capable of producing the types of steel to the tolerances needed for our carriers, an injection molder that molds plastic inserts into our steel carriers, an adhesive manufacturer that supplies the critical glue used in the production of the semiconductor polishing templates and a pad supplier that produces a unique material used to attach semiconductor wafers to the polishing template. We also rely on third parties for certain automation equipment used in the solar industry, machined parts, steel frames and metal panels and other components used particularly in the assembly of semiconductor production equipment.

Although we make reasonable efforts to ensure that parts are available from multiple suppliers, this is not always practical or even possible; accordingly, some key parts are being procured from a single supplier or a limited group of suppliers. During the semiconductor industry peak years, increases in demand for capital equipment resulted in longer lead-times for many important system components, which could cause delays in meeting shipments to our customers. Because the selling price of some of our systems exceeds $1.0 million, the delay in the shipment of even a single system could cause significant variations in our quarterly revenue, operating results and the market value of our common stock. We have sought, and will continue to seek, to minimize the risk of production and service interruptions and shortages of key parts by:

selecting and qualifying alternative suppliers for key parts;

monitoring the financial stability of key suppliers; and

maintaining appropriate inventories of key parts.

There can be no assurance that our financial position and results of operations will not be materially and adversely affected if, in the future, we do not receive in a timely and cost-effective manner a sufficient quantity and quality of parts to meet our production requirements.

We might require additional financing to expand our operations.

We believe that current cash balances, our existing line of credit, cash flows generated from our operations and additional available financing will provide adequate working capital for at least the next twelve months. However, we expect we will require additional financing for further implementation of our growth plans. There is no assurance that any additional financing will be available if and when required, or, even if available, that it would not materially dilute the ownership percentage of the then existing shareholders.

Cost of compliance with Section 404 of the Sarbanes Oxley Act could adversely affect future operating results, the trading price of our common stock and failure to comply could result in loss of our listing on NASDAQ, civil penalties and other liabilities.

Section 404 of the Sarbanes Oxley Act requires management to certify that it has tested and found the Company s internal controls to be effective. It is also required that the Company s independent auditors attest that such management representations are reasonably founded. The adequacy of internal controls generally takes into consideration that the anticipated benefits of a control should outweigh the cost of that control. Auditing standards related to the internal control requirements of Section 404 of the Sarbanes Oxley Act will significantly increase the cost and time needed to comply with the requirements of Section 404. Based upon the existing deadlines, we must fully comply with all requirements of Section 404, no later than September 30, 2008. Complying with these requirements may have a material impact on our operating results. Failure to comply could result in civil penalties, loss of our listing on NASDAQ, and the cost of possible litigation. Because of the complexities and limited time available, there can be no assurance of meeting the compliance deadline.

We are not currently in compliance with the Nasdaq Global Market s audit committee composition requirements.

NASDAQ rules require that our audit committee have a minimum of three members and be comprised only of independent directors. We currently have an audit committee of comprised of two independent board members and are relying on an exception which provides that since we fail to comply with the audit committee composition requirements due to one vacancy on our audit committee, we will have until the earlier of the next annual shareholders meeting or one year from the occurrence of the event that caused the failure to comply with this requirement. We intend to add a new member to our board and our audit committee at our next annual shareholders meeting. If we fail to regain compliance with the applicable NASDAQ rules in a timely manner, we could face delisting.

Terrorist attacks and threats or actual war may negatively impact all aspects of our operations, revenue, costs and stock price.

The 2001 terrorist attacks in the United States, as well as events occurring in response or connection to them, including future terrorist attacks against United States targets, rumors or threats of war, actual conflicts involving the United States or its allies or military or trade disruptions impacting our domestic or foreign suppliers of parts, components and subassemblies, may impact our operations, including, among other things, by causing delays or losses in the delivery of supplies or finished goods and decreased sales of our products. More generally, any of these events could cause consumer confidence and spending to decrease or result in increased volatility in the United States and worldwide financial markets and economy. They could also result in economic recession in the United States or abroad. Any of these occurrences could have a significant adverse impact on our financial position and results of operations.

We face the risk of product liability claims.

The manufacture and sale of our products, which in operation involve toxic materials, involve the risk of product liability claims. In addition, a failure of one of our products at a customer site could interrupt the business operations of our customer. Our existing insurance coverage limits may not be adequate to protect us from all liabilities that we might incur in connection with the manufacture and sale of our products if a successful product liability claim or series of product liability claims were brought against us.

We are subject to environmental regulations, and our inability or failure to comply with these regulations could adversely affect our business.

We are subject to environmental regulations in connection with our business operations, including regulations related to manufacturing and our customers use of our products. From time to time, we receive notices regarding these regulations. It is our policy to respond promptly to these notices and to take any necessary corrective action. Our failure or inability to comply with existing or future environmental regulations could result in significant remediation liabilities, the imposition of fines and/or the suspension or termination of development, manufacturing or use of certain of our products, each of which could damage our financial position and results of operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We believe that our properties are adequate for our current needs. In addition, we believe that adequate space can be obtained to meet our foreseeable business needs. The following chart identifies the principal properties which we own or lease.

Location	Use	Size	Monthly Rent	Lease Expiration
Semiconductor Equipment Segment				
Tempe, AZ	Corporate	15,000 sf	$9,000	11/30/2007
Austin, TX	Mfg Support	(1)	(1)	(1)
Billerica, MA	Office, Warehouse & Mfg.	30,000 sf	$18,000	8/31/2011
Heerde, The Netherlands	Office & Mfg.	10,000 sf	Owned	N/A
Heerde, The Netherlands	Warehouse & Mfg.	10,000 sf	$9,000	7/31/2008
Polishing Supplies Segment				
Carlisle, PA	Office & Mfg.	22,000 sf	$12,000	6/30/2007 (2)

(1) Services are performed in customer s facilities.

(2) We have an option to renew for three additional terms of one year each. We intend to exercise our renewal options.

ITEM 3. LEGAL PROCEEDINGS

None.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

None.

PART II

ITEM 5. MARKET FOR REGISTRANT S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

MARKET INFORMATION

Our common stock, par value $0.01 per share (Common Stock), began trading on the NASDAQ Global Market (formerly the NASDAQ National Market) under the symbol ASYS on April 18, 2001. From 1983 to 2001, our Common Stock was traded on the NASDAQ SmallCap Market. On December 8, 2006, the closing price of our Common Stock as reported on the NASDAQ Global Market was $6.90 per share. The following table sets forth the high and low bid price at which the shares of our Common Stock traded for each quarter of fiscal 2006 and 2005, as reported by the NASDAQ Global Market.

	Fiscal 2006		Fiscal 2005	
	High	Low	High	Low
First quarter	$ 9.05	$ 5.22	$ 4.99	$ 3.76
Second quarter	10.31	6.26	4.37	2.81
Third quarter	10.02	6.05	6.20	2.62
Fourth quarter	7.44	6.25	7.74	4.61

HOLDERS

As of December 8, 2006, there were 937 shareholders of record of our Common Stock. Based upon a recent survey of brokers, we estimate there were approximately an additional 1,782 beneficial shareholders who held shares in brokerage or other investment accounts as of that date.

DIVIDENDS

We have never paid dividends on our Common Stock. Our present policy is to apply cash to investment in product development, expansion or acquisition; consequently, we do not expect to pay dividends on Common Stock in the foreseeable future.

SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS

The following table sets forth certain information, as of September 30, 2006, concerning outstanding options and rights to purchase Common Stock granted to participants in all of the Company s equity compensation plans and the number of shares of Common Stock remaining available for issuance under such equity compensation plans.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders (1)	308,384	5.95	255,837
Equity compensation plans not approved by security holders			
Total	308,384		255,837

(1) Represents the 1995 and 1998 Employee Stock Option Plans and the Non-Employee Director Stock Option Plan and any respective amendments thereto.

ITEM 6. SELECTED FINANCIAL DATA

This selected financial data should be read in conjunction with Item 7, Management s Discussion and Analysis of Financial Condition and Results of Operations, and our consolidated financial statements (including the related notes thereto) contained elsewhere in this Annual Report.

	Years Ended September 30,				
	2006	2005	2004[1]	2003	2002
	(In thousands, except percentages, per share amounts)				
Operating Data:					
Net revenues	$ 40,445	$ 27,899	$ 19,299	$ 19,434	$ 20,533
Gross profit	$ 10,575	$ 7,668	$ 3,949	$ 4,835	$ 4,997
Gross profit %	26.1%	27.5%	20.5%	24.9%	24.3%
Operating income (loss)	$ 1,635	$ (244)	$ (2,035)	$ (245)	$ 77
Net income (loss)	$ 1,318	$ (259)	$ (3,165)	$ (100)	$ 118
Dividends on convertible preferred stock	$ (81)	$ (76)	$	$	$
Net income (loss) attributable to common	$ 1,237	$ (335)	$ (3,165)	$ (100)	$ 118
Earnings (loss) per share:					
Basic earnings (loss) per share	$ 0.40	$ (0.12)	$ (1.17)	$ (0.04)	$ 0.04
Diluted earnings (loss) per share	$ 0.38	$ (0.12)	$ (1.17)	$ (0.04)	$ 0.04
Order backlog[2]	$ 13,600	$ 14,388	$ 7,300	$ 7,645	$ 6,499
Balance Sheet Data:					
Cash and cash equivalents	$ 6,433	$ 3,309	$ 1,674	$ 7,453	$ 8,046
Working capital	$ 11,883	$ 9,968	$ 7,735	$ 12,727	$ 12,166
Current ratio	2.6:1	3.7:1	2.7:1	4.9:1	5.5:1
Total assets	$ 23,563	$ 17,701	$ 16,660	$ 18,399	$ 17,393
Total current liabilities	$ 7,444	$ 3,752	$ 4,531	$ 3,259	$ 2,722
Long-term obligations	$ 617	$ 741	$ 474	$ 640	$ 459
Convertible preferred stock	$	$ 1,935	$	$	$
Total stockholders equity	$ 15,609	$ 13,208	$ 11,655	$ 14,499	$ 14,212

(1) On July 1, 2004, the Company acquired the Bruce Technologies horizontal furnace product line from Kokusai.

(2) The backlog as of September 30, 2006, 2005, 2004 and 2003 includes $0.9 million, $1.0 million, $0.7 million and $0.7 million, respectively, of open orders or deferred revenue on which we anticipate no gross margin.

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

The following discussion of our financial condition and results of operations should be read in conjunction with our Consolidated Financial Statements and the related notes included in Item 8, Financial Statements and Supplementary Data , in this Annual Report on Form 10-K. This discussion contains forward-looking statements, which involve risk and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of certain factors including, but not limited to, those discussed in Risk Factors and elsewhere in this Annual Report on Form 10-K.

Introduction

Management s Discussion and Analysis (MD&A) is intended to facilitate an understanding of our business and results of operations. MD&A consists of the following sections:

Overview: a summary of our business.

Results of Operations: a discussion of operating results.

Liquidity and Capital Resources: an analysis of cash flows, sources and uses of cash and financial position.

Contractual Obligations and Commercial Commitments

Critical Accounting Policies: a discussion of critical accounting policies that require the exercise of judgments and estimates.

Impact of Recently Issued Accounting Pronouncements: a discussion of how we are affected by recent pronouncements.

Overview

We operate in two segments: semiconductor equipment and polishing supplies. Our semiconductor equipment segment is a leading supplier of thermal processing systems, including related automation, parts and services, to the semiconductor, solar/photovoltaic, silicon wafer and MEMS industries.

Our polishing supplies and equipment segment is a leading supplier of wafer carriers to manufacturers of silicon wafers. The polishing segment also manufacturers polishing templates, steel carriers and double-sided polishing and lapping machines to fabricators of optics, quartz, ceramics and metal parts, and to manufacturers of medical equipment components.

Our customers are primarily manufacturers of integrated circuits and solar cells. The semiconductor and solar cell industries are cyclical and historically have experienced significant fluctuations. Our revenue is impacted by these broad industry trends.

In June 2006, we adopted a plan to consolidate the manufacturing of our automation product line into facilities already used to manufacture diffusion furnaces. Our automation products are often sold in conjunction with new diffusion furnaces. As a result of this decision, we recorded approximately $0.2 million of restructuring charges in fiscal 2006.

In July 2004, we completed the acquisition of the Bruce Technologies horizontal diffusion furnace product line from Kokusai Semiconductor Equipment Corporation , which we believe makes us a leading manufacturer of horizontal diffusion furnaces.

Results of Operations

The following table sets forth certain operational data as a percentage of net revenue for the periods indicated:

	Years Ended September 30,		
	2006	2005	2004
Net revenues	100.0%	100.0%	100.0%
Cost of sales	73.9%	72.5%	79.5%
Gross margin	26.1%	27.5%	20.5%
Selling, general and administrative	20.5%	26.2%	28.3%
Restructuring charge	0.5%		
Research and development	1.1%	2.2%	2.8%
Operating income (loss)	4.0%	(0.9)%	(10.6)%
Interest and other income (expense), net		0.3%	(0.3)%
Income (loss) before income taxes	4.0%	(0.6)%	(10.9)%
Income tax provision	0.7%	0.3%	5.5%
Net income (loss)	3.3%	(0.9)%	(16.4)%

Fiscal 2006 compared to Fiscal 2005

Net Revenue

Net revenue consists of revenue recognized upon shipment or installation of products using proven technology and upon acceptance of products using new technology. In addition, spare parts sales are recognized upon shipment. Service revenue is recognized upon completion of the service activity or ratably over the term of the service contract. The majority of our revenue is generated from large furnace systems sales which, depending on the timing of shipment and installation, can have a significant impact on our revenue and earnings in any given period. *See* Critical Accounting Policies Revenue Recognition.

	Years Ended September 30,			
Net Revenue	**2006**	**2005**	**Inc (Dec)**	**%**
	(dollars in thousands)			
Semiconductor Equipment Segment	$ 33,363	$ 20,668	$ 12,695	61%
Polishing Supplies Segment	7,082	7,231	(149)	(2)%
Net revenues	$ 40,445	$ 27,899	$ 12,546	45%

Overall growth in net revenue in fiscal 2006 was primarily due to a beginning backlog of $14.4 million, a robust semiconductor equipment market, and increasing penetration into the solar market. Net revenue in fiscal 2006 was positively impacted by the shipment of a $5.2 million multi-furnace order in the quarter ended March 31, 2006, for which there was no corresponding order of similar magnitude in fiscal 2005. In addition, net revenue in fiscal 2006 was positively impacted by revenue related to the solar industry of approximately $2.8 million versus $1.4 million in fiscal 2005.

The decrease in net revenue of the polishing supplies segment was due primarily to a decrease in sales of insert carriers.

The following table reflects new orders, shipments and net revenue for each quarter of fiscal 2006 and 2005, on a consolidated basis, as well as for each of our two business segments.

28

	Fiscal Quarter						
	First	Second	Third	Fourth[2]	Fiscal Year[2]	Semi-conductor Equipment Segment [2]	Polishing Supplies Segment
	(dollars in thousands)						
2006:							
New orders [1]	$ 11,236	$ 6,505	$ 10,506	$ 11,410	$ 39,657	$ 32,577	$ 7,080
Shipments	$ 8,420	$ 11,378	$ 10,899	$ 10,636	$ 41,333	$ 34,251	$ 7,082
Net revenues	$ 7,915	$ 10,892	$ 10,351	$ 11,287	$ 40,445	$ 33,363	$ 7,082
Ending backlog	$ 17,709	$ 13,322	$ 13,477	$ 13,600	$ 13,600	$ 12,614	$ 986
Book-to-bill ratio	**1.3:1**	**0.6:1**	**1.0:1**	**1.1:1**	**1.0:1**	**1.0:1**	**1.0:1**
2005							
New orders [1]	$ 8,323	$ 5,079	$ 7,152	$ 14,433	$ 34,987	$ 27,884	$ 7,104
Shipments	$ 6,952	$ 8,928	$ 5,706	$ 6,888	$ 28,474	$ 21,235	$ 7,239
Net revenues	$ 7,172	$ 8,915	$ 5,507	$ 6,305	$ 27,899	$ 20,668	$ 7,231
Ending backlog	$ 8,451	$ 4,615	$ 6,260	$ 14,388	$ 14,388	$ 13,400	$ 988
Book-to-bill ratio	**1.2:1**	**0.6:1**	**1.3:1**	**2.1:1**	**1.2:1**	**1.3:1**	**1.0:1**

(1) Orders are net of cancellations and include the change in the U. S. dollar value of orders recorded in Euros by our semiconductor equipment segment.

(2) The backlog as of September 30, 2006 and 2005 includes $0.9 million and $1.0 million, respectively, of open orders or deferred revenue on which we anticipate no gross margin.

Gross Profit

Gross profit is the difference between net revenue and cost of goods sold. Cost of goods sold consists of purchased material, labor and overhead to manufacture equipment or spare parts and the cost of service and factory and field support to customers for warranty, as well as installation and paid service calls. In addition, the cost of outsourcing the assembly or manufacturing of certain systems and subsystems to third parties and supplemental contract field service is included in cost of goods sold. Gross margin is gross profit as a percentage of net revenue.

Gross Profit	Years Ended September 30, 2006	2005	Increase (Decrease)	%
	(dollars in thousands)			
Semiconductor Equipment Segment	$ 8,461	$ 5,509	$ 2,952	54%
Polishing Supplies Segment	2,114	2,159	(45)	(2)%
Total	$ 10,575	$ 7,668	$ 2,907	38%
Gross Margin	26%	27%		

Gross profit increased in fiscal 2006 by $2.9 million, or 38%, over fiscal 2005. The increase was driven by higher shipments during the year. Gross margin was 26% in fiscal 2006 compared to 27% in fiscal 2005. Major factors that contributed to the decrease in margin percentage were an increase in profit deferred in fiscal 2006 compared to 2005, the recognition of approximately $0.7 million of revenue and an equal amount of costs related to customer acceptance of our small batch vertical furnace and lower margins on the multi-furnace order shipped during fiscal 2006. The decrease in gross margin was also impacted by a change in product mix, as the polishing supplies segment (which has higher gross margins) declined as a percentage of consolidated revenue.

The timing of revenue recognition can have a particularly significant effect on gross margin when the equipment revenue of an order is recognized in one period and the remainder of the revenue attributed to holdbacks is recognized in a later period. The portion of revenue attributed to the holdbacks generally comprises 10-20% of an order and has a significantly higher gross margin percentage.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist of the cost of employees, consultants and contractors, as well as facility costs, sales commissions, legal and accounting fees and promotional marketing expenses.

	Years Ended September 30,			
Selling, general and administrative	**2006**	**2005**	**Increase (Decrease)**	**%**
	(dollars in thousands)			
Semiconductor Equipment Segment	$ 7,111	$ 5,918	$ 1,193	20%
Polishing Supplies Segment	1,202	1,367	(165)	(12)%
Total	$ 8,313	$ 7,285	$ 1,028	14%
Percent of net revenue	21%	26%		

Total selling, general and administrative expenses as a percentage of net revenue decreased to 21% in fiscal 2006 from 26% in fiscal 2005, as a result of higher sales. The $1.0 million increase over fiscal 2005 was due to approximately $0.2 million in increased personnel costs to support the increase in revenue and the increased regulatory obligations associated with being a public company, increased commissions of approximately $0.2 million resulting from the increased revenue, $0.2 million in increased non-cash stock-based compensation costs during fiscal 2006 related to the adoption of SFAS 123(R) and increased legal fees associated with the restructuring of our legal entities in Europe and consulting costs for the initial upgrade of the software used to operate and control our operations in Europe.

Restructuring Charges

	Years Ended September 30,			
Restructuring Charge	**2006**	**2005**	**Increase (Decrease)**	**%**
	(dollars in thousands)			
Semiconductor Equipment Segment	$ 190	$	$ 190	0%
Polishing Supplies Segment				0%
Total	$ 190	$	$ 190	0%

In June 2006, we adopted a plan to consolidate the manufacturing of our automation product line into facilities already used to manufacture diffusion furnaces. Our automation products are often sold in conjunction with the sale of new diffusion furnaces. As a result of this decision, we recorded $0.2 million of restructuring charges in fiscal 2006.

Research and Development

Research and development expenses consist of the cost of employees, consultants and contractors who design, engineer and develop new products; materials and supplies used in product prototyping, including wafers, chemicals and process gases; depreciation and amortization expense; charges for repairs to research equipment; and costs of outside services for facilities, process engineering support and wafer analytical services. We also include in research and development expenses the amortization of costs associated with the preparation and filing of patents and other intellectual property. Reimbursements of these costs in the form of governmental research and development grants amounted to $0.1 million in fiscal 2006 and 2005, and are netted against these expenses.

	Years Ended September 30,			
Research and Development	**2006**	**2005**	**Increase (Decrease)**	**%**
	(dollars in thousands)			
Semiconductor Equipment Segment	$ 437	$ 627	$ (190)	(30)%
Polishing Supplies Segment				0%

Total	$ 437	$ 627	$ (190)	(30)%
Percent of net revenue	1%	2%		

Development work on the small batch vertical furnace product line in fiscal 2005 was the primary factor in the $0.2 million decrease in research and development expenses from fiscal 2006 compared to the prior year.

Income Tax Provision

In fiscal 2004, we recorded a valuation allowance for the total of our deferred tax assets, including a net operating loss carryforward. As the deferred tax assets increase or decrease, we record an additional tax provision or recognize a benefit, respectively, so that the valuation allowance remains equal to the total of our deferred tax assets. During fiscal 2006, our deferred tax assets declined by $0.2 million, resulting in a decline in our valuation allowance and an equal amount of tax benefit. This resulted in an effective tax rate for fiscal 2006 of 17.5%. Our future effective income tax rate depends on various factors, such as tax legislation, the geographic composition of our pre-tax income, the level of expenses that are not deductible for tax purposes, changes in our deferred tax assets and the effectiveness of our tax planning strategies.

Fiscal 2005 compared to 2004

Net Revenue

The following table reflects the increase in net revenue during fiscal 2005 as compared to 2004:

	Years Ended September 30,
	2005