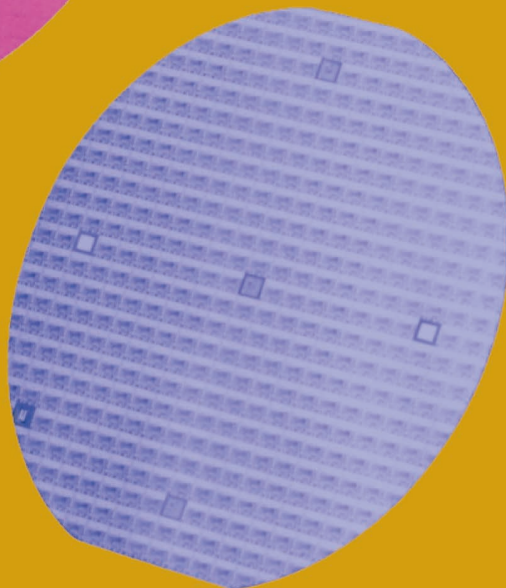
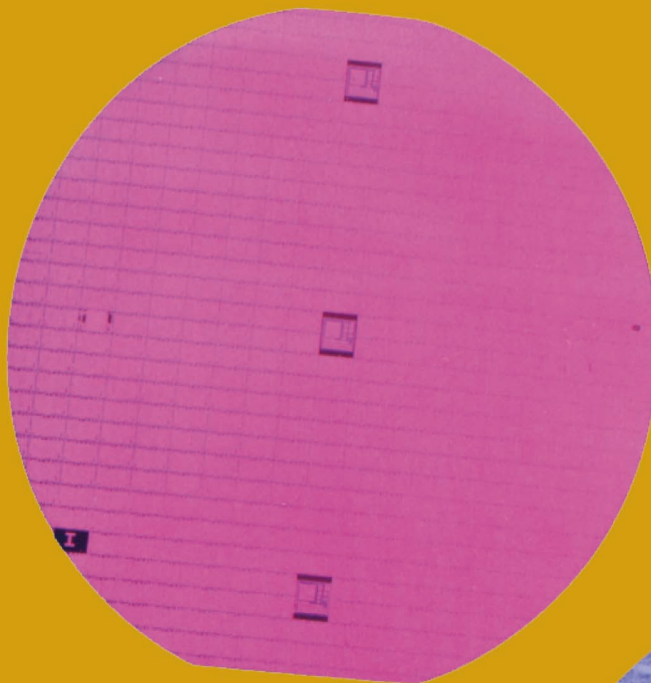
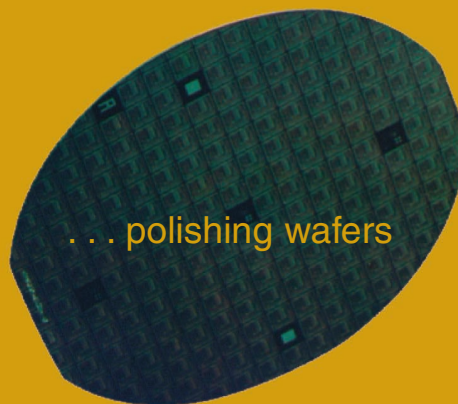




AMTECH SYSTEMS, INC.



Supplying the semiconductor,  
semiconductor wafer, MEMS and  
solar cell industries with quality production  
equipment and supplies for . . .



. . . polishing wafers

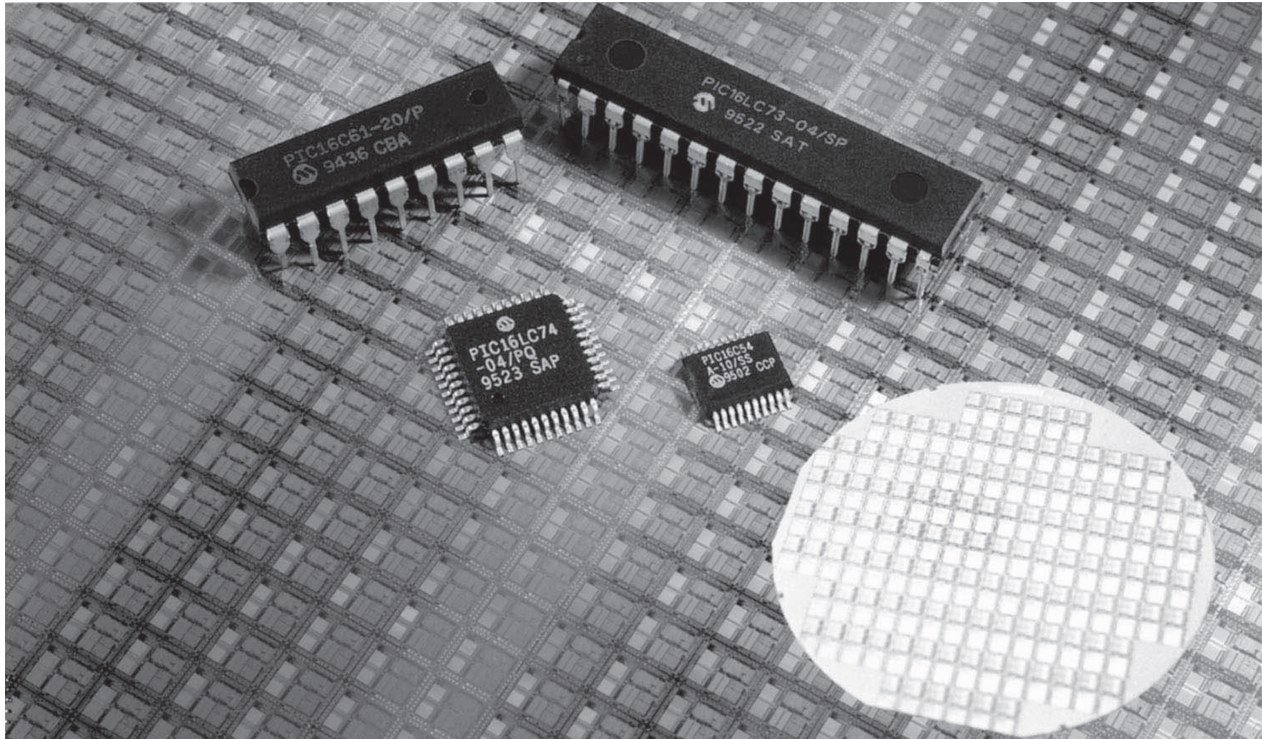


. . . automating  
wafer transfer,



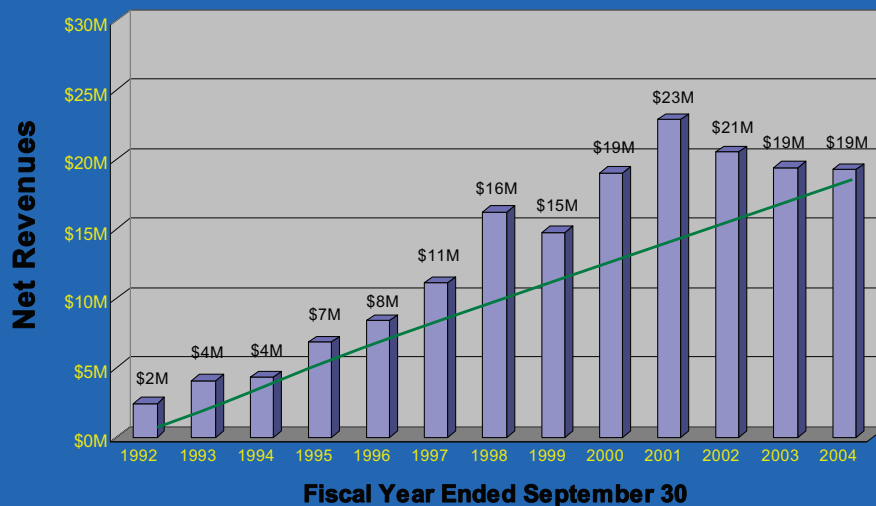
. . . and wafer  
processing.

FISCAL 2004 ANNUAL REPORT



Amtech designs, manufactures and sells products used in the fabrication of semiconductors, semiconductor wafers, MEMS components and solar cells. The Company's products add value in several stages of production of these devices. The Company's polishing equipment and supplies prepare the wafer for further processing while our diffusion furnaces and automation products facilitate the safe, efficient fabrication of integrated circuitry onto a silicon wafer substrate through the growth or deposition of conducting and insulating materials.

### Summary of Net Revenues 19% Compounded Annual Growth Rate



Note: Figures are rounded to the nearest million

## TO OUR SHAREHOLDERS:

During fiscal 2004, revenues declined 1% to \$19.3 million, despite the July 1, 2004 acquisition of Bruce Technologies ("BTI"). The pretax operating loss for the year increased ten fold to \$2.1 million as a result of non-cash and other charges, including \$0.3 million of inventory write-offs in existing operations, \$0.3 million difference between our valuation of the opening BTI inventory and the value at which it was carried by the seller, \$0.5 million increase in deferred profits, \$0.3 million investment in the new small batch vertical furnace, representing the estimated contract costs in excess of the selling price, \$0.1 million of BTI integration costs, and \$0.7 million of additional losses incurred by the automation division due to a sharp decline in revenue. The automation division is most affected by the industry cycles, as most of its potential customers can continue to use manual loading. The net loss for the year was \$3.2 million, or \$1.1 million higher than the pretax loss, as we provided a valuation allowance on all of our net deferred tax assets.

We are in a very cyclical industry and we believe that as we move through the cycles, our results of operations generally lag those of the larger, leading-edge semiconductor equipment manufacturers by two to three quarters. Also, because most of our revenue is derived from the manufacture and sale of large systems and at times from multi-system orders, our results reflect significant volatility between quarters and even years.

Both of these factors negatively affected our results for fiscal 2004. We view our loss in this context and in light of the fact that most of the larger companies in our industry reported significantly larger losses relative to their size in the past two years, before reporting strong earnings in 2004. Despite the results for fiscal 2004, we continued to make investments during the year that are expected to improve our future results of operations and remain confident in our growth strategy and optimistic about the future.

### FISCAL 2004 HIGHLIGHTS

During fiscal 2004, we.....

- Closed the year with \$19 million of revenue, a level that represents a 19% compounded average annual growth rate since 1992.
- Managed the downturn well relative to the semiconductor equipment industry.
- Made good progress on the development of a small batch dual-chamber vertical diffusion furnace.
- Completed the \$4 million acquisition of Kokusai's semiconductor horizontal diffusion furnace operations in the United States and

Europe, with \$8.6 million in estimated annual revenue, referred to as Bruce Technologies.

- Completed ISO 9001 certification in our European operations.
- Continued to penetrate the market for 300mm diffusion furnaces and automation.

### OUR GROWTH STRATEGY

Our growth strategy is composed of:...

- Internal or organic growth, i.e. increasing market share by developing new products or services within our existing product lines (e.g., see above) and adding or increasing penetration of emerging markets, e.g. photovoltaic cells, compound semiconductor materials, and MEMS (microelectromechanical system) components;
- Acquisition growth, which involves acquiring new product lines or businesses that build on core competencies and that complement our business model, such as the acquisition of Bruce Technologies; and
- Innovative growth, i.e. the development of new product lines or businesses using leading technologies through research and development.

### PLANS FOR FISCAL 2005

During fiscal 2005, we intend to return to profitability, which we accomplished during the first two quarters. We are also pleased with raising \$1.9 million in net proceeds from the issuance of preferred stock. We will continue to execute our growth strategy by seeking to increase our share of the markets in which we participate. We will continue the integration of the Bruce Technologies operations. We expect to ship the first two small batch vertical systems in the third and fourth quarters of fiscal 2005 and to formally launch that product into the market in the first quarter of fiscal 2006. We believe that we are well positioned to take advantage of these and other opportunities.

We wish to thank our employees worldwide for their extraordinary efforts and loyalty during this severe downturn in the industry. With support from our customers, stockholders, suppliers, and employees, we are confident that Amtech Systems can resume its rapid and profitable growth as the industry recovers from the current downturn.

Sincerely,



J.S. Whang  
President and Chief Executive Officer



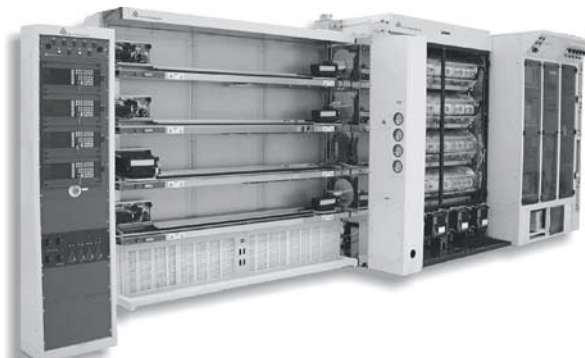
## SEMICONDUCTOR EQUIPMENT SEGMENT PRODUCTS

Amtech designs, manufactures and sells products used in the fabrication of semiconductor devices, MEMS components and solar cells. Currently, this line of products is primarily comprised of horizontal diffusion and CVD (chemical vapor deposition) processing equipment used in repetitive semiconductor fabrication steps for growing or depositing layers of conducting and insulating materials to form integrated circuits on silicon wafer substrates. In production there are many different process steps. Our first small batch vertical furnace systems will ship in the second half of fiscal 2005. For long processes, like thick oxides, or at high temperatures a horizontal furnace is more cost effective and when combined with mass wafer transfer loading of our S-300 automation it provides an excellent solution for these processes, particularly on wafer sizes ranging from six inch (150mm) to twelve inch (300mm).

### HORIZONTAL DIFFUSION FURNACES



*Pictured above is one of the many models of horizontal diffusion furnace systems designed, manufactured and sold by the Company under the Tempress® trade name.*



*The above diffusion furnace design was acquired in July 2004 along with the horizontal furnace division of Kokusai and is being manufactured and sold under the Bruce Technologies® trade name.*

### SMALL BATCH VERTICAL FURNACES (SBVF)

For short processes, and high quality layers like thin oxides, and for small geometry devices, our SBVF (small batch vertical furnace) will provide the best solution.



The combination of our SBVF and either the Tempress® or Bruce Technologies® Horizontals provide the best Mix-and-Match selection available in the market, all with support from one vendor.

The first two models of our SBVF systems are expected to ship in the third and fourth fiscal quarters of 2005.

The formal launch of the SBVF into the market is currently planned for our first fiscal quarter of 2006.



## AMTECH'S FAMILY OF AUTOMATION PRODUCTS

Amtech's family of automation products provides a safer and more efficient method of loading and unloading horizontal diffusion furnace systems with silicon wafers. Many semiconductor fabricators still use human operators to load horizontal diffusion furnace systems, where the top tube level can be as high as seven feet, and with internal heating chambers that can reach temperatures of 1300° C. The use of Amtech's automation products reduce the risk of scrap caused by human error and the exposure of wafers to contaminants. These products also improve the ergonomics and safety of loading and unloading wafers at the various tube levels and improve the economics of horizontal diffusion furnace systems. Such safety issues are particularly important due to the trend to larger wafer sizes because, as wafer sizes increase, each boat of wafers becomes heavier and more difficult to handle, and the diameter of the furnace chambers increases, causing an increase in the height of the upper tube level.

### E-300

Amtech's most cost effective robotic product is the patented E-300. This product is most suitable for lower cost semiconductor devices, such as diodes and power management chips. The E-300 operates like an elevator and is generally used to raise boats loaded with up to 300 wafers to the upper reactor chambers of a diffusion furnace.

### S-300

The S-300 model (at right), a patented product, 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. This product is suitable for the production of nearly all semiconductors fabricated in a horizontal furnace, but is not compatible with furnace reactor chambers where the process requires an Atmoscan®. During 2002, Amtech began shipping new S-300 models for 300mm wafers and other models with cassette-to-cassette capability and SECS II Gem interface to the customer's factory automation and an interface to third party SMIF pod openers. Amtech believes that customers will view the addition of the SECS II Gem interface to their factory automation as a means to reduce scrap caused by an operator loading wafers into the wrong process chamber.



### L-300

The L-300 system (at left), the latest addition to Amtech's automation line, was designed for fabrication houses with older diffusion equipment where a load station is not used. This system allows basic automation to be used on equipment that was entirely manually loaded in the past.



### IBAL

IBAL (Individual Boats with Automated Loading) is Amtech's first automation product, a patented integrated automation system capable of loading Atmoscan® process tubes and cassette-to-cassette furnace loading. The modularity of IBAL, along with the S-300, a mid-range product, and the L-300 and E-300, at a lower price break, mean that the Company can serve a broad range of customer automation needs and budgets.

### ATMOSCAN®

The Company's initial entrée into diffusion equipment was the patented ATMOSCAN®, a specially designed cantilevered diffusion processing tube that is injected with an inert gas to protect the wafers from ambient oxygen, moisture, and particles. It further protects the wafers from sudden temperature change, as they are unloaded from the furnace chamber. The ATMOSCAN® was instrumental in the initial development of the Company's worldwide distribution channel.

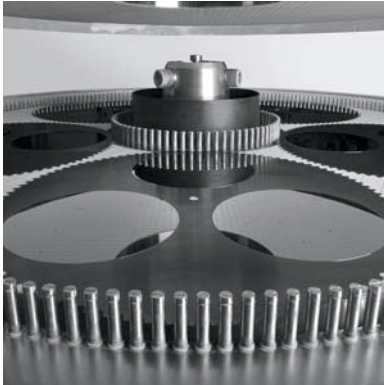
*(Right) The products described above and on the preceding page are highly complementary and synergistic. They are sold to the same customers, through the same distribution channels, often as fully integrated systems. Pictured is an Amtech loadstation (background), S 300 automation system (right of center), a third-party SMIF pod cassette on a SMIF pod opener and wafer transfer machine (far left).*



## WAFER POLISHING PRODUCTS

Amtech also designs, manufactures and sells products used in the production of semiconductor silicon wafers and other flat substrate materials. At present, this line consists of consumable polishing supplies, such as wafer carriers, polishing templates and machine parts, and double-sided precision lapping and polishing machines sold under the P.R. Hoffman brand. Typical applications requiring these products include semiconductor silicon wafers, computer disk substrates, ceramic components of cellular phones, pagers and other wireless communication devices and optical lens, filters, and electro-optical components. The Company's wafer polishing products are designed to process flat substrate materials to exact tolerances of thickness, flatness, parallelism and surface finish.

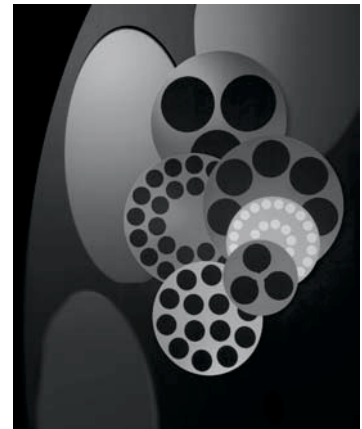
### ***CARRIERS***



Carriers are work holders where wafers are nested during the lapping and polishing processes. The Company produces carriers for its line of lapping and polishing machines as well as for machines made by competitors. These custom carriers are sold in a variety of sizes, configurations and materials, and are generally customized for specific applications. Insert carriers, steel carriers with plastic inserts molded into the work-holes, account for a significant percentage of total carrier sales. Insert carriers provide the advantages of steel carriers, such as durability and rigidity, and are manufactured to precise dimensions. The plastic insert reduces the potential for damage to the edges of sensitive materials, such as large silicon semiconductor wafers. Pictured: Model 5400 machine opened to show carriers holding multiple 200mm silicon wafers.

### ***SEMICONDUCTOR POLISHING TEMPLATES***

Amtech's semiconductor polishing templates (at right) are used for single-sided polishing of semiconductor wafers. These templates are designed for single-sided applications on machines manufactured by competitors. Polishing templates are customized for specific applications and are manufactured to exacting tolerances. Growth in the use of alternative substrate materials used in the telecommunications industry, and substrates used for blue and white LED's has expanded the market for this product.



### ***PLATES, GEARS, WEAR ITEMS and OTHER PARTS***

The Company produces a wide assortment of plates, gears, parts and wear items for its own and competing machines. Approximately eighty percent (80%) of the machine parts used are fabricated by Amtech. In addition to producing standard off-the-shelf parts, the Company has the ability to produce highly customized parts.

### ***DOUBLE-SIDED LAPPING AND POLISHING MACHINES***

The polishing process is used to change the characteristics of the surface of substrate materials, e.g. silicon wafers.



Polishing is a complex science, often involving multiple steps, each at a specified set of process parameters such as polishing speed, pressure, time and temperature. Polishing improves the flatness (planarity), smoothness and optical properties of the substrate's surfaces. Lapping processes are similar to polishing, except that no polishing pad is used and the work piece is pressed into a polishing liquid (slurry) that is applied to a cast-iron lapping wheel. Lapping results in higher removal rates than polishing, but produces rougher surface finishes. Dimensional tolerance, surface finish, quantity of material to be removed, along with production rates required and cost of operation are the primary variables considered in the determination of the best process for a specific application. Pictured: The Model 5400, Amtech's newest **SEW RO** precision double-sided, planetary, lapping and polishing machine, capable of processing large diameter (such as 200mm and 300mm silicon wafers) products to world class standards. The Company also produces **SEW RO** Models 3100, 1900, and 1500 which are capable of processing smaller wafers and precision optics, as well as other smaller machines.

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

**Form 10-K**

(Mark One)

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

For the fiscal year ended: September 30, 2004

or

- ☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d)  
OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission file number: 0-11412

**AMTECH SYSTEMS, INC.**

*(Exact name of registrant as specified in its charter)*

**Arizona**

*(State or other jurisdiction of  
incorporation or organization)*

**86-0411215**

*(I.R.S. Employer  
Identification No.)*

**131 South Clark Drive, Tempe, Arizona**

*(Address of principal executive offices)*

**85281**

*(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, \$.01 Par Value**

**(Title of Class)**

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. ☒ Yes ☐ No

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

Indicate by check mark whether the registrant is an accelerated filer (as defined in Exchange Act Rule 12(b)(2)). ☐ Yes ☒ No

As of March 31, 2004, the aggregate market value of the voting stock held by non-affiliates of the registrant was approximately \$12,805,000, based upon the closing sales price reported by the NASDAQ National Market® on that date.

As of January 12, 2005, the registrant had outstanding 2,705,121 shares of Common Stock, \$.01 par value.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the Definitive Proxy Statement related to the registrant's 2005 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, 2004, are incorporated by reference into Part III of this Form 10-K.

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## 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,” “believes,” “estimates,” “predicts,” “potential,” “continue,” or the negative of these terms or other comparable terminology. Any expectations based on these forward-looking statements are subject to risks and uncertainties and other important factors, including those discussed in the section entitled “Item 7. Management’s Discussion and Analysis — Trends, Risks and Uncertainties.” 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. Unless noted otherwise, all references to a year apply to Amtech’s fiscal year, which ends on September 30th.

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

## PART I

### ITEM 1. *BUSINESS*

Amtech Systems, Inc. (“Amtech” or the “Company”) was incorporated in Arizona in October 1981, under the name Quartz Engineering & Materials, Inc., and changed to its present name in 1987. Amtech also conducts operations through three wholly-owned subsidiaries, Tempres Systems, Inc., a Texas corporation with all of its operations in the Netherlands (“Tempres Systems” or “Tempres”), P.R. Hoffman Machine Products, Inc., an Arizona corporation based in Carlisle, Pennsylvania (“P.R. Hoffman”) and Bruce Technologies, Inc., a Massachusetts corporation based in Billerica, Massachusetts (“Bruce Technologies”).

We develop, manufacture, market and service wafer and semiconductor fabrication equipment and related spare parts for the global semiconductor industry. Customers for our products include semiconductor wafer manufacturers and semiconductor integrated circuit (or chip) manufacturers, who either use the chips they manufacture in their own products or sell them to other companies. These chips are key components in most electronic products for telecommunications (especially wireless communications), computers and consumer electronics and are also used to add functionality to, or improve the performance of, a wide range of existing products, such as automobiles. Other customers for our products include manufacturers of optical components and solar cells and research and development facilities.

Our business is divided into two business segments, semiconductor equipment and polishing supplies. The semiconductor equipment segment manufactures and sells horizontal diffusion furnaces; processing/robotic equipment and host systems for such diffusion furnaces. This includes related spare parts, consumables and services used in certain processes of fabricating integrated circuits, or chips, on silicon wafers. In addition, our semiconductor equipment segment provides manufacturing support services, including wet and dry cleaning of semiconductor machine processing parts, to one of our Texas-based customers. Our polishing supplies segment produces and sells carriers and templates that are consumed in the final steps of manufacturing silicon wafers (the raw material used in the production of semiconductors), double-sided precision lapping and polishing machines and related spare parts. For information regarding revenue, operating profit or loss and identifiable assets attributable to each of these two business segments, see Note 9 of the Notes to Consolidated Financial Statements included herein and Item 7 of this annual report.

We serve a niche market in an industry that experiences on going technological advances, and which is very cyclical. As a result, our future profitability and growth depends on our ability to develop or acquire and market profitable improved or new products, and on our ability to adapt to cyclical trends.

## GROWTH STRATEGY

Our strategy for growing revenue and operating profit is to develop improved or new products and services that satisfy our targeted markets, to further penetrate these and new markets with existing and new products and to acquire additional products through strategic acquisitions. We categorize these growth strategies as internal growth and acquisition growth.

*Internal Growth.* Our strategy for internal growth, sometimes referred to as organic growth, includes adding new markets, new or improved products and new services. We began providing a new service, contract semiconductor manufacturing support, in the fourth quarter of 1997, and in 2004 expanded the services provided and revenues generated by these services. Service revenues were 5% of sales in 2004. In 2000, we began obtaining orders for semiconductor production equipment from manufacturers of MEMS (microelectromechanical system) using nanotechnology. While MEMS manufacturers are currently experiencing a downturn, this proved to be a significant new market for us in 2000 and 2001 and we expanded our position in this market with the 2004 acquisition of Bruce Technologies from Kokusai Semiconductor Corporation (“Kokusai”). In addition, one of the first new markets added by our semiconductor equipment segment was manufacturers of solar cells.

Our new products have included the July 2000 introduction of the S-300 and E-300 models of automation, which were a significant source of sales in 2001 and 2002. Other new products, which we began shipping in 2002, include 300mm diffusion furnaces sold to wafer manufacturers and related automation and S-300 models with cassette-to-cassette capability, a SECS II Gem (semiconductor equipment communications standard with level II documentation and incorporating the general equipment model) interface to a customer’s factory automation and an interface to third party SMIF (standard mechanical interface) pod openers. The introduction of new products in 2002 helped our semiconductor equipment segment avoid the severe revenue decline experienced by most of our peers in 2002. We expect these new products to generate increased sales and profits during the next industry upturn.

During 2003, our polishing supplies segment received a customer order for a double-sided lapping and polishing machine with a larger capacity than our previous machines. This machine is driven by servo motors, rather than the hydraulics used in our then existing largest machine. P.R. Hoffman completed the design and manufacture of this machine, Model 5400 Servo, in 2003, and it was shipped and accepted by the customer in 2004. The Model 5400 is our first lapping and polishing machine capable of processing parts up to 19.5 inches in diameter; has higher capacities for smaller parts; and is equipped with a Windows™ touch-screen interface to a programmable controller for flexible multi-step control of speeds and pressure, optional thickness control, and crash protection. The Model 5400 offers very high precision for a large double-sided planetary machine and is especially suited to thin and fragile substrates. This design uses servo motors to precisely control the smooth, quiet, three-way planetary motions as well as precise, completely variable control of downward force ranging from as little as 24 pounds to as much as 1½ tons.

During 2003, after considerable consultation with a customer, our semiconductor equipment segment received an order for a new small batch vertical furnace, which is subject to customer acceptance. 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. This system is expected to have the same process capability of other vertical furnaces in the marketplace, but with less complex automation and a lower cost than that of our competitors. The market for vertical furnaces is much larger than any of the other markets we currently serve. However, we intend to target research and development and other niche applications first, since the competition in vertical furnaces is fierce and our competitors are much larger with substantially greater financial resources, processing knowledge and advanced technology than Amtech. The development of this small batch vertical furnace is presently moving from the sub-assembly stage to the final assembly phase. Delivery is now expected to be in March, 2005. There can be no assurance that when completed the customer will accept this small batch vertical furnace.

The large installed customer base of Bruce Technologies, Inc., which was acquired in 2004, increases the market to which the Company can sell its new or existing automation products and its proposed small batch vertical furnace.

*Acquisition Growth.* In 1995, we completed a secondary offering of our common stock, yielding proceeds of \$3.6 million to be used to fund our acquisition strategy. That year, we acquired certain assets of the former Tempress, B.V. and hired Tempress, B.V.'s former engineers to develop our first models of the Tempress® horizontal diffusion furnaces for production in The Netherlands. On July 1, 1997, we acquired substantially all of the assets of P.R. Hoffman Machine Products Corporation. 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 and to target new customers. In September 2000, we raised an additional \$4.6 million through a private placement of our common stock to further fund our acquisition strategy. On July 1, 2004, we acquired certain semiconductor horizontal diffusion furnace operations, product line and other assets from Kokusai and its affiliate Kokusai Electric Europe, GmbH, which will be marketed under the name, Bruce Technologies. Bruce Technologies has a large installed base, including several large semiconductor fabricators. While we have had some difficulty identifying fairly-valued suitable acquisition candidates, we continue to pursue acquisition candidates that will either increase our existing market share or expand the number of front-end semiconductor processes addressed by our products.

## INDUSTRY

The semiconductor industry experienced significant growth since the early 1990s. This growth is primarily attributable to increased demand for personal computers and the 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 and traditional products with more “intelligence,” which has led to an increased number of semiconductor devices in electronic and other consumer products.

Although the semiconductor market has experienced significant growth over the past decade, it remains cyclical by nature, characterized by periods of either under or over supply for most semiconductors, including microprocessors, memory, power management chips, discrete 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 historical peaks in 2000, the semiconductor industry experienced one of its most severe down turns in 2001, 2002 and the first half of 2003 which resulted in a decline in revenue for both chip fabricators and most semiconductor equipment manufacturers. The industry began to rebound from this downturn during the later part of 2003. As this industry rebound developed in 2004, it became clear that most of the increased spending was by new semiconductor fabs utilizing 300mm technologies, a market not served by the Company. Our 300mm products, including a diffusion furnace, automation, and insert carriers, are only used by wafer manufacturers. As a result, we have not benefited from the 2004 rebound, i.e. our 2004 orders were slightly lower than in 2003.

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,” and optical components are fabricated on a silicon wafer substrate and are part of the circuitry or electronic components of many of the aforementioned products.

Most semiconductor chips are built on a base of silicon, called a wafer, and include multiple layers of wiring that connect a variety of circuit components, such as transistors and other structures. 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) pulling molten silicon to form an ingot; (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) insulating or conducting layers are deposited on the wafer surface, which sometimes is accomplished in a diffusion furnace

via a chemical reaction called chemical vapor deposition (“CVD”); (7) a photosensitive material, called photoresist, is spread over and then baked on the wafer; (8) the wafer is then exposed to light directed through a mask with circuit patterns; (9) the wafer is then placed in a chemical solution that removes the soluble portion of the photoresist, leaving only the desired pattern; (10) reactive gases then etch away the exposed areas to create a dimensional pattern on the wafer surface; (11) ions are driven into the exposed areas of the patterned wafer to create electrically charged conductive regions; and (12) the wafer then goes through a high temperature annealing process to relieve stress and drive the implanted ions deeper into the wafer.

The silicon wafer may be cycled ten to twenty times through these wafer-processing steps, starting each time at step (5) or (6) 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 step (3) and our semiconductor equipment segment’s products may be used in steps (5), (6) and (12). A part of the Company’s growth strategy is to increase the number of process steps it can serve by acquiring additional product lines.

## **SEMICONDUCTOR EQUIPMENT SEGMENT PRODUCTS**

The semiconductor manufacturing equipment products, used in the oxidation, CVD,  $\text{POLC}_3$  doping and annealing steps of fabricating integrated circuits on silicon wafers, are manufactured by our Arizona, Massachusetts and Netherlands operations. The following paragraphs describe the products that comprise our semiconductor equipment segment:

### ***Horizontal Diffusion Furnaces***

Through our subsidiaries, Tempress Systems and Bruce Technologies, we produce and sell horizontal diffusion and conveyor furnace systems, which generally include a load station. Our diffusion furnaces currently address several deposition steps in the semiconductor manufacturing process, including oxidation/diffusion and low-pressure chemical vapor deposition (“LPCVD”),  $\text{POLC}_3$  doping and annealing. The LPCVD step consists of performing CVD under high temperature, low-pressure conditions to deposit insulating or conductive layers, primarily on wafers up to 200mm in size. Diffusion furnaces also are used in certain high and ultra-high temperature processes in the manufacture of optical components of high-speed switches used in broadband fiber optic telecommunications networks.

Our diffusion 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 are often customized to meet the requirements of a customer’s particular processes. The horizontal diffusion furnaces utilize existing industry technology and are sold primarily to customers who do not require the advanced automation of, or cannot justify the significantly higher expense of, vertical diffusion furnaces for some or all of their diffusion processes. In 2002, we began shipping models of the Tempress® diffusion furnace capable of processing 300mm wafers, with the initial customer being a semiconductor wafer manufacturer, and we now have models capable of processing all currently existing wafer sizes.

Tempress Systems also produces conveyor furnace systems used to produce thick films for the electronics industry. Conveyor furnace systems provide for precision thermal processing of electronic parts for thick film applications, including annealing, sealing, soldering, silvering, curling, brazing, alloying, gloss-metal sealing and component packaging.

### ***Proposed New Small Batch Vertical Furnace***

During 2003, after considerable consultation with a customer, our semiconductor equipment segment received an order for a new small batch vertical furnace, which is subject to customer acceptance. 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. This system is expected to have the same process capability of other vertical furnaces in the marketplace, but with less complex automation and a lower cost than that of our competitors. The market for vertical furnaces is much larger than any of the other markets we currently serve. However, we intend to target research and development and other niche



applications first, since the competition in vertical furnaces is fierce and our competitors are much larger and have substantially greater financial resources, processing knowledge and advanced technology than Amtech.

### ***Processing/Robotic Equipment***

Our processing and robotic equipment consist of several products that either automate the loading of horizontal diffusion furnaces or improve the processing characteristics of such furnaces. Wherever possible, our processing and robotic products are sold in various combinations of our Tempress® and Bruce Technologies® diffusion furnaces in order to maximize sales of these products and expand the market for our diffusion furnaces. These products also are sold to customers as retrofits to most all brands of horizontal diffusion furnaces.

### ***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. The following paragraphs describe our automation products.

*E-300.* Our most cost effective robotic product is the E-300. This product is most suitable for the lowest cost semiconductor devices, such as diodes and power management chips. The E-300 operates like an elevator and generally is used to raise boats loaded with up to 300 wafers to one or both of the upper two reactor chambers of a diffusion furnace. There the operator uses a hand held tool to lift the wafer boat off the E-300 and to either place them directly on a cantilever paddle system, into an Amtech Atmoscan®, or onto an IBAL Trolley, which then places the wafers on the paddle or Atmoscan®. The E-300 can be used in conjunction with all wafer sizes, including 300mm wafers.

*S-300.* The 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 fabricated in a horizontal furnace, but is not compatible with furnace reactor chambers where the process requires an Atmoscan®. During 2002, we began shipping S-300 models for 300mm wafers and other models with cassette-to-cassette capability, a SECS II Gem interface to the customer's factory automation and an interface to third party SMIF pod openers. We believe that customers will view the SECS II Gem interface to their factory automation as a means to reduce scrap that is sometimes caused by an operator loading wafers into the wrong process chamber. The S-300 can now be used in conjunction with all wafer sizes, including 300mm wafers.

*IBAL.* Our Individual Boats with Automated Loading. ("IBAL") automation system is a patented integrated automation system composed of four modules comprised of hardware and software. The IBAL Shuttle transfers wafers between wafer transfer machines manufactured by third parties and the IBAL Queue, providing customers with the option of complete cassette-to-cassette wafer handling. The IBAL Queue provides a convenient staging area for the operator or the IBAL Shuttle to place boats on a load station and automates the loading of those boats onto the IBAL Butler. The IBAL Butler automatically transfers wafer carriers onto the IBAL Trolley of the appropriate furnace tube level for loading. The IBAL Trolley automatically places the quartz trays that hold silicon wafers ("boats") on a cantilever paddle system or into an Amtech Atmoscan® that then are inserted in the diffusion furnace. This sequence is reversed for unloading the furnace after the particular process step has been completed.

The automation products described above are sometimes sold as a complete system in conjunction with a load station module, which also includes an ultra-clean environment for wafer loading by filtering and controlling the flow of air.

### ***Atmoscan® and Other Cantilevered Processing Systems***

Atmoscan® is a patented 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 are increased control of the environment of the wafers during the gaseous and heating process, thereby increasing yields and decreasing manufacturing costs; a decreased need for the cleaning of diffusion furnace tubes, which ordinarily involves substantial expense and equipment down time; and significant economies in the manufacturing process.

We also designed and sell an open cantilever paddle system, the type of loader which remains the most commonly used in the semiconductor industry for loading wafers into horizontal furnaces. Prior to the introduction of the Atmoscan®, our alternative to the open cantilevered processing system, similar systems were used by the industry.

### **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, between 55% and 65% 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. These products are manufactured by our P.R. Hoffman operation in Pennsylvania and are described below.

#### ***Carriers***

Carriers are work holders into which silicon wafers or other materials are inserted for the purpose of holding them securely in place during lapping and polishing processes. We produce carriers for our line of lapping and polishing machines, as well as those machines sold by our competitors. Substantially all of the carriers we produce are customized for specific applications. A very significant category of our steel carriers, referred to as insert 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 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 such materials, because they provide the advantages of steel carriers while reducing the potential for damage to the edges of sensitive materials such as large semiconductor wafers, which are becoming more standard in the industry. Our insert carriers are used for double-sided lapping or polishing of semiconductor wafers up to 300 mm in diameter.

#### ***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 all 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 LED's.

#### ***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.

Lapping machines process parts using an abrasive slurry and cast iron plates. The material to be processed is positioned in carriers, which are then driven with a planetary motion between the top and bottom plates. The planetary action of the lapping machines simultaneously removes equal amounts of material from both sides of the material being processed. While polishing machines are similar to the lapping machines,

polishing is achieved by using finer free abrasive slurry and plates equipped with a polishing pad material. Depending on the process, the wafers are held in place in the pockets of a carrier, for double-sided processing, or templates or wax mountings for single-sided processing. We do not manufacture or sell single-sided polishing machines or wax mountings. The polishing process is used to improve the characteristics of the surfaces of silicon wafers and other materials. We also manufacture and sell repair parts for our line of lapping and polishing machines.

#### ***New Large Capacity Servo Series of Lapping and Polishing Machines***

During 2003, our polishing supplies segment received a customer order for a double-sided lapping and polishing machine with a larger capacity, compared to our previous machines, and driven by servo motors, rather than the hydraulics used in our then existing largest machine. P.R. Hoffman completed the design and manufacture of this machine, Model 5400 Servo, in 2003, and it was shipped and accepted by the customer in 2004. The Model 5400 is our first lapping and polishing machine capable of processing parts up to 19.5 inches in diameter, including 300mm wafers; has higher capacities for smaller parts; and is equipped with a Windows™ Touch-screen interface to a programmable controller for flexible multi-step control of speeds and pressure, optional thickness control, and crash protection. The 5400 model offers very high precision for a large double-sided planetary machine and is especially suited to thin and fragile substrates. This design uses servo motors to precisely control the smooth, quiet, three-way planetary motions as well as precise, completely variable control of downward force ranging from as little as 24 pounds to as much as 1½ tons.

#### ***Plates, Gears, Wear Items and Other Parts***

Since lapping machinery involves abrasive slurries, the plates, gears and carriers are often exposed to a high degree of abrasion and wear. Accordingly, we produce a wide assortment of plates, gears, parts and wear items for our own machines as well as for machines manufactured by our competitors. In addition to producing standard off-the-shelf parts, we have the ability to produce highly customized parts.

### **MANUFACTURING, RAW MATERIALS AND SUPPLIERS**

Our manufacturing activities consist primarily of assembling various commercial and proprietary components into finished systems in Heerde, The Netherlands (diffusion furnaces), Tempe, Arizona (processing and robotic systems), Billerica, Massachusetts (diffusion furnaces) and Carlisle, Pennsylvania (lapping and polishing machines). Polishing consumables, including carriers, templates, gears, wear items and spare parts, are fabricated from various materials in Carlisle, Pennsylvania, from raw materials manufactured to our specifications by our suppliers. Many items, such as proprietary components for systems and lapping plates, are also purchased from suppliers who manufacture these items to our specifications. In addition, certain parts for our automation products are fabricated in our machine shop. All final assembly and system tests 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 the majority of the products in the polishing supplies segment are designed to specific customers' specifications, this segment's facility is equipped to perform a significantly higher percentage of the fabrication processes required in the manufacture of its products and certain of the manufacturing processes are subcontracted out to various third parties. In addition, this segment relies on key suppliers for certain materials, including two steel mills, an injection molder, pad supplier (sole sourced from a Japanese company) and an adhesive manufacturer. During the fourth quarter of 2004, the Company purchased a state of the art laser-cutting tool, to significantly reduce the cost and lead times of producing steel carriers, particularly insert carriers. 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.

Prior to the July 1, 2004 acquisition of the Bruce Technologies product line, the Bruce Technologies horizontal diffusion furnaces were manufactured by an outsource manufacturer. The Company continued to outsource that manufacturing until the assumed outsourcing contract expired November 22, 2004. Since that time, we have been transitioning the order fulfillment and production to facilities in Billerica, MA and Tempe,

AZ. While it is expected that most spare parts order fulfillment and the assembly of various commercial and proprietary components into upgrade kits and complete systems will be completely transitioned to the Company's facilities by January 1, 2005, some work will continue to be outsourced to others, based upon the best cost, delivery and quality.

## **BACKLOG**

Our order backlog decreased to \$7.3 million as of September 30, 2004, from \$7.6 million at the same date of the previous year. The orders included in our backlog are generally credit approved customer purchase orders expected to ship within the next twelve months. The 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 recognition. We schedule production of our systems based on order backlog and customer commitments. However, customers may delay delivery of products or cancel orders suddenly and without sufficient notice, subject to possible cancellation penalties. Due to possible customer changes in delivery schedules and cancellations of orders, our backlog at any particular date is not necessarily indicative of actual sales for any succeeding period. Delays in delivery schedules and/or a reduction of backlog during any particular reporting period could have a material adverse effect on our business, financial position and results of operations. In addition, our backlog does not provide any assurance that we will realize a profit from those orders or indicate in which period revenue will be recognized. See the disclosure under the caption "Results of Operations — Net Revenues" in Item 7 of this report for a breakdown of the backlog by segment.

## **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. Historically, our early product development efforts were accomplished primarily through cooperative efforts with two key customers. 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 continue to be a significant element in our future development projects. Generally, our relationships in such projects are substantially dependent on personal involvement of our President, Mr. Jong S. Whang, and our division general managers.

During 2003, after considerable consultation with a customer, our semiconductor equipment segment received an order for a new small batch vertical furnace, which is subject to customer acceptance. 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. This system is expected to have the same process capability of other vertical furnaces in the marketplace, but with less complex automation and a lower cost than that of our competitors. The development of this small batch vertical furnace is presently moving from the sub-assembly stage to the final assembly phase. Delivery is expected in March, 2005. There can be no assurance that when completed the customer will accept this small batch vertical furnace.

As previously reported, the results of the feasibility work on a new technology Asher pursuant to a joint product development agreement with PSK Tech, Inc. were encouraging. However, continued improvements in existing technologies have delayed our customers' potential requirements for this product and thus further development has been suspended.

During 2003, our polishing supplies segment received a customer order for a double-sided lapping and polishing machine with a larger capacity, compared to our previous machines, and driven by servo motors, rather than the hydraulics used in our then existing largest machine. P.R. Hoffman completed the design and manufacture of this machine, Model 5400 Servo, in 2003, and it was shipped and accepted by the customer in 2004. The Model 5400 is our first lapping and polishing machine capable of processing parts up to 19.5 inches in diameter; has higher capacities for smaller parts; and is equipped with a Windows™ Touch-screen interface to a programmable controller for flexible multi-step control of speeds and pressure, optional thickness control, and crash protection. The 5400 model offers very high precision for a large double-sided planetary machine



and is especially suited to thin and fragile substrates. This design uses servo motors to precisely control the smooth, quiet, three-way planetary motions as well as precise, completely variable control of downward force ranging from as little as 24 pounds to as much as 1½ tons.

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 research and development costs. Our approach to such expenditures has allowed us to produce a number of new products while spending amounts that are generally modest in relation to most semiconductor equipment manufacturers. Our expenditures that have been accounted for as research and development were \$0.5 million (2.6% of revenues) in 2004, \$0.7 million (3.6% of revenues) in 2003 and \$0.5 million (2.4% of revenues) in 2002. These amounts exclude those expenses incurred in connection with customer orders or supported by government grants.

## PATENTS

The following table shows the patents granted or licensed and the expiration date thereof, and the material patents pending, for our products in each of the countries listed below:

<u>Product</u>	<u>Country</u>	<u>Expiration Date or Pending Approval</u>
Atmoscan® .....	United States	August 30, 2005
IBAL Cantilever Trolley .....	United States	July 10, 2015
IBAL Cantilever Trolley .....	United States	June 12, 2018
Photo CVD .....	United States	June 1, 2010
Photo CVD .....	United States	November 15, 2011
Proposed 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
IBAL Model S-300.....	France, Germany, Italy, The Netherlands, United Kingdom	Pending Approval
P. R. Hoffman Insert Carriers(*) ...	United States	July 2, 2006
Boat Transfer and Queuing Furnace Elevator and Method .....	United States	June 16, 2007
Wafer Handling Station .....	United States	March 5, 2006
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
Modular V-CVD Diffusion Furnace(**).....	Canada	December 28, 2005
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.

There can be no assurance that our pending patent applications will be allowed or that the issued or pending patents will not be challenged or circumvented by competitors. There can be no assurance that any of these rights held by us will not be challenged, invalidated or circumvented, or that such rights will provide competitive advantages to us.

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. There can be no assurance that third parties will not assert infringement claims in the future. Our involvement in any patent dispute or other intellectual property dispute could have a material adverse effect on our business. Adverse determinations in any litigation relating to intellectual property could possibly subject us to significant liabilities to third parties, require us to seek licenses from third parties and prevent us from manufacturing and selling one or more of our products. There also can be no assurance in the event of successful claims of infringement that we will be able to obtain licenses on reasonable terms, if at all. Any of these events could have a material adverse effect on our business, financial position and results of operations.

## **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, an internet website, advertising in trade magazines and the distribution of product brochures. We also participate in trade shows, including Semicon West, Semicon Europa, Semicon Japan, Diskcon and one large optics show each year. Our selling activities in Asia, a fast growing market, are enhanced by the active involvement of our President, Jong S. Whang, with the accounts of certain key customers.

In 2004, net revenues were to customers in the following geographic regions: North America 36%, Asia 33% and Europe 31%. One customer represented 10% of net revenues during 2004. Two customers represented 15% and 12% of net revenues, respectively, during 2003. No customer accounted for 10% or more of net revenues during 2002. For a more complete analysis of significant customers and sales to customers by geographic region, see Note 8 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 9 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 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 the semiconductor devices equipment market, the semiconductor wafer market, the solar cell and optical component equipment markets 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 Company's installed base provides some competitive advantage, as customers with a number of our systems can minimize training, spares inventory and other costs by acquiring similar equipment from us and the Company is more likely to receive greater attention from existing customer contacts when it offers new products. VSLI Research Data indicate that the Bruce Technologies product line, acquired by Amtech in 2004, enjoyed a 42% share of the horizontal diffusion furnace installed base.

Our diffusion furnaces, robotic/processing equipment and double-sided lapping and polishing machines primarily compete with those produced by other domestic and foreign original equipment manufacturers, some of which are well-established firms that are larger and have substantially greater financial resources than Amtech. Our diffusion furnaces compete against vertical furnaces on the high-end of the price spectrum. 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 focusing our sales and marketing efforts on the large and stable middle 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 expect to gain marketing synergies and to be more competitive at the upper end of our targeted market. By purchasing our own brands of used diffusion furnaces at opportunistic prices, refurbishing them, and then reselling them with the original manufacturer's warranty, we expect to be able to better defend the lower end of our targeted market. We have also 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 even more competitive in the market. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Trends, Risks and Uncertainties" for a discussion regarding the impact on our diffusion furnace sales of the industry trend of producing smaller chips on larger wafers.

We believe our automation products are generally superior to those of our primary competitors. We believe that patents on the key features of our automation products provide a competitive advantage. We expect our automation product competitors to seek to continually improve the design and performance of their products. There can be 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. 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. The target market for our automation products is customers who want to improve employee safety and reduce scrap. The acquisition of the Bruce Technologies product line has already provided increased sales opportunities and a new customer for our automation products through introductions to their installed base, which tend to be semiconductor fabricators with a large number of horizontal furnaces. We are not aware of any products comparable to our IBAL automation products that are capable of loading Atmoscan® systems, thus providing us with a competitive advantage.

We are not aware of any significant product that directly competes with the Atmoscan®; however, there are several processing systems and various configurations of existing manufacturing products that provide advantages similar to those that we believe the Atmoscan® provides to semiconductor manufacturers. Notwithstanding this competition, we believe that Atmoscan® provides 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.

We believe that we are much larger and financially stronger than most of the other domestic manufacturers of lapping and polishing carriers, which tend to be family-owned businesses. However, we are currently also experiencing price competition from 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 continually updating our product line to keep pace with the rapid changes in our customers' requirements and by providing a higher level of customer service. During September 2004, we completed the installation and began producing steel carriers, including insert carriers, on a newly acquired state of the art laser cutting tool, which is expected to significantly reduce costs and lead times of these products. We have been able to capture a small yet meaningful share of the semiconductor polishing template market, which Rodel, a division of Rohm and Haas, dominates with an estimated 90% market share. Our strategy for competing for template orders is to seek out niche markets and to provide the highest level of customer support and reduced total cost of ownership.

## **EMPLOYEES**

At September 30, 2004, we employed 132 people. Of these employees, 15 were based at our corporate offices and manufacturing facility in Tempe, Arizona; 25 were employed at our manufacturing plant in Carlisle, Pennsylvania; 17 at our manufacturing plant in Billerica, Massachusetts; 54 at our facilities in and near Heerde, The Netherlands; and 21 in our contract semiconductor manufacturing support services business located in Austin, Texas. Of the 25 people employed at our Carlisle, Pennsylvania facility, 14 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 2. *PROPERTIES***

Our semiconductor processing/robotic equipment business and corporate offices are located in 15,700 square feet of office and manufacturing space in Tempe, Arizona. These facilities are leased at a current rate of \$8,096 per month, on a triple net basis, for a term to expire on November 30, 2007. Manufacturing support services are performed in customer facilities.

Our diffusion furnace business is conducted primarily in a 9,900 square foot building that we own, which is located in Heerde, The Netherlands and 12,500 square feet of leased office and warehouse space located in Billerica, MA, with rental payments of \$7,812 per month through the end of the March 31, 2005 expiration date. In November 2004, the Billerica, MA lease was renewed for an additional five years on comparable terms. We also lease an additional 10,000 square feet of manufacturing space in locations near our Heerde plant. These additional facilities are leased at a current rate of \$4,700 per month, for varying terms, the last of which expires on July 31, 2008.

Our polishing supplies business is located in a 21,740 square foot building located in Carlisle, Pennsylvania. These facilities are leased at a current rate of \$10,860 per month, on a triple net basis, for a term that expires on June 30, 2005. We have the option to renew the lease for five successive terms of one year each.

We consider the above facilities suitable and adequate to meet our current requirements.

## **ITEM 3. *LEGAL PROCEEDINGS***

In August 2000, a “P.R. Hoffman Machine Products” was one of 11 companies named in a legal action being brought by North Middleton Township in Carlisle, Pennsylvania, in the Court of Common Pleas, Cumberland County, Pennsylvania, the owner of a landfill allegedly found to be contaminated. We acquired the assets of P.R. Hoffman Machine Products Corporation in an asset transaction consummated on July 1, 1997. The landfill was closed and has not been used by P.R. Hoffman since sometime prior to completion of our acquisition transaction. Therefore, we believe that the named company was the prior owner of the acquired assets. On January 7, 2004, this legal action was dismissed due to the Township’s failure to pursue the action within the statutory time limits.

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

None.



## PART II

### ITEM 5. *MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS*

#### MARKET INFORMATION

Our common stock, par value \$.01 per share ("Common Stock"), began trading on the NASDAQ National Market®, under the symbol "ASYS," on April 18, 2001. Prior to that time, our Common Stock was traded on the NASDAQ SmallCap Market. The following table sets forth the high and low bid price at which the shares of our Common Stock traded for each quarter of 2004 and 2003, as reported by the NASDAQ National Market®.

	Fiscal 2004		Fiscal 2003	
	High	Low	High	Low
First quarter .....	\$7.89	\$4.85	\$3.95	\$2.75
Second quarter .....	6.61	4.91	3.25	2.95
Third quarter .....	5.93	4.47	4.30	2.90
Fourth quarter .....	5.20	4.07	5.67	3.32

#### HOLDERS

As of January 11, 2005, there were 989 stockholders of record of our Common Stock. Based upon a recent survey of brokers, we estimate there were approximately an additional 2,382 beneficial stockholders who held shares in brokerage or other investment accounts as of that date.

#### DIVIDENDS

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

## 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 report. Effective October 1, 2000, we changed our revenue recognition policy. Since revenue is not reported on a consistent basis between years, certain data contained in this report may not be comparable between years.

	FISCAL YEAR ENDED SEPTEMBER 30,				
	2004	2003	2002	2001	2000
	(In thousands, except per share data)				
<b>Operating Data:</b>					
Net revenues . . . . .	\$19,299	\$19,434	\$20,533	\$22,852	\$19,027
Operating income (loss) . . . . .	(2,105)	(245)	77	1,577	1,982
Income (loss) before cumulative effect of change in accounting principle . . . . .	(3,165)	(100)	118	1,153	1,325
Cumulative effect of change in accounting principle, net of tax(1) . . . . .	—	—	—	(690)	—
Net income (loss) . . . . .	(3,165)	(100)	118	463	1,325
<b>Earnings (loss) per share:</b>					
<b>Basic:</b>					
Income (loss) before cumulative effect of change in accounting principle . . . . .	\$ (1.17)	\$ (.04)	\$ .04	\$ .43	\$ .61
Cumulative effect of change in accounting principle, net of tax(1) . . . . .	—	—	—	(.26)	—
Basic earnings (loss) per share . . . . .	\$ (1.17)	\$ (.04)	\$ .04	\$ .17	\$ .61
<b>Diluted:</b>					
Income (loss) before cumulative effect of change in accounting principle . . . . .	\$ (1.17)	\$ (.04)	\$ .04	\$ .41	\$ .56
Cumulative effect of change in accounting principle, net of tax(1) . . . . .	—	—	—	(.25)	—
Diluted earnings (loss) per share . . . . .	\$ (1.17)	\$ (.04)	\$ .04	\$ .16	\$ .56
<b>Pro forma amounts with the change in accounting principle applied retroactively (unaudited):</b>					
Net revenues . . . . .	\$19,299	\$19,434	\$20,533	\$22,852	\$18,908
Net income (loss) . . . . .	(3,165)	(100)	118	1,153	1,061
Net income (loss) per share:					
Basic: . . . . .	\$ (1.17)	\$ (.04)	\$ .04	\$ .43	\$ .49
Diluted: . . . . .	\$ (1.17)	\$ (.04)	\$ .04	\$ .41	\$ .45
<b>Balance Sheet Data:</b>					
Cash and cash equivalents . . . . .	\$ 1,674	\$ 7,453	\$ 8,046	\$ 5,998	\$ 5,785
Working capital . . . . .	7,735	12,727	12,166	11,620	10,934
Total assets . . . . .	16,660	18,399	17,393	18,571	17,483
Total current liabilities . . . . .	4,531	3,259	2,722	4,575	4,667
Long-term obligations . . . . .	474	640	459	411	237
Stockholders' equity . . . . .	11,655	14,499	14,212	13,584	12,580

- (1) Amount gives effect to a non-cash charge of \$690,211, after reduction for income tax benefits of \$410,000, or (\$.26) per basic share, recorded to reflect the cumulative effect of the accounting change as of October 1, 2000, related to the adoption of Securities and Exchange Commission (“SEC”) Staff Accounting Bulletin No. 101, “Revenue Recognition in Financial Statements.”

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

### EXECUTIVE SUMMARY

#### Introduction.

Management's Discussion and Analysis (MD&A) is intended to facilitate an understanding of Amtech's business and results of operations. This MD&A should be read in conjunction with Amtech's Consolidated Financial Statements and the accompanying Notes to Consolidated Financial Statements included elsewhere in this report. MD&A consists of the following sections:

- *Overview:* a summary of Amtech's business and opportunities.
- *Results of Operations:* a discussion of operating results.
- *Financial Condition, Liquidity and Capital Resources:* an analysis of cash flows, sources and uses of cash, contractual obligations and financial position.
- *Contractual Obligations:* a discussion of future 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 the impact of recent pronouncements.
- *Trends, Risks and Uncertainties:* a discussion of significant risks that could affect Amtech's operating results.

#### Overview

We develop, manufacture, market and service wafer and semiconductor fabrication equipment and related parts, supplies and services on a worldwide basis. Customers for our products include semiconductor wafer manufacturers and semiconductor integrated circuit (or chip) manufacturers, who either use the chips they manufacture in their own products or sell them to other companies. Other customers for our products include manufacturers of optical components and solar cells and research and development facilities.

The products offered are grouped into two business segments: the semiconductor equipment segment, which offers horizontal diffusion furnaces, processing/robotic equipment for diffusion furnaces, related spare parts and manufacturing support services to semiconductor fabricators and silicon wafer manufacturers; and the polishing supplies segment, which offers supplies, including carriers and templates, and equipment for lapping and polishing primarily to silicon wafer manufacturers.

Since Amtech is a supplier to the (i) semiconductor industry and (ii) manufacturers of silicon wafers, which are a key raw material in the fabrication of integrated circuits, Amtech's results are driven by worldwide demand for integrated circuits, which in turn depends on end-user demand for consumer electronics. Demand for our products can change significantly from period to period as a result of numerous factors, including, but not limited to, changes in: 1) global and regional economic conditions; 2) supply and demand for semiconductors and the related changes in capacity utilization and production volume of manufacturers of semiconductors, silicon wafers, solar cells and optical components; 3) the profitability of semiconductor manufacturers and their silicon wafer suppliers; and 4) the addition of new product lines, such as the July 1, 2004, acquisition of the Bruce Technologies diffusion furnace. Since over 50% of our consolidated revenues are derived from our operations in The Netherlands, which has the Euro as its functional currency, changes in the value of the currencies in which we do business affect our competitiveness.

The global semiconductor industry is volatile. Demand for semiconductor and silicon wafer manufacturing equipment and related consumable products has been volatile as a result of sudden changes in semiconductor supply and demand and the resulting changes in capacity utilization at our customers. As a result, our business has historically been subject to those cyclical industry conditions, and 2004, 2003 and 2002 were no exception. Customers' delivery and installation schedules on large system orders often add to this volatility. Some of the factors that are not within our control, but can effect the timing of delivery and

installation and therefore revenue volatility, are (i) site preparation, (ii) securing local permits, (iii) installation of other equipment with which our systems must interface, and (iv) availability of our technicians at the time the preceding steps are completed. The table presented in “Results of Operations, Net Revenues” reflects the volatility in our new orders and net revenues, both within and across years, which are caused by changes in the industry climate and the factors discussed above.

Within the global semiconductor equipment market, which is served by both of our business segments, each geographic region exhibits unique characteristics that can cause, and in the past have caused, capital equipment investment patterns to vary significantly from period to period. In 2004, 2003 and 2002, 33%, 44% and 20%, respectively, of our total revenue was attributable to sales in Asia, principally China, Korea and Taiwan. While revenue from Asia declined in 2004, compared to 2003, due to the competitive disadvantage experienced by our Netherlands operation from the strong Euro, revenue from that region were second only to the record level achieved in 2003 and represent the second highest proportion of net revenues from that region since 1996. The higher sales from Asia during 2004 and 2003 are partially due to the fact that China’s economy has been very strong. Another factor is that significant portions of the semiconductor industry’s operations have moved to Asia in order to better serve that rapidly growing semiconductor market in China and to reduce the costs of operations. This is a trend of increasing importance to us and to other suppliers to the industry. One example of this trend is that many semiconductor fabricators have gone fabless, out-sourcing the manufacturing operations to foundries in Taiwan or elsewhere in Asia. As a result, silicon wafer manufacturing in Asia has also increased. For a more complete analysis of sales to customers by geographic region, see Note 8 of the accompanying consolidated financial statements.

We serve niche markets in an industry that experiences on going technological advances. As a result, our future profitability and growth depends on our ability to develop or acquire and market profitable improved or new products and our ability to adapt to industry volatility and fluctuations in the value of the currencies in which we transact business. For these and other reasons, our results of operations for 2004, 2003 and 2002 may not necessarily be indicative of future operating results. We are focusing our major efforts on the following areas:

- Acquisitions: Acquisitions that will either significantly increase our share of the markets we already compete in or that expand the number of semiconductor processes our products can address. The acquisition of Bruce Technologies dramatically increases our share of the horizontal diffusion market and provides us with stronger relationships to several large semiconductor fabs. We continue to engage in discussions with other potential acquisition targets.
- Expansion of product offerings: Since late in 2003, after considerable consultation with a customer and receipt of an order, we have been designing a new small batch vertical furnace, which is subject to customer acceptance. 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. This system is expected to have the same process capability of other vertical furnaces in the marketplace, but with less complex automation and a lower cost than that of our competitors. The market for vertical furnaces is much larger than any of the other markets we currently serve. However, we intend to target research and development and other niche applications first, since the competition in vertical furnaces is fierce and our competitors are much larger with substantially greater financial resources, processing knowledge and advanced technology than Amtech. The development of this small batch vertical furnace is presently moving from the sub-assembly stage to the final assembly phase. Delivery is now expected to be in March 2005. There can be no assurance that when completed the customer will accept this small batch vertical furnace. The cost of the first system is expected to exceed the selling price by \$0.4 million, with most of the excess charged to cost of sales in 2004.
- Cost reduction: During the fourth quarter of 2004, the Company purchased a state of the art laser-cutting tool to significantly reduce the cost and lead times of producing steel carriers, particularly insert carriers. We have and continue to integrate and centralize the payroll, accounting, billing, collections, and accounts payable functions of Bruce Technologies to gain increased efficiencies. Since the end of the year we have begun moving away from the sole-sourced outsourced manufacturing and order fulfillment model of Bruce Technologies and transitioning that order fulfillment and production to facilities in Billerica, MA and Tempe, AZ. While it is expected that most spare parts order fulfillment



and the assembly of various commercial and proprietary components into upgrade kits and complete systems will be completely transitioned to the Company's facilities by January 1, 2005, some work will continue to be outsourced, based upon the best cost, delivery and quality.

- Opportunistic purchases: We have increased the purchasing of our own brands of used diffusion furnaces at opportunistic prices, refurbishing them, and then reselling them with the original manufacturer's warranty in order to better defend the lower end of our targeted market.
- Ventures: Since the end of 2004, we have 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 market.

The following discussion and analysis should be read in conjunction with the Selected Financial Data and the Consolidated Financial Statements and Notes appearing elsewhere in this report.

## RESULTS OF OPERATIONS

**Net Revenues.** Our net revenues for 2004 were \$19.3 million, compared to \$19.4 million in 2003 and \$20.5 million in 2002, representing decreases of 1% in 2004 and 5% in 2003. Our Netherlands operation accounted for approximately 51% of consolidated net revenues and 73% of the net revenues of the semiconductor equipment segment. Our Netherlands operation records all transactions in Euros, its functional currency, which in turn are translated into United States ("U.S.") dollars, our reporting currency. The Euro increased in value relative to the U.S. dollar in both 2004 and 2003. As a result of the decline in the value of the U.S. dollar, consolidated net revenues, and those of the semiconductor equipment segment, were approximately \$2.4 million and \$1.7 million higher in 2004 and 2003, respectively; than they would have been had the exchange rates remained the same as the weighted average exchange rates for 2002. However, the increasing value of the Euro made it more difficult to compete and win orders in Asia, leading to an 11% decline in that region's percentage contribution to consolidated net revenue, offsetting approximately \$2.2 million of the 2004 increase in net revenue just described.

The following table reflects new orders (net of cancellations), shipments and net revenues for each quarter and year during the three years in the period ended September 30, 2004, and the backlog as of the end of those periods, on a consolidated basis, as well as for each of our two business segments:

	Fiscal Quarter				Fiscal Year	Semi-conductor Equipment Segment	Polishing Supplies Segment
	First	Second	Third	Fourth			
	(Dollars in thousands)						
<b>2004:</b>							
New orders(1) (2) .....	\$3,684	\$4,038	\$4,129	\$7,103	\$18,954	\$12,927	\$6,027
Shipments .....	3,744	5,697	5,232	5,136	19,809	13,725	6,084
Net revenues .....	3,921	5,631	4,835	4,912	19,299	13,215	6,084
Ending backlog(3) .....	7,408	5,815	5,109	7,300	7,300	6,185	1,115
<b>2003:</b>							
New orders(1) .....	\$2,165	\$6,477	\$7,498	\$3,027	\$19,167	\$13,495	\$5,672
Shipments .....	4,165	4,785	3,396	6,267	18,613	13,313	5,300
Net revenues .....	4,329	5,448	3,622	6,035	19,434	14,134	5,300
Ending backlog(3) .....	5,748	6,777	10,653	7,645	7,645	6,473	1,172
<b>2002:</b>							
New orders(1) .....	\$2,213	\$ 519	\$6,132	\$5,626	\$14,490	\$ 9,404	\$5,086
Shipments .....	4,373	3,983	4,189	4,925	17,470	12,348	5,122
Net revenues .....	5,457	5,577	4,447	5,052	20,533	15,411	5,122
Ending backlog(3) .....	10,711	5,653	7,338	7,912	7,912	7,112	800

(1) New orders are net of cancellations.

(2) In the 4th quarter and full fiscal year, new orders include approximately \$0.4 million of backlog acquired in the Bruce Technologies acquisition.

- (3) The ending backlogs include deferred revenue, which amounted to \$1.0 million, \$0.5 million, and \$1.4 million as of September 30, 2004, 2003, and 2002, respectively.

Shipments increased by \$1.2 million in 2004, compared to 2003, as a result of approximately \$1.2 million of additional sales from the acquired Bruce Technologies product line acquired in the fourth quarter. Despite this increase in shipments during 2004, net revenues declined by \$0.1 million or 1% to \$19.3 million in 2004 from \$19.4 million in 2003, primarily due to customer caused delays in completing installations and obtaining acceptances on a few large systems that shipped in 2002, on which the revenue was recognized in 2003, and on four systems shipped during 2004 that will not be recognized until 2005. Net revenues of the polishing supplies segment increased by \$0.8 million, primarily in consumables. While the acquisition of Bruce Technology increased the semiconductor equipment net revenues by \$1.2 million, the remaining semiconductor equipment net revenues decreased by \$1.4 million.

*Semiconductor Equipment Revenue.* Our semiconductor equipment segment accounted for 68%, 73% and 75% of net revenues in 2004, 2003 and 2002, respectively. This segment also accounted for 108% and 79% of the operating loss in 2004 and 2003 and 255% of operating income in 2002. The semiconductor and optical component industries' cycles peaked during 2000 and reached bottom in 2002. The semiconductor industry again began to improve during 2003, with new orders (net of cancellations) from this segment reaching \$13.5 million, the second highest in the history of our semiconductor segment. However, this segment's business began to soften again in 2004, when new orders, excluding those acquired with the Bruce Technologies product line, declined by \$.03 million, or .1%. Again, the strong Euro relative to the U.S. dollar caused the cost of our products manufactured in Europe to be higher than those of competitors with production in the United States and Asia. Over 50% of our products have been produced in Europe over the past three years. However, with the acquisition of the Bruce Technologies product line, we expect that our domestic operations will account for the majority of production starting in 2005.

The semiconductor equipment segment's net revenues were \$13.2 million, \$14.1 million and \$15.4 million in 2004, 2003 and 2002, respectively, representing revenue declines of 6% and 8% in 2004 and 2003, respectively. Although shipments increased by \$0.4 million in 2004 to \$13.7 million, from \$13.3 million in 2003, revenue declined in 2004 by \$0.9 million primarily due the \$0.8 million increase in the amount of revenue deferred as a result of additional customer caused delays in completing installations and obtaining acceptances. Certain post-shipment factors that affect the timing of the recognition of revenue are discussed above. Also, see "Revenue Recognition" in Note 1 of the accompanying consolidated financial statements for a summary of our revenue recognition policy and the components of deferred profit. The inclusion of Bruce Technologies for four quarters in 2005, compared to one quarter in 2004, is expected to allow us to report higher revenue in 2005.

*Polishing Supplies Revenue.* Revenues of the polishing supplies segment reached a record \$8.2 million in 2000, as the semiconductor industry reached the peak of its business cycle. This segment reached the bottom of the ensuing cyclical downturn during 2002, with revenue decreasing dramatically to \$5.1 million, before increasing slightly to \$5.3 million in 2003 and by another 15% to reach \$6.1 million in 2004. Increased revenues in 2004 and 2003 result mainly from increased sales of insert carriers. The increase in insert carrier revenue accounted for 92% and 252% of the increase in polishing supplies revenue in 2004 and 2003, respectively.

The following table sets forth certain operational data as a percentage of net revenues for each of the three years in the period ended September 30, 2004:

	<u>Year Ended September 30,</u>		
	<u>2004</u>	<u>2003</u>	<u>2002</u>
Net revenues .....	100.0%	100.0%	100.0%
Cost of sales .....	<u>79.5</u>	<u>75.1</u>	<u>75.7</u>
Gross margin .....	20.5	24.9	24.3
Selling, general and administrative expenses .....	28.6	22.8	21.5
Research and development .....	<u>2.8</u>	<u>3.4</u>	<u>2.4</u>
Operating income (loss) .....	<u>(10.9)%</u>	<u>(1.3)%</u>	<u>0.4%</u>

*Gross Margin.* Consolidated gross margin for 2004 was \$3.9 million, compared to \$4.8 million in 2003 and \$5.0 million in 2002, representing a decrease of \$0.9 million, or 18%, in 2004, and a decrease of \$0.2 million, or 3%, in 2003. In 2004, the gross margin of the semiconductor equipment segment decreased by \$1.2 million, or 33%, primarily due to non-cash charges represented by a \$0.6 million write down of inventories and \$0.5 million increase in the deferral of profit resulting from unexpected delays by one customer in completing the facilities for four systems shipped during the second and third quarters of fiscal 2004. Also contributing to the decline in 2004 gross margin was the \$0.3 million of estimated future losses on the sale of a small batch vertical furnace being designed and manufactured under a contract in cooperation with a significant customer in the electronics industry. The gross margin of the polishing supplies segment increased by \$0.3 million, or 32%, in 2004 due to the increased revenue and the improvement in that segment's gross margin percentage, discussed below.

In 2003, the gross margin of the semiconductor equipment segment decreased by \$0.2 million, or 6%, primarily due to the decline in revenues, described above. On a consolidated basis, this was only partially offset by the \$0.1 million, or 7%, increase in the 2003 gross margin of the polishing supplies segment resulting from higher revenues, compared to 2002.

As a percentage of net revenues, the consolidated gross margin was 20.5% in 2004 and 24.9% in 2003, compared to 24.3% in 2002. The \$0.5 million of gross margins that were deferred in 2004 on a nearly equal amount of deferred revenue, compared to the recognition of \$0.1 million of deferred net revenue in 2003 accounts for approximately 1.7% of the 4.4% decline in gross margins as a percent of revenue. Pursuant to its inventory valuation accounting policy, Amtech valued Bruce Technologies' inventories acquired from Kokusai Semiconductor Corporation at \$0.3 million less than the value at which the seller carried those inventories and charged that amount to cost of sales. As a result, write-downs of excess or obsolete inventory were \$0.3 million higher in 2004, compared to 2003, and accounted for 1.5% of the decline in gross margin as a percentage of revenues in 2004 compared to 2003. In 2004 and 2003, development of a small batch vertical furnace pursuant to a customer purchase order became the most significant project. However, because this system is being built to a customer specification and order, the only significant incremental costs related to this project results from the \$0.3 million of projected costs in excess of the selling price, which has been accounted for as additional cost of sales, representing another 1.5% of the decline in our gross margin percentage. These factors were only partially offset by the improved margins of the polishing supplies segment, which resulted from spreading fixed costs over that segments higher revenue. Inventory write-downs were \$0.3 million, or 1.5% of revenue, and \$0.5 million, or 2.4% of revenue, in 2003 and 2002, respectively, with the reduction as a percentage of revenue more than accounting for the 0.6% improvement in our gross margin percentage in 2003 compared to 2002. Our gross margin has significantly fluctuated in the past and will continue to fluctuate in the future based on several factors including, but not limited to, the severity and duration of industry cycles, the timing of revenue recognition under evolving accounting principles, product mix and overhead absorption levels.

*Selling, General and Administrative Expenses.* Consolidated selling, general and administrative expenses were \$5.5 million in 2004, compared to \$4.4 million in 2003 and 2002. The semiconductor equipment segment accounted for \$1.0 million of the increase in selling, general and administrative expenses, which is attributable to the addition of Bruce Technology in the fourth quarter of fiscal 2004 (\$0.4 million), and increases in selling personnel and related costs (\$0.2 million), administrative personnel costs (\$0.1 million), other selling costs, such as advertising and trade shows, (\$0.1 million). In addition, the higher selling, general and administrative expenses in 2004 were caused by \$0.3 million of increases in other general and administrative expenses, including foreign currency transaction losses (\$0.1 million) and due to the rise in the dollar value of Euro denominated expenses incurred in The Netherlands (\$0.3 million), resulting from the change in the rate used to translate those costs and to a lesser extent travel and other costs associated with the due diligence on and integration of the recent acquisition of Bruce Technologies (\$0.1 million), which were partially offset by a \$0.2 million decline in commissions as a result of a decline in sales through sales representatives, particularly in China. The remaining increase in selling, general and administrative costs in 2004 is attributable to the polishing supplies segment, primarily resulting from commissions and royalties on higher sales of insert carriers.

In 2003, general and administrative costs declined by \$0.4 million primarily due to a reduction in provisions for doubtful accounts, but that reduction was offset by increased selling costs, including commissions (\$0.2 million), personnel costs (\$0.1 million) and other costs, such as tradeshow and advertising

(\$0.1 million). The increase in commissions in 2003 compared to 2002 is attributable to increased sales in territories where we use sales representatives, such as Asia.

Selling, general and administrative expenses as a percentage of net revenues increased dramatically in 2004 to 28.6% from 22.8% in 2003 and 21.5% in 2002, partially because Bruce Technologies selling, general and administrative expenses were approximately 36% of its revenue as a result of certain transition costs that have since been eliminated through the centralization of back office functions and because the increases in expenditures for the other operations described above did not result in proportionately greater revenue.

*Research and Development Expenses.* During 2004, 2003 and 2002, expenditures accounted for as research and development were \$0.5 million, \$0.7 million and \$0.5 million, respectively. The primary reason for the decline in research and development from 2003 to 2004 is that the 2003 costs include certain preliminary conceptual development costs on the small batch vertical furnace, discussed above, prior to receipt of the customer order and thus were expensed. During 2002 and 2001, the most significant projects included in research and development expenses was the development of a new technology, Asher, pursuant to a joint product development agreement with PSK Tech Inc. and development of a new model for our horizontal diffusion furnace product line. As previously reported, the results of the feasibility work on this new technology were encouraging. However, continued improvements in existing technologies have delayed our customers' potential requirements for this product and thus further development has been suspended.

*Operating Income (Loss).* Reduced revenues and gross margins and increased selling, general and administrative costs in 2004 resulted in an operating loss of \$2.1 million, compared to an operating loss of \$0.2 million, or 1% of revenue, in 2003, and an operating income of \$0.1 million, or less than 1% of revenue, in 2002. The 2004 operating loss is primarily comprised of increases in selling, general and administrative expenses, described above, \$0.5 million of operating profit deferred on the four systems that were delivered to a customer during the second and, third quarters, but on which installation could not be completed due to customer delays, \$0.6 million of inventory write-downs primarily related to inventory acquired along with the Bruce Technologies product line, and \$0.3 million of anticipated losses recorded on a customer contract, representing our investment in the development of a small batch vertical diffusion furnace that has the potential to generate significant revenues in the future.

*Interest Income, net.* Net interest income was less than \$0.1 million in 2004, 2003 and 2002. The decrease in net interest income in 2004 and 2003 is primarily the result of a decline in interest rates since 2001 and, to a lesser degree, fluctuations in excess cash available for investment.

*Income Tax Provision.* During 2004 we recorded an income tax provision of \$1.1 million. The provision includes a charge for \$1.8 million resulting from a valuation allowance for the total deferred tax assets at September 30, 2004. In 2003, we recorded an income tax benefit of \$0.1 million, respectively, compared to the income tax provision recorded in 2002 of \$0.1 million. Excluding the 2004 charge of \$1.8 million for the valuation allowance, the effective tax rate as a percentage of income (loss) before income taxes was 34%, 52% and 30% in 2004, 2003 and 2002, respectively. The lower rate in 2004 compared to 2003 is because permanent differences as a percent of pre-tax loss is lower in 2004 than 2003. The significantly higher effective tax rate in 2003 than 2002 is due to the impact of permanent differences between financial reporting and taxable income, primarily the extraterritorial income exclusion of 17%. The significantly lower effective tax rate in 2002 is a result of the fact that more than all of the consolidated operating profit was earned in The Netherlands where there are no state income taxes. In addition, a state income tax benefit arose from operating losses in the U.S. during 2002.

Statement of Financial Accounting Standards ("SFAS") No. 109 "Accounting for Income Taxes" ("SFAS 109") requires that a valuation allowance be established when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the company operates and the length of carry back and carryforward periods. SFAS 109 further states that forming a conclusion that a valuation allowance is not needed is difficult when there is negative evidence such as cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of the review undertaken at September 30, 2004, we concluded that it was appropriate to establish a full valuation allowance for net deferred tax assets.



The valuation allowance will be reversed in future accounting periods if the Company sustains a sufficient level of taxable income to be able to utilize the benefits of the net deferred tax assets.

Our future effective income tax rate depends on various factors, such as tax legislation, the geographic composition of pre-tax income, non-tax deductible expenses and the effectiveness of our tax planning strategies.

*Net Income (Loss).* As a result of the operating results described above, 2004 resulted in a net loss of \$3.2 million, compared to the net loss of \$0.1 million for 2003 and net income reported for 2002 of \$0.1 million. Net income (loss) per diluted share was \$(1.17), \$(.04) and \$.04 in 2004, 2003 and 2002, respectively. Net income (loss) per diluted share was \$(1.17), \$(.04) and \$.04 in 2004, 2003 and 2002, respectively.

## **FINANCIAL CONDITION, LIQUIDITY AND CAPITAL RESOURCES**

As of September 30, 2004 and 2003, cash and cash equivalents were \$1.7 million and \$7.5 million, respectively. The \$3.6 million cost of the acquisition of the Bruce Technologies product line and \$0.9 million of cash used to finance receivables directly related to that operation, but not acquired in that transaction, account for \$4.5 million of the \$5.8 million of cash used during 2004. Our ratio of current assets to current liabilities was 2.7:1 and 4.9:1 at September 30, 2004 and 2003, respectively.

In 2004, net cash used in operating activities was \$1.2 million, compared to cash used by operations of \$0.8 million in 2003 and cash provided by operations of \$2.4 million in 2002. The 2004 net loss (\$3.2 million) was offset by \$1.1 million of non-cash adjustments for depreciation (\$0.5 million) and the write-down of inventory (\$0.6 million) coupled with an increase in accounts payable (\$0.2 million), decrease in deferred taxes (\$1.1 million), and the addition to deferred profit (\$0.5 million). However, the increase in inventories (\$0.3 million), accounts receivable (\$0.5 million) and prepaid expenses (\$0.2 million) contributed to the use of operating cash in 2004.

The 2003 net loss (\$0.1 million) was more than offset by \$0.8 million of non-cash adjustments for depreciation (\$0.5 million) and the write-down of inventory (\$0.3 million). However, the increase in inventories (\$0.9 million), accounts receivable (\$0.1 million) and income taxes receivable (\$0.5 million) resulted in operating activities using \$0.8 million of cash in 2003.

Investing activities consisted of software, computer and equipment purchases and building improvements, which totaled \$1.1 million, \$0.2 million and \$0.5 million in 2004, 2003 and 2002, respectively. In addition, \$3.6 million was invested in the fourth quarter 2004 acquisition of the Bruce Technologies product line, which consisted primarily of \$2.3 million of inventory, \$1.5 million of intangible assets, including non-compete agreements, trademarks and trade names, customer relationships, technology, backlog and goodwill, and \$0.1 million of office equipment. This was offset by the assumption of \$0.3 million of liabilities. Because no trade receivables were acquired in the transaction approximately \$0.9 million and \$0.2 million was used to finance receivables generated during the last quarter of 2004 and the first quarter of 2005, respectively.

Financing activities used \$-0- million in 2004 and provided \$0.3 million and \$-0- million in 2003 and 2002, respectively. In 2003, financing activities consisted mainly of the proceeds from an increase in the mortgage on the building in the Netherlands.

At September 30, 2004, our principal sources of liquidity consisted of \$1.7 million of cash and cash equivalents and approximately \$0.3 million available in a Euro line of credit. Since the only lien on our assets is a \$0.5 million mortgage loan and a security interest in trade receivables of the operation in The Netherlands, we believe that significant amounts of additional liquidity are available from various financing sources. We believe that we have sufficient liquidity for our current operations. One element of our growth strategy is the acquisition of product lines or businesses that complement our existing product lines and business. Another element of that strategy is the development of new products, such as the small batch vertical furnace. Our currently available cash and cash equivalents are expected to be sufficient for existing operations, and planned research and development. However, significant unplanned development of new products or the completion of additional acquisitions may require additional capital resources that are expected to be obtained from one or more sources of financing, such as a private placement, a public offering, working capital loans or term loans from banks or other financial institutions, equipment leasing, mortgage financing and internally generated cash

flow from operations. There can be no assurance of the availability or sufficiency of these or any other source of funding for those purposes.

## CONTRACTUAL OBLIGATIONS

Key suppliers include two steel mills, one domestic and one German, capable of meeting the material specifications we require. As of September 30, 2004, we had unconditional commitments to purchase \$0.5 million of steel, with delivery dates to be determined in the future. Due to minimum order quantities for this steel and long lead time, we have made purchase commitments that may be in excess of future production requirements, and it could take several years to use all of the steel commitments in production of our products. These purchase commitments are not expected to result in any significant losses.

We lease buildings, vehicles and equipment under operating leases. As of September 30, 2004, future minimum rental commitments under non-cancelable operating leases with initial or remaining terms of one year or more totaled \$519,000.

The following table shows minimum lease payments due:

	<u>Less than 1 Year</u>	<u>1-3 Years</u>	<u>3-5 Years</u>	<u>Total</u>
Buildings .....	\$120,624	\$ 19,070	\$ -0-	\$139,694
Vehicles .....	113,819	173,674	58,291	345,784
Equipment .....	<u>11,316</u>	<u>18,768</u>	<u>3,105</u>	<u>33,189</u>
Total .....	<u>\$245,759</u>	<u>\$211,512</u>	<u>\$61,396</u>	<u>\$518,667</u>

## CRITICAL ACCOUNTING POLICIES

“Management’s Discussion and Analysis of Financial Condition and Results of Operations” discusses our consolidated financial statements that have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amount of assets and liabilities at the date of the financial statements, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period.

On an on-going basis, we evaluate our estimates and judgments, including those related to revenue recognition, inventory valuation, accounts receivable collectibility, warranty and impairment of long-lived assets. We base our estimates and judgments on historical experience and on various other factors that we believe to be reasonable under the circumstances. The results of these estimates and judgments form the basis for making conclusions about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

A critical accounting policy is one that is both important to the portrayal of our financial position and results of operations, and also requires management’s most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. These uncertainties are discussed in the section below entitled “Trends, Risks and Uncertainties.” We believe the following critical accounting policies affect the more significant judgments and estimates used in the preparation of our consolidated financial statements.

*Revenue Recognition.* We review product and service sales contracts with multiple deliverables to determine if separate units of accounting are present in the arrangements. Where separate units of accounting exist, revenue is allocated to delivered items equal to the total sales price less the greater of (1) the relative fair value of the undelivered items, and (2) all contingent portions of the sales arrangement.

We recognize revenue when persuasive evidence of an arrangement exists; the product has been delivered and title has transferred, or services have been rendered; the seller’s price to the buyer is fixed or determinable

and collectibility is reasonably assured. For us, this policy generally results in revenue recognition at the following points:

(1) For the semiconductor equipment segment, transactions where legal title passes to the customer upon shipment, we recognize revenue upon shipment for those products where the customer's defined specifications have been met with at least two similarly configured systems and processes for a comparably situated customer. However, a portion of the revenue associated with certain installation-related tasks, equal to the greater of the relative fair value of those tasks or the portion of the contract price contingent upon their completion, generally 10%-20% of the system's selling price (the "hold-back"), and directly related costs, if any, are deferred and recognized into income when the tasks are completed.

(2) For products where the customer's defined specifications have not been met with at least two similarly configured systems and processes, the revenue and directly related costs are deferred at the time of shipment and recognized into income at the time of customer acceptance or when this criterion has been met. We have, on occasion, experienced longer than expected delays in receiving cash from certain customers pending final installation or system acceptance. If some of our customers were to refuse to pay the remaining holdback, or otherwise delay final acceptance or installation, the deferred revenue would not be recognized, adversely affecting our future operating results.

(3) Equipment sold by the polishing supplies segment does not include process guarantees, acceptance criteria or holdbacks; therefore, the related revenue is recorded upon shipment. Our shipping terms for both segments are customarily FOB our shipping point or equivalent terms.

(4) For all segments, sales of spare parts and consumables are recognized upon shipment, as there are no post shipment obligations other than standard warranties.

(5) Service revenues are recognized upon performance of the services requested by the customer. Revenue related to service contracts is recognized ratably over the period of the contract or in accordance with the terms of the contract, which generally coincides with the performance of the services requested by the customer.

*Deferred Tax Asset Valuation Allowance.* We currently have significant net deferred tax assets resulting from expenses not currently deductible for tax purposes, revenues previously recognized for tax purposes and net operating loss carryforwards which will reduce taxable income in future periods. We established a full valuation allowance for net deferred tax assets and recognized a \$1.8 million charge during 2004.

SFAS No. 109 requires a valuation allowance be established when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the company operates and the length of carryback and carryforward periods. It also states that it is difficult to conclude that a valuation allowance is not needed when there is negative evidence such as cumulative losses in recent years. Therefore, the cumulative losses weigh heavily in the overall assessment.

*Inventory Valuation.* We value our inventory at the lower of cost (first-in, first-out method) or net realizable value. We regularly review inventory quantities and record a write-down for excess and obsolete inventory. The write-down is primarily based on historical inventory usage adjusted for expected changes in product demand and production requirements. However, our industry is characterized by customers in highly cyclical industries, rapid technological changes, frequent new product developments and rapid product obsolescence. During 2001 and 2002 there was a significant decrease in worldwide demand for semiconductor capital equipment. Demand for our products has fluctuated significantly in the past, and may do so in the future, which could result in an increase in the cost of inventory or an increase in excess inventory quantities. While inventory turnover in 2004 remains at a level that is within historic norms on a consolidated basis, certain portions of the inventory are at higher levels than what are needed for current operating activities, a condition that may not change until there is further improvement in capital spending by our customers. While the inventories acquired in the Bruce Technologies transaction will require several years to consume in production and through spare parts sales, management believes the write-downs taken are sufficient to protect against future losses, as this product line is receiving greater attention under its current ownership. However, there can be no assurance that future developments will not necessitate further write-downs.

*Allowance for Doubtful Accounts.* We maintain an allowance for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. This allowance is based on historical experience, credit evaluations and specific customer collection issues we have identified. Since a significant portion of our revenues are derived from the sale of high-value systems, our accounts receivable are often concentrated in a relatively few number of customers. A significant change in the liquidity or financial position of any one of these customers could have a material adverse impact on the collectibility of our accounts receivable and our future operating results.

*Warranty.* We provide a limited warranty, generally for 12 to 24 months, to all purchasers of our new products and systems. A provision for the estimated cost of providing warranty coverage is recorded upon shipment of all systems. On occasion, we have been required and may be required in the future to provide additional warranty coverage to ensure that the systems are ultimately accepted or to maintain customer goodwill. While our warranty costs have historically been within our expectations and we believe that the amounts accrued for warranty expenditures are sufficient for all systems sold through September 30, 2004, we cannot guarantee that we will continue to experience a similar level of predictability with regard to warranty costs. In addition, technological changes or previously unknown defects in raw materials or components may result in more extensive and frequent warranty service than anticipated, which could have a material adverse impact on our operating results for the periods in which such additional costs materialize.

*Impairment of Long-lived Assets.* We evaluate whether events and circumstances have occurred that indicate the estimated useful lives of long-lived assets or intangible assets may warrant revision or that the remaining balance may not be recoverable. Goodwill is also tested for impairment at least annually. When factors indicate that an asset should be evaluated for possible impairment, we use an estimate of the related undiscounted net cash flows generated by the asset over the remaining estimated life of the asset in measuring whether the asset is recoverable. We make judgments and estimates used in establishing the carrying value of long-lived or intangible assets. Those judgments and estimates could be modified if adverse changes occurred in the future resulting in an inability to recover the carrying value of these assets. We have not experienced any impairment to long-lived assets during 2004 or 2003. Future adverse changes could be caused by, among other factors, a downturn in the semiconductor industry, a general economic slowdown, reduced demand for our products in the marketplace, poor operating results, the inability to protect intellectual property or changing technologies and product obsolescence.

## **IMPACT OF RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS**

In January 2003, the FASB issued Interpretation No. 46, "Consolidation of Variable Interest Entities, an Interpretation of ARB No. 51." This Interpretation addresses the consolidation by business enterprises of variable interest entities when the equity investors do not have the characteristics of a controlling financial interest (as defined in the Interpretation). In December, 2003, the FASB issued Interpretation No. 46R, "Consolidation of Variable Interest Entities, an Interpretation of ARB No. 51." The FASB deferred the effective date for implementation of this Interpretation until fiscal years ending after March 15, 2004. We believe that we currently have no contractual or other business relationship with a variable interest entity, and therefore, the adoption of this Interpretation did not have a material effect on our financial position or results of operations.

In November 2004, the FASB issued SFAS No. 151, "Inventory Costs," which amends the guidance in ARB No. 43, Chapter 4, "Inventory Pricing," to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs and wasted material. This Statement requires that those items be recognized as current-period charges regardless of whether they meet the criterion of "so abnormal." In addition, this Statement requires allocation of fixed production overhead to the costs of conversion be based on the normal capacity of the production facilities. The company is currently evaluating the provisions of SFAS No. 151 and will adopt it on November 1, 2005, as required. We believe the adoption of this Statement will not have a material effect on our financial position or results of operations.

In December 2004, the FASB issued SFAS No. 123R, "Share-Based Payments", which amends SFAS No. 123, "Accounting for Stock-based Compensation". This statement requires companies to expense the fair value of employee stock options and similar awards, and is effective for periods beginning after



June 15, 2005. The company will adopt the provisions of SFAS No. 123R on July 1, 2005. See the pro forma in Note 1 of the Consolidated Financial Statements for the impact of this statement.

## **TRENDS, RISKS AND UNCERTAINTIES**

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

The revenues of our semiconductor equipment segment, which accounts for approximately three quarters of our consolidated revenues, is comprised of sales of horizontal diffusion furnaces and our processing/robotic product line. Our processing/robotic product line is 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 to use than the horizontal diffusion furnaces in certain manufacturing processes of smaller chips on larger wafers. Because of this trend, we had expected that demand for our horizontal diffusion furnaces would decline. We believe this trend has yet not adversely affected us to the extent originally expected primarily because:

- we have experienced continued demand from manufacturers that do not require the more expensive vertical furnaces, such as from manufacturers of analog, power management, discrete and MEMS chips and micro-controllers used in a number of consumer applications, including wireless phones;
- China's significant investments in its semiconductor industry have resulted in increased sales of our horizontal furnaces there;
- certain larger equipment manufacturers have decided to de-emphasize their horizontal product line and we have acquired the Bruce Technologies product line, thereby allowing us to increase our market share;
- we are pursuing alternative markets, such as solar cell manufacturers and certain research and development facilities; and
- we believe that because of improvements in automation for horizontal diffusion furnaces, such as our robotic product line, and due to the significantly higher cost of vertical furnaces, horizontal diffusion furnaces are becoming a more acceptable alternative to the vertical furnaces than they previously had been for certain devices.

However, to the extent that the trend to use vertical diffusion furnaces over horizontal diffusion furnaces continues, our revenues may decline and our corresponding ability to generate income may be adversely affected.

***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. 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 revenues.

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. 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.

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

We are the beneficiary of a life insurance policy on the life of our President and Chief Executive Officer, Mr. J.S. Whang, in the amount of \$1,000,000, 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.

In addition, historically, our product development has been accomplished through cooperative efforts with two key customers. Our relationship with one of these customers, as well as with our joint development partner for the new technology Asher, is substantially dependent on personal relations established by Mr. Whang. 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.

We also depend on the management efforts of our officers and other key personnel and on our ability to attract and retain key personnel. Most of our products, other than the Atmoscan® and products acquired in the P.R. Hoffman and Bruce Technologies' acquisitions were developed by our own personnel. We presently employ two engineers at our Tempe, Arizona plant, including one with a Ph.D. One engineer is employed at our Billerica, Massachusetts plant. We employ ten engineers, including two with Ph.D.'s, at our Netherlands operation. These employees design and support the horizontal diffusion furnace and conveyor furnace product lines manufactured in the Netherlands and the related Process/Robotic products manufactured in Tempe. 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.

***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 revenues 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.

***Our current capital structure could delay, defer or prevent a change of control.***

We are authorized to issue up to 100,000,000 shares of common stock and up to 100,000,000 shares of preferred stock. As of December 12, 2004, there were 2,705,121 shares of common stock outstanding. Authorized but unissued common stock may be issued for such consideration as the board of directors determines to be adequate. The board of directors may issue preferred stock with such rights, preferences, privileges and restrictions as they determine, without shareholder vote. Although we do not currently intend to issue any shares of our preferred stock, there can be no assurance that we will not do so in the future. Shareholders may or may not be given the opportunity to vote thereon, depending upon the nature of any such transactions, applicable law, the rules and policies of the national securities exchange on which the common stock or preferred stock, as the case may be, is then trading, if any, and the judgment of the board of directors. Shareholders have no preemptive rights to subscribe for newly issued shares of our capital stock.

On May 17, 1999, we declared a dividend distribution of one preferred share purchase right for each outstanding share of common stock. The dividend was payable on June 9, 1999 to stockholders of record as of the close of business on that date. Each right entitles the registered holder to purchase one one-hundredth of a share of Series A Participating Preferred Stock, subject to adjustment, at a price of \$8.50 per one one-hundredth of a share of Preferred Stock, subject to adjustment. The rights issuance was adopted as protection against a takeover by a third party.

Mr. Whang and certain other key employees have severance arrangements that require us to make significant lump sum payments in the event of a change of control in ownership.

Having the outstanding rights, and a substantial number of authorized and unreserved shares of common stock, preferred stock and severance arrangements with key employees could have the effect of making it more difficult for a third party to acquire a majority of our outstanding voting stock. Management could use the additional shares to resist a takeover effort even if the terms of the takeover offer are favored by a majority of the independent shareholders. This could delay, defer or prevent a change in control.

***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 the 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; have additional pending patent applications relating to some of our products and technologies; and license the right to manufacture certain products under patents owned by third parties, some of which are on a non-exclusive basis. 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. The owner of the patent from whom we license the right to manufacture insert carriers may grant licenses to our competitors, diminishing or eliminating any competitive advantage we may have. 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.

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 agreements with our customers, suppliers, employees and consultants and through other security measures. We also rely on trade secret protection for our technology, in part through confidentiality agreements with employees, consultants and third parties. 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, 2004, receivables from one customer comprised 15% of our accounts receivable. A concentration of our receivables from 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.

***If any of our customers cancel or fail to accept a large system order, our financial position and results of operations could be materially 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. In light of the significant dollars associated with larger system sales, should any of these orders be cancelled prior to shipment, or not be accepted by the customer, our financial position and results of operations could be materially adversely affected.

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

During 2004, 64% of our sales were made to customers outside of North America as follows:

- Asia (including Korea, People's Republic of China, Taiwan, Japan, Singapore, Indonesia, Malaysia, Australia and India) — 33%
- Europe (including 1% or less to Israel and Africa) — 31%

Because of our significant dependence on international revenues, 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 a loss of \$0.1 million during 2004 and gains of \$0.1 million and \$0.2 million during 2003 and 2002, respectively, 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, Tempres Systems, has conducted its operations in the Netherlands since 1995. 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 revenues and costs.

***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, revenues, 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 revenues.

***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 potential acquisitions.***

We continually evaluate potential acquisitions. We make acquisitions of, or significant investments in, other businesses with synergistic products, services and technologies. 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 stockholders, 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.

***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 to supply 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 needed for carriers to the tolerances that we require, 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 laser cutting, 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 has 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 systems exceeds \$1 million, the delay in the shipment of even a single system could cause significant variations in quarterly revenues, 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.***

On September 13, 2000, we issued 383,000 shares of common stock, and warrants to purchase an aggregate of up to 59,300 shares of common stock, in a private placement pursuant to a Stock and Warrant Purchase Agreement. We received net proceeds of \$4.6 million, after deducting placement agents', legal, accounting and registration fees. Those proceeds have been used to fund our growth initiatives. While we believe that current cash balances, the small line of credit and cash flows generated from our operations provide adequate working capital for the foreseeable future, additional financing is expected to be required 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.

***If our securities become ineligible for trading on the NASDAQ system, they might be subject to Rule 15c-9 of the Securities Exchange Act of 1934, which imposes additional sales practice requirements on broker-dealers who sell such securities to persons other than established customers and accredited investors.***

While our common stock is now included on the NASDAQ National Market®, continued listing on NASDAQ will depend on our ability to meet certain eligibility requirements established from time to time by the NASDAQ National Market® or the NASDAQ SmallCap Market. Loss of NASDAQ eligibility could result from material operating losses, or if the market price of our common stock falls below \$1.00 per share. For transactions covered by the rule, the broker-dealer must make a special suitability determination for the purchaser and receive the purchaser's written consent to the transaction prior to the sale. The rule may adversely affect the ability of broker-dealers to sell our securities, and consequently may limit the public market for, and the trading price of, our common stock.

***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. Interpretations of the Public Company Accounting Oversight Board ("PCAOB") of 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 as they are interpreted by the PCAOB no later than September 30, 2005. Estimates of complying with these requirements approximate \$0.5 million in the first year and fifty percent of that amount in each ensuing year. 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.

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

Recent terrorist attacks in the United States, as well as events occurring in response or connection to them, including, without limitation, 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 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 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, but not limited to, 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 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

We are exposed to financial market risks, including changes in foreign currency exchange rates and interest rates. Our operations in the United States are conducted in U.S. dollars. Our operation in The Netherlands, a component of the semiconductor equipment segment, conducts business primarily in the Euro and the U.S. dollar. The functional currency of our Netherlands operation is the Euro. The functional currency for all other operating units is the U.S. dollar.

During 2004, approximately \$3.4 million, or 18% of our net revenues, were transacted in a currency other than the functional currency of the operating unit generating that revenue. That exposure to the risk of changing foreign currency exchange rates was partially offset by transacting purchases during the year equal to approximately \$1.2 million, or 8% of our cost of sales, in a currency other than the functional currency of the operating unit making the purchase. As of September 30, 2004, we did not hold any stand-alone or separate derivative instruments. We recorded a loss of \$0.1 million during 2004 and gains of \$0.1 million and \$0.2 million during 2003 and 2002, respectively, as a result of foreign currency transactions. Our investment in and advances to our Netherlands operation totals \$2.6 million. A 10% change in the value of the Euro relative to the U.S. dollar would cause a \$0.3 million foreign currency translation adjustment, a type of other comprehensive income (loss), which would be a direct adjustment to our stockholders' equity.

When the value of the Euro increases relative to the value of the U.S. dollar, our operation in The Netherlands becomes less competitive outside the European market, as it must raise prices to those customers that normally make purchases in U.S. dollars in order to maintain the same profit margins. This was the situation in 2004, which contributed to the \$2.2 million decrease in revenues from Asia to \$6.4 million in 2004

as compared to \$8.6 million in 2003. When this occurs, this operation attempts to have transactions denominated in the Euro and to increase its purchases denominated in U.S. dollars, which become less expensive, but there are practical limits to the effectiveness of these strategies. When the value of the Euro declines relative to the value of the U.S. dollar, our operation in The Netherlands can be more competitive against United States based equipment suppliers, as the cost of purchases denominated in U.S. dollars becomes more expensive. In 2004, the purchases and sales of this foreign operation that were denominated in currencies not linked to its functional currency, including U.S. dollars, were approximately \$3.4 million and \$1.2 million, respectively. In 2003, the purchases and sales of this foreign operation that were denominated in currencies not linked to its functional currency, including U.S. dollars, were approximately \$3.2 million and \$1.6 million, respectively. Most of those purchases were denominated in U.S. dollars and provide a partial hedge against fluctuations in exchange rates on sales denominated in that currency. Because it is difficult to predict the volume of U.S. dollar denominated transactions arising from our Netherlands operation, we do not hedge against the effects of exchange rate changes on future transactions. The Euro was at a relatively high value relative to the U.S. dollar at the end of 2004, leaving our Netherlands operation at a competitive disadvantage compared to other suppliers based in the United States.

**ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

(a) The following documents are filed as part of this Annual Report on Form 10-K:

	<u>Page</u>
(1) Financial Statements:	
Report of Independent Registered Public Accounting Firm .....	36
Consolidated Balance Sheets: September 30, 2004 and 2003 .....	37
Consolidated Statements of Operations: Years ended September 30, 2004, 2003 and 2002	38
Consolidated Statements of Stockholders' Equity and Comprehensive Income (Loss):	
Years ended September 30, 2004, 2003 and 2002 .....	39
Consolidated Statements of Cash Flows: Years ended September 30, 2004, 2003 and 2002	40
Notes to Consolidated Financial Statements .....	41



## **REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

The Board of Directors and Stockholders  
Amtech Systems, Inc.:

We have audited the accompanying consolidated balance sheets of Amtech Systems, Inc. and subsidiaries (the Company) as of September 30, 2004 and 2003, and the related consolidated statements of operations, stockholders' equity and comprehensive income (loss) and cash flows for each of the years in the three-year period ended September 30, 2004. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Amtech Systems, Inc. and subsidiaries as of September 30, 2004 and 2003, and the results of their operations and their cash flows for each of the years in the three-year period ended September 30, 2004, in conformity with accounting principles generally accepted in the United States of America.

/s/ KPMG LLP

Phoenix, Arizona  
January 10, 2005

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**CONSOLIDATED BALANCE SHEETS**

	September 30,	
	2004	2003
<b>ASSETS</b>		
<b>CURRENT ASSETS:</b>		
Cash and cash equivalents .....	\$ 1,674,352	\$ 7,453,069
Accounts receivable (less allowance for doubtful accounts of \$188,000 and \$176,000, at September 30, 2004 and 2003, respectively) .....	3,629,177	3,005,128
Inventories .....	5,993,837	3,893,886
Deferred income taxes .....	—	980,000
Income taxes receivable .....	611,333	460,000
Prepaid expenses .....	357,475	193,615
Total current assets .....	12,266,174	15,985,698
PROPERTY, PLANT AND EQUIPMENT — net .....	2,220,172	1,503,074
DEFERRED INCOME TAXES — long term .....	—	150,000
INTANGIBLE ASSETS — net .....	1,343,171	31,728
GOODWILL — net .....	816,639	727,837
OTHER ASSETS .....	13,374	705
<b>TOTAL ASSETS .....</b>	<b><u>\$16,659,530</u></b>	<b><u>\$18,399,042</u></b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
<b>CURRENT LIABILITIES:</b>		
Accounts payable .....	\$ 1,459,197	\$ 1,221,327
Current maturities of long term debt .....	19,730	—
Accrued compensation and related taxes .....	743,600	626,426
Accrued warranty expense .....	260,332	321,300
Deferred profit .....	1,031,441	534,082
Customer deposits .....	210,803	226,959
Accrued loss on contract .....	363,862	41,633
Other accrued liabilities .....	441,979	287,428
Total current liabilities .....	4,530,944	3,259,155
LONG-TERM OBLIGATIONS .....	473,510	640,490
Total liabilities .....	5,004,454	3,899,645
<b>COMMITMENTS AND CONTINGENCIES (Notes 4 and 7)</b>		
<b>STOCKHOLDERS' EQUITY:</b>		
Preferred stock; no specified terms; 100,000,000 shares authorized; none issued .....	—	—
Common stock; \$0.01 par value; 100,000,000 shares authorized; shares issued and outstanding: 2,705,121 at September 30, 2004 and 2,698,421 at September 30, 2003 .....	27,051	26,984
Additional paid-in capital .....	12,887,986	12,873,039
Accumulated other comprehensive income .....	500,275	194,338
Retained earnings (Accumulated deficit) .....	(1,760,236)	1,405,036
Total stockholders' equity .....	11,655,076	14,499,397
<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY .....</b>	<b><u>\$16,659,530</u></b>	<b><u>\$18,399,042</u></b>

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

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**

	Year Ended September 30,		
	2004	2003	2002
Revenues, net of returns and allowances .....	\$19,298,897	\$19,433,534	\$20,532,768
Cost of sales .....	15,350,214	14,598,488	15,536,264
Gross margin .....	3,948,683	4,835,046	4,996,504
Selling, general and administrative .....	5,521,771	4,430,418	4,422,352
Research and development .....	531,609	650,051	497,020
Operating income (loss) .....	(2,104,697)	(245,423)	77,132
Interest income, net .....	3,425	35,744	91,039
Income (loss) before income taxes .....	(2,101,272)	(209,679)	168,171
Income tax provision (benefit) .....	1,064,000	(110,000)	50,000
<b>NET INCOME (LOSS) .....</b>	<b><u><u>\$(3,165,272)</u></u></b>	<b><u><u>\$ (99,679)</u></u></b>	<b><u><u>\$ 118,171</u></u></b>
<b>EARNINGS (LOSS) PER SHARE:</b>			
Basic:			
Basic earnings (loss) per share .....	<u><u>\$ (1.17)</u></u>	<u><u>\$ (.04)</u></u>	<u><u>\$ .04</u></u>
Diluted:			
Diluted earnings (loss) per share .....	<u><u>\$ (1.17)</u></u>	<u><u>\$ (.04)</u></u>	<u><u>\$ .04</u></u>
Number of shares used in per share calculations:			
Basic .....	2,702,060	2,692,222	2,683,030
Diluted .....	2,702,060	2,692,222	2,765,553

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

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**  
**AND COMPREHENSIVE INCOME (LOSS)**

	<u>Common Stock</u>		<u>Additional Paid-In Capital</u>	<u>Accumulated Other Comprehensive Income (Loss)</u>	<u>Retained Earnings (Accumulated Deficit)</u>	<u>Total Stockholders' Equity</u>
	<u>Number of Shares</u>	<u>Amount</u>				
<b>BALANCE AT</b>						
<b>SEPTEMBER 30, 2001</b>	2,649,171	\$26,492	\$12,539,040	\$(368,242)	\$ 1,386,544	\$13,583,834
Net income .....	—	—	—	—	118,171	118,171
Translation adjustment...	—	—	—	188,603	—	188,603
Comprehensive income						<u>306,774</u>
Common Stock issued pursuant to P.R.						
Hoffman earn-out .....	30,600	306	309,523	—	—	309,829
Stock options exercised ..	<u>8,800</u>	<u>88</u>	<u>11,152</u>	<u>—</u>	<u>—</u>	<u>11,240</u>
<b>BALANCE AT</b>						
<b>SEPTEMBER 30, 2002</b>	<u>2,688,571</u>	<u>26,886</u>	<u>12,859,715</u>	<u>(179,639)</u>	<u>1,504,715</u>	<u>14,211,677</u>
Net loss .....	—	—	—	—	(99,679)	(99,679)
Translation adjustment...	—	—	—	493,963	—	493,963
Minimum pension liability adjustment .....	—	—	—	(119,986)	—	<u>(119,986)</u>
Comprehensive income						<u>274,298</u>
Stock options exercised ..	<u>9,850</u>	<u>98</u>	<u>13,324</u>	<u>—</u>	<u>—</u>	<u>13,422</u>
<b>BALANCE AT</b>						
<b>SEPTEMBER 30, 2003</b>	<u>2,698,421</u>	<u>26,984</u>	<u>12,873,039</u>	<u>194,338</u>	<u>1,405,036</u>	<u>14,499,397</u>
Net loss .....	—	—	—	—	(3,165,272)	(3,165,272)
Translation adjustment...	—	—	—	185,951	—	185,951
Minimum pension liability adjustment .....	—	—	—	119,986	—	<u>119,986</u>
Comprehensive loss ...						<u>(2,859,335)</u>
Stock options exercised ..	<u>6,700</u>	<u>67</u>	<u>14,947</u>	<u>—</u>	<u>—</u>	<u>15,014</u>
<b>BALANCE AT</b>						
<b>SEPTEMBER 30, 2004</b>	<u>2,705,121</u>	<u>\$27,051</u>	<u>\$12,887,986</u>	<u>\$ 500,275</u>	<u>\$(1,760,236)</u>	<u>\$11,655,076</u>

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

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

	<u>Year Ended September 30,</u>		
	<u>2004</u>	<u>2003</u>	<u>2002</u>
<b>OPERATING ACTIVITIES</b>			
Net income (loss) .....	\$(3,165,272)	\$ (99,679)	\$ 118,171
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization .....	510,271	483,997	447,321
Write-down of inventory .....	641,202	297,052	528,153
Provision for doubtful accounts .....	26,172	47,514	372,058
Loss on disposals of long-lived assets .....	—	9,029	—
Gain from merger of pension plan .....	(54,424)	—	—
Deferred income taxes .....	1,130,000	2,000	393,000
Changes in operating assets and liabilities:			
Accounts receivable .....	(540,540)	(78,603)	881,332
Inventories .....	(268,494)	(865,808)	1,382,943
Prepaid expenses and other assets .....	(156,736)	(93,740)	(14,645)
Accounts payable .....	194,175	223,815	(24,675)
Accrued liabilities and customer deposits .....	195,535	20,430	(556,595)
Deferred profit .....	464,589	(209,263)	(973,010)
Income taxes receivable .....	(142,200)	(508,575)	(114,629)
Net cash provided by (used in) operating activities .....	<u>(1,165,722)</u>	<u>(771,831)</u>	<u>2,439,424</u>
<b>INVESTING ACTIVITIES</b>			
Purchases of property, plant and equipment .....	(1,079,111)	(206,307)	(464,322)
Investment in Bruce Technologies, Inc. ....	<u>(3,598,911)</u>	<u>—</u>	<u>—</u>
Net cash used in investing activities .....	<u>(4,678,022)</u>	<u>(206,307)</u>	<u>(464,322)</u>
<b>FINANCING ACTIVITIES</b>			
Common stock issued .....	15,014	13,422	11,240
Borrowings on mortgage loan .....	<u>—</u>	<u>255,713</u>	<u>—</u>
Net cash provided by financing activities .....	<u>15,014</u>	<u>269,135</u>	<u>11,240</u>
EFFECT OF EXCHANGE RATE CHANGES ON CASH ...	<u>50,013</u>	<u>116,409</u>	<u>61,201</u>
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS .....	(5,778,717)	(592,594)	2,047,543
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR .....	<u>7,453,069</u>	<u>8,045,663</u>	<u>5,998,120</u>
CASH AND CASH EQUIVALENTS, END OF YEAR .....	<u><u>\$ 1,674,352</u></u>	<u><u>\$7,453,069</u></u>	<u><u>\$8,045,663</u></u>
Supplemental Cash Flow Information:			
Cash paid (received) during the year for:			
Interest expense .....	\$ 27,576	\$ 34,414	\$ 16,926
Income taxes paid (refunded) — net .....	85,000	383,000	(209,000)
Non-Cash Items:			
Common stock issued pursuant to PR Hoffman acquisition ...	\$ —	\$ —	\$ 309,829
Minimum pension liability adjustment .....	119,986	(119,986)	—

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



**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**FOR THE YEARS ENDED SEPTEMBER 30, 2004, 2003 AND 2002**

**1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

*Nature of Operations and Basis of Presentation* — Amtech Systems, Inc., an Arizona corporation (“Amtech”), and its wholly-owned subsidiaries; P. R. Hoffman Machine Products, Inc. (“P. R. Hoffman”) and Bruce Technologies, Inc. (“Bruce Technologies”), based in the United States; and Tempres Systems, Inc. (“Tempres”) based in The Netherlands, comprise the “Company.” Amtech designs, assembles, sells and installs capital equipment and related consumables used in the manufacture of wafers of various materials, primarily silicon wafers for the semiconductor industry, and in certain semiconductor fabrication processes. These products are sold to manufacturers of silicon wafers and semiconductors worldwide, particularly in the United States, Asia and northern Europe. In addition, Amtech provides semiconductor manufacturing support services.

Amtech serves a niche market in an industry that experiences rapid technological advances, and which in the past has been very cyclical. Therefore, Amtech’s future profitability and growth depend on its ability to develop or acquire and market profitable new products, and on its ability to adapt to cyclical trends.

The accompanying consolidated financial statements include the accounts of Amtech and its wholly-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation. Unless otherwise noted, all references to a year refer to Amtech’s fiscal year, which ends on September 30th.

*Use of Estimates* — The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the year. Actual results could differ from those estimates.

*Reclassifications* — Certain amounts in the 2003 and 2002 consolidated financial statements have been reclassified to conform to the 2004 presentation.

*Revenue Recognition* — The Company reviews product and service sales contracts with multiple deliverables to determine if separate units of accounting are present in the arrangements. Where separate units of accounting exist, revenue is allocated to delivered items equal to the total sales price less the greater of (1) the relative fair value of the undelivered items, and (2) all contingent portions of the sales arrangement.

We recognize revenue when persuasive evidence of an arrangement exists; the product has been delivered and title has transferred, or services have been rendered; the seller’s price to the buyer is fixed or determinable and collectibility is reasonably assured. For us, this policy generally results in revenue recognition at the following points:

(1) For the semiconductor equipment segment, transactions where legal title passes to the customer upon shipment, we recognize revenue upon shipment for those products where the customer’s defined specifications have been met with at least two similarly configured systems and processes for a comparably situated customer. However, a portion of the revenue associated with certain installation related tasks, equal to the greater of the relative fair value of those tasks or the portion of the contract price contingent upon their completion, generally 10%-20% of the system’s selling price (the “hold-back”), and directly related costs, if any, are deferred and recognized into income when the tasks are completed.

(2) For products where the customer’s defined specifications have not been met with at least two similarly configured systems and processes, the revenue and directly related costs are deferred at the time of shipment and recognized into income at the time of customer acceptance or when this criterion has been met. We have, on occasion, experienced longer than expected delays in receiving cash from certain

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**FOR THE YEARS ENDED SEPTEMBER 30, 2004, 2003 AND 2002 — (Continued)**

customers pending final installation or system acceptance. If some of our customers were to refuse to pay the remaining holdback, or otherwise delay final acceptance or installation, the deferred revenue would not be recognized, adversely affecting our future operating results.

(3) Equipment sold by the polishing supplies segment does not include process guarantees, acceptance criteria or holdbacks; therefore, the related revenue is recorded upon shipment. Our shipping terms for both segments are customarily FOB our shipping point or equivalent terms.

(4) For all segments, sales of spare parts and consumables are recognized upon shipment, as there are no post shipment obligations other than standard warranties.

(5) Service revenues are recognized upon performance of the services requested by the customer. Revenue related to service contracts is recognized ratably over the period of the contract or in accordance with the terms of the contract, which generally coincides with the performance of the services requested by the customer.

The components of deferred profit are as follows:

	September 30,		
	2004	2003	2002
Deferred Revenues .....	\$1,130,796	\$626,265	\$1,442,215
Deferred Costs .....	99,355	92,183	762,285
	<u>\$1,031,441</u>	<u>\$534,082</u>	<u>\$ 679,930</u>

Equipment sold by the polishing supplies segment does not include process guarantees or acceptance criteria; therefore, the related revenue is recorded upon shipment. For all segments, sales of spare parts and consumables are recognized upon shipment, as there are no post shipment obligations other than standard warranties. Service revenues are recognized as services are performed. Revenue related to service contracts is recognized ratably over the period of the contract, which generally coincides with the performance of the services requested by the customer.

*Cash Equivalents* — Cash equivalents consist of money market mutual funds, time certificates of deposit and U.S. treasury bills. The Company considers certificates of deposit and treasury bills to be cash equivalents if their original maturity is 90 days or less.

*Concentrations of Credit Risk* — Financial instruments that potentially subject Amtech to significant concentrations of credit risk consist principally of cash equivalents and trade accounts receivable. The Company invests in a variety of financial instruments with high quality financial institutions, such as, money market mutual funds, certificates of deposit and U.S. treasury bills. Amtech's customers consist of semiconductor manufacturers located throughout the world. The Company manages credit risk by performing ongoing credit evaluations of its customers' financial condition, by requiring significant partial payments or letters of credit prior to shipment where appropriate and by actively monitoring collections. Amtech maintains a reserve for potentially uncollectible receivables based on its assessment of collectibility. In addition, the Company utilizes letters of credit to mitigate credit risk when appropriate.

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**FOR THE YEARS ENDED SEPTEMBER 30, 2004, 2003 AND 2002 — (Continued)**

The following is a summary of the activity in the Company's allowance for doubtful accounts during the years ended September 30, 2004, 2003 and 2002:

	<b>Year Ended September 30,</b>		
	<b>2004</b>	<b>2003</b>	<b>2002</b>
Balance at beginning of year . . . . .	\$176,000	\$152,000	\$630,000
Charged to expense . . . . .	26,172	47,514	372,058
Recoveries . . . . .	(14,172)	(23,514)	(850,058)
Balance at end of year . . . . .	<u>\$188,000</u>	<u>\$176,000</u>	<u>\$152,000</u>

As of September 30, 2004, receivables from one customer comprised 15% of accounts receivable. As of September 30, 2003, receivables from three customers comprised 18%, 15% and 10%, respectively, of accounts receivable. Management believes the amounts outstanding at September 30, 2004, from these customers, are fully collectible. In addition, 57% of the work-in-process inventory ("WIP") at September 30, 2004 is attributable to a single customer. The systems ordered by that customer are part of a five-system order, which began shipping during the second quarter of 2004.

*Inventories* — Inventories are stated at the lower of cost (first-in, first-out method) or net realizable value. The components of inventories are as follows:

	<b>September 30,</b>	
	<b>2004</b>	<b>2003</b>
Purchased parts and raw materials . . . . .	\$4,161,847	\$2,391,270
Work-in-process . . . . .	1,185,428	1,011,717
Finished goods . . . . .	<u>646,562</u>	<u>490,899</u>
	<u>\$5,993,837</u>	<u>\$3,893,886</u>

*Property, Plant and Equipment* — Maintenance and repairs are charged to expense as incurred. The costs of additions and improvements are capitalized. The cost of property retired or sold and the related accumulated depreciation are removed from the applicable accounts when disposition occurs and any gain or loss is recognized. Depreciation is computed using the straight-line method. Useful lives for equipment, machinery and leasehold improvements range from three to seven years; for furniture and fixtures from five to ten years; and for buildings twenty years. Depreciation and amortization expense was \$450,000, \$467,000 and \$361,000 in 2004, 2003 and 2002, respectively.

In accordance with Financial Accounting Standards Board ("FASB") Statement of Financial Accounting Standards ("SFAS") No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets," long-lived assets are reviewed for impairment whenever events or circumstances indicate that the carrying amount of the asset may not be recoverable. If the sum of the undiscounted expected cash flows from an asset to be held and used in operations is less than the carrying value of the asset, an impairment loss is recognized. The Company has not recognized any impairment losses on its long-lived assets during 2004, 2003 or 2002.

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**FOR THE YEARS ENDED SEPTEMBER 30, 2004, 2003 AND 2002 — (Continued)**

The following is a summary of property, plant and equipment:

	September 30,	
	2004	2003
Building and leasehold improvements .....	\$ 945,146	\$ 817,651
Equipment and machinery .....	1,839,007	1,702,913
Furniture and fixtures .....	2,287,264	1,428,191
	5,071,417	3,948,755
Accumulated depreciation and amortization .....	(2,851,245)	(2,445,681)
	<u>\$ 2,220,172</u>	<u>\$ 1,503,074</u>

*Goodwill* — On October 1, 2002, the Company adopted SFAS No. 142, “Goodwill and Other Intangible Assets.” Under SFAS No. 142, goodwill and intangible assets with indefinite lives are no longer subject to amortization, but are tested for impairment at least annually. Accordingly, the Company reviews goodwill for impairment on an annual basis, or more frequently if circumstances dictate. The Company has completed both the initial impairment testing required by SFAS No. 142 and its updated annual impairment testing, noting no indication of impairment associated with the recorded goodwill balance of \$817,000.

For comparative purposes, pro forma net income (loss) assuming SFAS No. 142 had been adopted in 2002 is as follows:

	Year Ended September 30,		
	2004	2003	2002
Net income (loss), as reported .....	\$(3,165,272)	\$(99,679)	\$118,171
Amortization expense, net of tax .....	—	—	51,800
Net income (loss), pro forma .....	<u>\$(3,165,272)</u>	<u>\$(99,679)</u>	<u>\$169,971</u>
Basic Earnings (Loss) Per Share:			
As reported .....	\$ (1.17)	\$ (.04)	\$ .04
Pro forma .....	(1.17)	(.04)	.06
Diluted Earnings (Loss) Per Share:			
As reported .....	\$ (1.17)	\$ (.04)	\$ .04
Pro forma .....	(1.17)	(.04)	.06

The following is a summary of goodwill:

	September 30,		
	2004	2003	2002
Balance at beginning of year .....	\$727,837	\$727,837	\$801,544
Additions .....	88,802	-0-	-0-
Amortization .....	-0-	-0-	73,707
Balance at end of year .....	<u>\$816,639</u>	<u>\$727,837</u>	<u>\$727,837</u>

*Intangibles* — Intangible assets are capitalized and amortized over 5-15 years if the life is determinable. If the life is not determinable, amortization is not recorded. Amortization of intangibles was \$60,000, \$17,000 and \$13,000 for 2004, 2003 and 2002, respectively. Amortization is expected to be \$98,000, \$67,000, \$62,000, \$55,000 and \$36,000 in 2005, 2006, 2007, 2008 and 2009, respectively.

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The following is a summary of intangibles:

	September 30,		Lives
	2004	2003	
Patents (owned and licensed) .....	\$ 97,002	\$222,846	7 years
Trademarks .....	592,000	-0-	Indefinite
Non-compete agreements .....	350,000	-0-	10 years
Customer lists .....	276,000	-0-	15 years
Backlog/acquired contracts .....	50,000	-0-	6 months
Technology .....	102,000	-0-	4 years
	1,467,002	222,846	
Accumulated amortization .....	(123,831)	(191,118)	
	<u>\$1,343,171</u>	<u>\$ 31,728</u>	

*Proprietary Product Rights* — Through the acquisition of the net assets of P. R. Hoffman, the Company acquired the license for the design of its steel carriers with plastic inserts for abrasive machining of silicon wafers. In 1995, P. R. Hoffman licensed the patent rights from the patent holder, and pays a royalty to the patent holder for the use of such patent rights. Royalty expense for all licenses is included in cost of sales and totaled \$108,000, \$84,000 and \$66,000 in 2004, 2003 and 2002, respectively.

*Warranty* — The Company provides free of charge a limited warranty, generally for periods of 12 to 24 months, to all purchasers of its new products and systems. The Company records accruals for estimated warranty costs at the time revenue is recognized. Management believes the amounts accrued for future warranty expenditures are sufficient for all warranty costs on systems sold through September 30, 2004.

The following is a summary of activity in accrued warranty expense:

	Years ended September 30,	
	2004	2003
Beginning balance .....	\$321,300	\$262,573
Warranty expenditures .....	(75,707)	(110,409)
Assumed liability from acquisition .....	108,026	-0-
Reserve adjustment .....	(93,287)	169,136
Ending balance .....	<u>\$260,332</u>	<u>\$321,300</u>

*Research and Development Expenses* — Product development costs are expensed as incurred.

*Foreign Currency Transactions and Translation* — Financial information relating to the Company's foreign subsidiary is reported in accordance with SFAS No. 52, "Foreign Currency Translation." The functional currency of Tempres is the Euro. Net income (loss) includes pretax losses from foreign currency transactions of \$70,000 in 2004 and pretax gains of \$55,000 and \$157,000 in 2003 and 2002, respectively. The gains or losses resulting from the translation of Tempres' financial statements have been included in other comprehensive income (loss).

*Income Taxes* — The Company files consolidated federal income tax returns and computes deferred income tax assets and liabilities based upon cumulative temporary differences between financial reporting and taxable income, carryforwards available and enacted tax laws.



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Statement of Financial Accounting Standards (“SFAS”) No. 109 “Accounting for Income Taxes” (“SFAS 109”) requires that a valuation allowance be established when it is “more likely than not” that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company’s performance, the market environment in which the company operates and the length of carry back and carryforward periods. SFAS 109 further states that forming a conclusion that a valuation allowance is not needed is difficult when there is negative evidence such as cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of the review undertaken at September 30, 2004, we concluded that it was appropriate to establish a full valuation allowance for net deferred tax assets. A valuation allowance for deferred tax assets was recorded in the amount of \$1.8 million on September 30, 2004.

*Stock-Based Compensation* — The Company accounts for its employee stock-based compensation plans under SFAS No. 123, “Accounting for Stock-Based Compensation.” SFAS No. 123 permits companies to record employee stock-based transactions using the intrinsic value method in accordance with Accounting Principles Board (“APB”) Opinion No. 25, “Accounting for Stock Issues to Employees,” under which no compensation cost is recognized and the pro forma effects on earnings and earnings per share are disclosed as if the fair value approach had been adopted.

No compensation expense has been recognized by the Company, as all options have been granted with an exercise price equal to, or greater than, the fair value of the common stock on the date of grant. No adjustment has been made for the non-transferability of the options, or for the risk of forfeiture at the time of issuance. Forfeitures of unvested options are instead recorded as incurred. The fair value of each option grant has been estimated as of the date of grant using the Black-Scholes option pricing model with the following weighted average assumptions:

	Year Ended September 30,		
	2004	2003	2002
Risk free interest rate .....	3.71% to 4.74%	3.65% to 3.71%	4.6% to 5.3%
Expected life .....	4 to 6 years	4 years	4 to 6 years
Dividend rate .....	0%	0%	0%
Expected volatility .....	40% to 53%	32% to 44%	61%

The following table illustrates the pro-forma effect on net income (loss) and earnings (loss) per share, as if the Company had applied the fair value recognition provisions of SFAS No. 123:

	Year Ended September 30,		
	2004	2003	2002
Net income (loss), as reported .....	\$(3,165,272)	\$ (99,679)	\$118,171
Compensation expense, net of tax .....	210,339	192,205	196,171
Net income (loss), pro forma .....	<u>\$(3,375,611)</u>	<u>\$(291,884)</u>	<u>\$(78,000)</u>
Basic Earnings (Loss) Per Share:			
As reported .....	\$ (1.17)	\$ (.04)	\$ .04
Pro forma .....	(1.25)	(.11)	(.03)
Diluted Earnings (Loss) Per Share:			
As reported .....	\$ (1.17)	\$ (.04)	\$ .04
Pro forma .....	(1.25)	(.11)	(.03)

*Fair Value of Financial Instruments* — The carrying values of the Company’s current financial instruments approximate fair value due to the short term in which these instruments mature. The carrying values of

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the Company's line of credit (see Note 4) and long-term debt (see Note 5) approximate fair value because their variable interest rates approximate the prevailing interest rates for similar debt instruments.

*Impact of Recently Issued Accounting Pronouncements* — In January, 2003, the FASB issued Interpretation No. 46, "Consolidation of Variable Interest Entities, an Interpretation of ARB No. 51." This Interpretation addresses the consolidation by business enterprises of variable interest entities when the equity investors do not have the characteristics of a controlling financial interest (as defined in the Interpretation). In October, 2003, the FASB deferred the effective date for implementation of this Interpretation until December 31, 2003. Amtech believes it currently has no contractual or other business relationship with a variable interest entity, and therefore, does not believe that the adoption of this Interpretation will have a material effect on its financial position or results of operations.

In November 2004, the FASB issued SFAS No. 151, "Inventory Costs," which amends the guidance in ARB No. 43, Chapter 4, "Inventory Pricing," to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs and wasted material. This Statement requires that those items be recognized as current-period charges regardless of whether they meet the criterion of "so abnormal." In addition, this Statement requires allocation of fixed production overhead to the costs of conversion be based on the normal capacity of the production facilities. The Company is currently evaluating the provisions of SFAS No. 151 and will adopt it on November 1, 2005, as required. The Company believes the adoption of this Statement will not have a material effect on its financial position or results of operations.

In December 2004, the FASB issued SFAS No. 123R, "Share-Based Payments", which amends SFAS No. 123, "Accounting for Stock-based Compensation". This statement requires companies to expense the fair value of employee stock options and similar awards and is effective for periods beginning after June 15, 2005. The Company will adopt the provisions of SFAS No. 123R on July 1, 2005. See the pro forma above for the impact on current and prior year results.

## **2. STOCK-BASED COMPENSATION**

*Stock Warrants* — On September 8, 2000 the Company issued 59,300 warrants to purchase one share each of \$.01 par value common stock in connection with the private placement of 383,000 shares of common stock. The warrants are exercisable at a price per share of \$15.12 and expire on September 8, 2005. No warrants have been exercised to date.

*Stock Option Plans* — The Board of Directors has reserved 15,000 shares of common stock for issuance upon exercise of the outstanding options granted to directors under Director Stock Purchase Agreements prior to 1996. The Non-Employee Directors Stock Option Plan was approved by the shareholders in 1996 for the issuance of up to 100,000 shares of common stock to Directors. The Amended and Restated 1995 Stock Option Plan and the 1995 Stock Bonus Plan were also approved by stockholders in 1996 under which a combined total of 160,000 shares were authorized. The 1998 Employee Stock Option Plan (the "1998 Plan"), under which 50,000 shares could be granted, was adopted by the Board of Directors on January 31, 1998 and approved by shareholders on March 20, 1998. On October 13, 2000, the Board of Directors authorized an increase in the number of options available under the 1998 Plan to 300,000. The amendment was approved by the shareholders at the annual meeting on March 15, 2001. On December 14, 2001, the Board of Directors authorized an increase in the number of options available under the 1998 Plan to 500,000. The amendment was approved by the shareholders at the annual meeting on March 29, 2002. All of the plans expire in 2006, except the 1998 Plan, which expires in 2008.

Qualified stock options issued under the terms of the plans have, or will have, an exercise price equal to, or greater than, the fair market value of the common stock at the date of the option grant, and expire no later than 10 years from the date of grant, with the most recent grant expiring in 2014. Under the terms of the 1995

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Stock Option Plan, nonqualified stock options may also be issued. Options issued in 2004, 2003 and 2002 vest at the rate of 20% – 33% per year. As of September 30, 2004, the Company had 188,000 options available for issuance under the plans.

The stock option transactions and the options outstanding are summarized as follows:

	Year Ended September 30,					
	2004		2003		2002	
	Options	Weighted Average Exercise Price	Options	Weighted Average Exercise Price	Options	Weighted Average Exercise Price
Outstanding at beginning of year .....	405,217	\$4.70	434,567	\$4.78	386,617	\$4.56
Granted .....	65,000	5.70	16,000	3.11	60,000	5.64
Exercised .....	(6,700)	2.24	(9,850)	1.36	(8,800)	1.28
Forfeited .....	(24,500)	5.62	(35,500)	5.87	(3,250)	5.10
Outstanding at end of year ....	<u>439,017</u>	4.83	<u>405,217</u>	4.70	<u>434,567</u>	4.78
Exercisable at end of year .....	278,717	\$4.39	202,467	\$4.01	147,568	\$3.20
Weighted average fair value of options granted .....		\$2.68		\$1.03		\$3.27

The following summarizes information about stock options outstanding at September 30, 2004:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Number Outstanding	Remaining Contractual Life	Weighted Average Exercise Price	Number Exercisable	Weighted Average Exercise Price
\$1.13 — 1.49 .....	70,017	2.35	\$1.13	70,017	\$1.13
1.50 — 1.99 .....	9,000	4.40	1.50	9,000	1.50
2.00 — 3.24 .....	11,600	7.94	2.88	4,334	2.79
3.25 — 4.24 .....	8,500	7.75	3.25	4,000	3.25
4.25 — 5.49 .....	95,900	5.57	4.48	58,900	4.42
5.50 — 6.49 .....	78,000	7.77	5.79	29,800	5.83
6.50 — 6.99 .....	<u>166,000</u>	6.48	6.54	<u>102,666</u>	6.55
	<u>439,017</u>			<u>278,717</u>	

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**3. EARNINGS (LOSS) PER SHARE**

Earnings (loss) per share (EPS) are calculated as follows:

	<u>2004</u>	<u>2003</u>	<u>2002</u>
Net income (loss) .....	<u>\$ (3,165,272)</u>	<u>\$ (99,679)</u>	<u>\$ 118,171</u>
Weighted average shares outstanding:			
Common stock .....	2,702,060	2,692,222	2,683,030
Common stock equivalents(1) .....	<u>—</u>	<u>—</u>	<u>82,523</u>
Diluted shares .....	<u>2,702,060</u>	<u>2,692,222</u>	<u>2,765,553</u>
Earnings (Loss) Per Share:			
Basic .....	\$ (1.17)	\$ (.04)	\$ .04
Diluted .....	\$ (1.17)	\$ (.04)	\$ .04

- (1) Number of common stock equivalents is calculated using the treasury stock method and the average market price during the year. Options and warrants of 298,300 shares, 344,950 shares and 234,700 shares are excluded from the EPS calculations as they are either antidilutive due to the net loss for the year or had an exercise price greater than the average market price during the years ended September 30, 2004, 2003 and 2002, respectively.

**4. LINE OF CREDIT**

The Company has a line of credit in the amount of Euro 250,000 (approximately \$308,000) as of September 30, 2004. The line of credit accrues interest at a rate of 1.75% over a Netherlands bank's basic interest rate (2.75% at September 30, 2004 and 2003). The line of credit has no fixed expiration date, and requires minimum principal payments of Euro 4,000 per quarter. The line of credit is secured by a lien on the Company's land and buildings and on trade accounts receivable in The Netherlands. As of September 30, 2004 and 2003, there were no borrowings on the line of credit.

**5. LONG-TERM OBLIGATIONS**

Long-term obligations include a 26-year mortgage, secured by a lien on the Company's land and buildings and on trade accounts receivable in The Netherlands. The principal amount of the mortgage was \$493,000 and \$466,000 as of September 30, 2004 and 2003, respectively. The increase in 2004 is due to changes in currency translation rates. The mortgage matures on July 31, 2029, and no principal payments are due until October 1, 2004. Interest is paid monthly at a fixed rate of 4.05% until August 1, 2005, at which time a new fixed rate will be set based on prevailing market conditions. There is no penalty for prepayment of the mortgage, as long as the prepayment is made at the end of a fixed rate period as defined in the mortgage agreement.

Until May 3, 2004, the Company maintained a defined benefit pension plan for the hourly employees of P.R. Hoffman ("the Plan"). Long-term obligations included pension liabilities of \$174,000 at September 30, 2003. On May 3, 2004, the Plan merged into the National Integrated Group Pension Plan (NIGPP) and became a defined contribution plan; therefore, there is no long-term pension-related obligation as of September 30, 2004. Subsequent to the merger, the Company is required to make a monthly contribution to NIGPP for each hour worked by the covered employees. In 2004 \$8,000 was paid to NIGPP for these monthly payments. All trustee duties and fiduciary responsibilities were transferred to NIGPP. When the Plan was merged, a payment was made to NIGPP to satisfy existing pension liabilities. The amount of this payment was less than the recorded pension liability, therefore the Company realized a \$54,000 gain from the merger of the pension plan. In 2003, the Company recorded a minimum pension liability adjustment of \$120,000, which

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is reflected as a reduction of stockholders' equity (other comprehensive loss). This adjustment was reversed in 2004 when the Plan was merged into the NIGPP.

**6. STOCKHOLDERS' EQUITY**

The Company's stockholder rights plan authorizes the distribution of one right for each outstanding common share. Each right entitles the holder to purchase one one-hundredth of a share of Series A Participating Preferred Stock, at a purchase price of \$8.50, subject to certain antidilution adjustments. The rights will expire 10 years after issuance and will be exercisable if (a) a person or group becomes the beneficial owner of 15% or more of the Company's common stock or (b) a person or group commences a tender or exchange offer that would result in the offeror beneficially owning 15% or more of the Company's common stock (a "Stock Acquisition Date"). If a Stock Acquisition Date occurs, each right, unless redeemed by the Company at \$.01 per right, entitles the holder to purchase an amount of the Company's common stock, or in certain circumstances a combination of securities and/or assets or the common stock of the acquirer, having an equivalent market value of \$17.00 per right at a purchase price of \$8.50. Rights held by the acquiring person or group will become void and will not be exercisable. These rights have not been distributed as of September 30, 2004.

In 2002, the Company issued 30,600 shares of common stock as contingent consideration in accordance with the terms of its 1997 acquisition of substantially all of the assets and operating liabilities of P.R. Hoffman. This additional consideration was treated as part of the purchase price.

**7. COMMITMENTS AND CONTINGENCIES**

*Purchase Obligations* — Key suppliers include two steel mills, one domestic and one German, capable of meeting the material specifications the Company requires. As of September 30, 2004, the Company had unconditional commitments to purchase \$0.5 million of steel, with delivery dates to be determined in the future. Due to minimum order quantities for this steel and long lead times, the Company has made purchase commitments that may be in excess of future production requirements, and it could take several years to use all of the steel commitments in production of the Company's products. These purchase commitments are not expected to result in any significant losses.

*Legal Proceedings* — In August 2000, a "P.R. Hoffman Machine Products" was one of 11 companies named in a legal action being brought by North Middleton Township in Carlisle, Pennsylvania, in the Court of Common Pleas, Cumberland County, Pennsylvania, the owner of a landfill allegedly found to be contaminated. We acquired the assets of P.R. Hoffman Machine Products Corporation in an asset transaction consummated on July 1, 1997. The landfill was closed and has not been used by P.R. Hoffman since sometime prior to completion of our acquisition transaction. Therefore, we believe that the named company was the prior owner of the acquired assets. On January 7, 2004, this legal action was dismissed due to the Township's failure to pursue the action within the statutory time limits.

*Operating Leases* — The Company leases buildings, vehicles and equipment under operating leases. Rental expense under such operating leases was \$497,000, \$361,000 and \$308,000 in 2004, 2003 and 2002, respectively. As of September 30, 2004, future minimum rental commitments under non-cancelable operating leases with initial or remaining terms of one year or more totaled \$519,000, of which \$246,000, \$118,000, \$93,000 and \$62,000 is payable in 2005, 2006, 2007 and 2008, respectively.



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**8. MAJOR CUSTOMERS AND FOREIGN SALES**

One customer represented approximately 10% of net revenues during 2004. Two customers represented 15% and 12% of net revenues, respectively, during 2003. No customer accounted for 10% or more of net revenues during 2002.

The Company's net revenues were to customers in the following geographic regions:

	<u>Year Ended September 30,</u>		
	<u>2004</u>	<u>2003</u>	<u>2002</u>
North America .....	36%	26%	47%
Asia (Korea, People's Republic of China, Taiwan, Japan, Singapore, Indonesia, Malaysia, Australia and India) .....	33	44	20
Europe (including 1% or less to Israel and Africa) .....	<u>31</u>	<u>30</u>	<u>33</u>
	<u>100%</u>	<u>100%</u>	<u>100%</u>

**9. BUSINESS SEGMENT INFORMATION**

The Company classifies its products into two core business segments. The semiconductor equipment segment designs, manufactures and markets semiconductor wafer processing and handling equipment used in the fabrication of integrated circuits. Also aggregated in the semiconductor equipment segment are the manufacturing support service business and any difference between the planned corporate expenses, which are allocated to the segments based upon their revenue and the Company's investment in each, and actual corporate expenses. The polishing supplies segment designs, manufactures and markets carriers, templates and equipment used in the lapping and polishing of wafer thin materials, including silicon wafers used in the production of semiconductors.

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Information concerning the Company's business segments is as follows:

	Year Ended September 30,		
	2004	2003	2002
<u>Net revenues:</u>			
Semiconductor equipment.....	\$13,215,077	\$14,133,370	\$15,410,513
Polishing supplies .....	6,083,820	5,300,164	5,122,255
	<u>\$19,298,897</u>	<u>\$19,433,534</u>	<u>\$20,532,768</u>
<u>Operating income (loss):</u>			
Semiconductor equipment.....	\$(2,253,933)	\$ (192,790)	\$ 196,509
Polishing supplies .....	149,236	(52,633)	(119,377)
Total operating income (loss) .....	(2,104,697)	(245,423)	77,132
Interest income, net .....	3,425	35,744	91,039
Income (loss) before taxes .....	<u>\$(2,101,272)</u>	<u>\$ (209,679)</u>	<u>\$ 168,171</u>
<u>Capital expenditures:</u>			
Semiconductor equipment.....	\$ 328,097	\$ 153,735	\$ 464,322
Polishing supplies .....	751,014	52,572	—
	<u>\$ 1,079,111</u>	<u>\$ 206,307</u>	<u>\$ 464,322</u>
<u>Depreciation and amortization expense:</u>			
Semiconductor equipment.....	\$ 422,088	\$ 398,118	\$ 286,696
Polishing supplies .....	88,183	85,879	160,625
	<u>\$ 510,271</u>	<u>\$ 483,997</u>	<u>\$ 447,321</u>
	As of September 30,		
	2004	2003	
<u>Identifiable assets:</u>			
Semiconductor equipment.....	\$12,830,102	\$15,390,632	
Polishing supplies .....	3,829,428	3,008,410	
	<u>\$16,659,530</u>	<u>\$18,399,042</u>	
<u>Goodwill:</u>			
Semiconductor equipment.....	\$ 88,802	\$ —	
Polishing supplies .....	727,837	727,837	
	<u>\$ 816,639</u>	<u>\$ 727,837</u>	

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The Company has manufacturing operations in the United States and The Netherlands. Revenues, operating income (loss) and identifiable assets by geographic region are as follows:

	Year Ended September 30,		
	2004	2003	2002
<u>Net revenues:</u>			
United States .....	\$ 9,528,256	\$ 8,450,156	\$ 9,948,296
The Netherlands .....	9,770,641	10,983,378	10,584,472
	<u>\$19,298,897</u>	<u>\$19,433,534</u>	<u>\$20,532,768</u>
<u>Operating income (loss):</u>			
United States .....	\$ (885,831)	\$ (454,924)	\$ (756,023)
The Netherlands .....	(1,218,866)	209,501	833,155
	<u>\$(2,104,697)</u>	<u>\$ (245,423)</u>	<u>\$ 77,132</u>
	As of September 30,		
	2004	2003	
<u>Identifiable assets:</u>			
United States .....	\$10,817,042	\$12,060,463	
The Netherlands .....	5,842,488	6,338,579	
	<u>\$16,659,530</u>	<u>\$18,399,042</u>	

**10. INCOME TAXES**

The provision for (benefit from) income taxes consists of:

	Year Ended September 30,		
	2004	2003	2002
<u>Current:</u>			
Domestic federal .....	\$ (79,000)	\$ (236,000)	\$ (439,000)
Foreign .....	—	86,000	117,000
Domestic state .....	13,000	38,000	(21,000)
	<u>(66,000)</u>	<u>(112,000)</u>	<u>(343,000)</u>
<u>Deferred:</u>			
Domestic federal .....	875,000	39,000	210,000
Foreign .....	—	—	175,000
Domestic state .....	255,000	(37,000)	8,000
	<u>1,130,000</u>	<u>2,000</u>	<u>393,000</u>
	<u>\$1,064,000</u>	<u>\$ (110,000)</u>	<u>\$ 50,000</u>

The provision for income taxes includes a charge of \$1.8 million to provide a full valuation allowance on net deferred tax assets as of September 30, 2004.

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The provision for (benefit from) income taxes differs from the amount that would be computed by applying the U.S. corporate income tax rate of 34% to the income (loss) before income taxes as follows:

	<b>Year Ended September 30,</b>		
	<b>2004</b>	<b>2003</b>	<b>2002</b>
Provision (benefit) at the statutory federal rate . . . . .	\$ (714,000)	\$ (71,000)	\$ 57,000
Effect of permanent book-tax differences . . . . .	13,000	(19,000)	22,000
State tax provision . . . . .	2,000	(20,000)	(29,000)
Valuation allowance for net deferred tax assets . . . . .	1,768,000	—	—
Other items . . . . .	(5,000)	—	—
	<u>\$1,064,000</u>	<u>\$ (110,000)</u>	<u>\$ 50,000</u>

Deferred income taxes reflect the tax effects of temporary differences between the carrying value of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes.

The components of the Company's net deferred tax asset are as follows:

	<b>September 30,</b>	
	<b>2004</b>	<b>2003</b>
Allowance for doubtful accounts . . . . .	\$ 67,000	\$ 63,000
Uniform capitalization of inventory costs . . . . .	169,000	154,000
Inventory write-downs not currently deductible . . . . .	651,000	340,000
State net operating losses . . . . .	120,000	127,000
Federal net operating losses . . . . .	274,000	—
Book vs. tax depreciation . . . . .	(68,000)	(9,000)
Unrealized currency losses (gains) . . . . .	(1,000)	(1,000)
Deferred profit . . . . .	352,000	175,000
Liabilities not currently deductible . . . . .	<u>204,000</u>	<u>281,000</u>
	1,768,000	1,130,000
Valuation allowance . . . . .	<u>(1,768,000)</u>	—
Net deferred tax assets . . . . .	<u>\$ —</u>	<u>\$1,130,000</u>

The Company has \$1,691,000 of Arizona state net operating loss carryforwards at September 30, 2004 that begin to expire in 2007. The Company also has \$807,000 of Federal net operating loss carryforwards at September 30, 2004 that begin to expire in 2023.

Statement of Financial Accounting Standards ("SFAS") No. 109 "Accounting for Income Taxes" ("SFAS 109") requires that a valuation allowance be established when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the company operates and the length of carry back and carryforward periods. SFAS 109 further states that forming a conclusion that a valuation allowance is not needed is difficult when there is negative evidence such as cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of the review undertaken at September 30, 2004, we concluded that it was appropriate to establish a full

**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
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valuation allowance for net deferred tax assets. A valuation allowance for deferred tax assets was recorded in the amount of \$1.8 million on September 30, 2004.

**11. SELECTED QUARTERLY DATA (UNAUDITED)**

	<u>First Quarter</u>	<u>Second Quarter</u>	<u>Third Quarter</u>	<u>Fourth Quarter</u>
<u>Fiscal Year 2004:</u>				
Revenue .....	\$3,920,771	\$5,631,423	\$4,834,950	\$ 4,911,753
Gross margin .....	\$1,188,997	\$1,587,785	\$1,099,707	\$ 72,194
Net income (loss) .....	\$ 1,862	\$ 97,515	\$ (249,560)	\$(3,015,089)
Net income (loss) per share:				
Basic .....	\$ .00	\$ .04	\$ (.09)	\$ (1.11)
Diluted .....	\$ .00	\$ .03	\$ (.09)	\$ (1.11)
<u>Fiscal Year 2003:</u>				
Revenue .....	\$4,329,197	\$5,447,628	\$3,621,596	\$ 6,035,113
Gross margin .....	\$ 938,904	\$ 984,729	\$1,028,689	\$ 1,882,724
Net income (loss) .....	\$ (116,568)	\$ (267,764)	\$ (120,991)	\$ 405,644
Net income (loss) per share:				
Basic .....	\$ (.04)	\$ (.10)	\$ (.04)	\$ .15
Diluted .....	\$ (.04)	\$ (.10)	\$ (.04)	\$ .15

**12. ACQUISITION**

On July 1, 2004, the Company acquired, through its wholly owned subsidiaries, Bruce Technologies, Inc. and Tempres Systems, Inc., certain semiconductor horizontal diffusion furnace operations and assets in the United States and Europe from Kokusai Semiconductor Equipment Corporation and its affiliate Kokusai Electric Europe, GmbH. The purpose of this acquisition was to expand the Company's product and service offerings and immediately expand its overall market share. The cost of the acquisition was approximately \$3.9 million, including \$3.3 million paid at closing, \$0.3 of transaction costs, and the assumption of approximately \$0.3 million of liabilities. The Company is also required to pay the seller future payments of up to \$1.0 million contingent upon the consumption of inventories transferred at the closing.

The results of operations of this acquisition have been included in the consolidated financial statements from the date of acquisition.

The assets acquired principally consist of intellectual property and technology, customer lists, customer contracts, inventories and other tangible property used in connection with the acquired business. Liabilities assumed include obligations under certain contracts, and warranty claims for certain products and services under warranty as of the date of the acquisition.

The cost of the acquisition is summarized as follows:

Cash to seller at closing .....	\$3,292,000
Acquisition transaction costs .....	<u>307,000</u>
Total cost of acquisition .....	<u>\$3,599,000</u>

The allocation of the purchase price to the fair value of the assets acquired and liabilities assumed at the date of acquisition is as follows. Amortizable intangible assets are considered to have no residual value at the



**AMTECH SYSTEMS, INC. AND SUBSIDIARIES**  
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end of their useful lives. The goodwill of \$89,000 belongs entirely to the semiconductor equipment segment of the business and is expected to be deductible for tax purposes.

		<u>Useful Life</u>
Assets Acquired:		
Inventories .....	\$2,346,000	
Intangible assets:		
Non-compete agreements .....	350,000	10 years
Customer relationships .....	276,000	15 years
Trademarks and trade names .....	592,000	Indefinite
Backlog/acquired contracts .....	50,000	6 months
Technology .....	102,000	4 years
Property, plant and equipment .....	54,000	
Goodwill .....	89,000	
Total assets acquired .....	<u>3,859,000</u>	
Liabilities Assumed:		
Accrued warranty expense .....	108,000	
Severance liability .....	<u>152,000</u>	
Total liabilities assumed .....	<u>260,000</u>	
Net assets acquired .....	<u><u>\$3,599,000</u></u>	

The weighted average amortization period for amortizable intangibles is 10.4 years.

The following consolidated pro forma financial information was prepared assuming that the acquisition had occurred at the beginning of each fiscal year. This pro forma information does not necessarily reflect the results of operations that would have occurred had the acquisition taken place at the beginning of each fiscal year and is not necessarily indicative of results that may be obtained in the future (unaudited):

	<u>For the Year Ended September 30,</u>	
	<u>2004</u>	<u>2003</u>
Revenues .....	\$26,971,000	\$28,036,000
Net income (loss) .....	\$(2,478,000)	\$ 505,000
Net income (loss) per share:		
Basic .....	\$ (0.92)	\$ 0.19
Diluted .....	\$ (0.92)	\$ 0.18

For purposes of the above pro forma presentation, the historical revenues and earnings of Bruce Technologies for the years ended September 30, 2004 and 2003 have been combined with the revenues and earnings of Amtech for the years ended September 30, 2004 and 2003, respectively.

### 13. SUBSEQUENT EVENT

In December 2004, the Company entered into a capital lease with US Bancorp to finance the laser cutting tool purchased in the fourth quarter of fiscal 2004. The amount financed was \$500,000 with an interest rate of 6.55% and with 48 payments due in the amount of \$11,869. Future principal payments will be \$84,078, \$118,707, \$126,719, \$135,274 and \$35,222 for 2005, 2006, 2007, 2008 and 2009, respectively.

**ITEM 9. *CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE***

None.

**ITEM 9A. *CONTROLS AND PROCEDURES***

Our management, including our Chief Executive Officer (“CEO”) and Chief Financial Officer (“CFO”), has carried out an evaluation of the effectiveness of our disclosure controls and procedures as of September 30, 2004, pursuant to Exchange Act Rules 13a-15(e) and 15(d)-15(e). Based upon that evaluation, our CEO and CFO have concluded that as of such date, our disclosure controls and procedures in place are adequate to ensure material information, and other information requiring disclosure, is identified and communicated on a timely basis.

There have been no significant changes in our internal controls over financial reporting or in other factors that have materially affected, or are reasonably likely to materially affect, those controls subsequent to the date this evaluation was carried out, including any corrective actions with regard to significant deficiencies and material weaknesses.

**ITEM 9B. *OTHER INFORMATION***

None.

**PART III**

Pursuant to Paragraph G(3) of the General Instructions to Form 10-K, portions of the information required by Part III of Form 10-K are incorporated by reference to Amtech’s Definitive Proxy Statement to be filed with the Securities and Exchange Commission in connection with its 2005 Annual Meeting of Stockholders (the “Proxy Statement”).

**ITEM 10. *DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT***

The information required by this item is incorporated herein by reference to the Proxy Statement, which will be filed with the Securities and Exchange Commission within 120 days of the end of our fiscal year.

**ITEM 11. *EXECUTIVE COMPENSATION***

The information required by this item is incorporated herein by reference to the Proxy Statement, which will be filed with the Securities and Exchange Commission within 120 days of the end of our fiscal year.

**ITEM 12. *SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS***

The information required by this item is incorporated herein by reference to the Proxy Statement, which will be filed with the Securities and Exchange Commission within 120 days of the end of our fiscal year.

**ITEM 13. *CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS***

The information required by this item is incorporated herein by reference to the Proxy Statement, which will be filed with the Securities and Exchange Commission within 120 days of the end of our fiscal year.

**ITEM 14. *PRINCIPAL ACCOUNTING FEES AND SERVICES***

The information required by this item is incorporated herein by reference to the Proxy Statement, which will be filed with the Securities and Exchange Commission within 120 days of the end of our fiscal year.

## PART IV

### ITEM 15. *EXHIBITS, FINANCIAL STATEMENT SCHEDULES, AND REPORTS ON FORM 8-K*

(a)(1) The consolidated financial statements required by this item are set forth on the pages indicated at Item 8.

(2) All financial statement schedules are omitted because they are either not applicable, or because the required information is shown in the consolidated financial statements or notes thereto.

(3) Exhibits:

The exhibits listed in the accompanying index to exhibits are filed or incorporated by reference as part of this Annual Report on Form 10-K.

Exhibit No.	Description	Method of Filing
3.1	Articles of Incorporation	A
3.2	Articles of Amendment to Articles of Incorporation, dated April 27, 1983	A
3.3	Articles of Amendment to Articles of Incorporation, dated May 19, 1987	B
3.4	Articles of Amendment to Articles of Incorporation, dated May 2, 1988	C
3.5	Articles of Amendment to Articles of Incorporation, dated May 28, 1993	D
3.6	Articles of Amendment to Articles of Incorporation, dated March 14, 1999	E
3.7	Amended and Restated Bylaws	F
4.1	Rights Agreement dated May 17, 1999	G
10.1	Amended and Restated 1995 Stock Option Plan	H
10.2	Non-Employee Director Stock Option Plan	I
10.3	Employment Agreement with Robert T. Hass, dated May 19, 1992	J
10.4	Registration Rights Agreement with J.S. Whang, dated January 24, 1994	D
10.5	1998 Employee Stock Option Plan (Amended as of March 29, 2002)	K
10.6	Warrant to Purchase Common Stock, dated September 8, 2000	L
10.7	Stock and Warrant Purchase Agreement, dated September 8, 2000	L
10.8	Employment Agreement, dated March 15, 2001, between the Registrant and Jong S. Whang	M
10.9	Asset Purchase Agreement, dated May 3, 2004, by and between Kokusai Semiconductor Equipment Corporation and the Company	N
10.10	Amendment, dated June 25, 2004, to the Asset Purchase Agreement by and between Kokusai Semiconductor Equipment Corporation and the Company	N
10.11	Amendment, dated July 1, 2004, to the Asset Purchase Agreement by and between Kokusai Semiconductor Equipment Corporation and the Company	N
10.12	Asset Purchase Agreement, dated May 3, 2004, by and between Kokusai Electric Europe GmbH and the Company	N
10.13	Amendment, dated June 25, 2004, to the Asset Purchase Agreement by and between Kokusai Electric Europe GmbH and the Company	N
21	Subsidiaries of the Registrant	*
23	Consent of Independent Registered Public Accounting Firm	*
24	Powers of Attorney	**
31.1	Certification Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as Amended	*
31.2	Certification Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as Amended	*

<u>Exhibit No.</u>	<u>Description</u>	<u>Method of Filing</u>
32.1	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	*
32.2	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	*

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\* Filed herewith.

\*\* See signature page.

- A Incorporated by reference to Amtech's Form S-1 Registration Statement No. 2-83934-LA.
- B Incorporated by reference to Amtech's Annual Report on Form 10-K for the year ended September 30, 1987.
- C Incorporated by reference to Amtech's Annual Report on Form 10-K for the year ended September 30, 1988.
- D Incorporated by reference to Amtech's Form S-1 Registration Statement (File No. 33-77368).
- E Incorporated by reference to Amtech's Annual Report on Form 10-K for the year ended September 30, 1999.
- F Incorporated by reference to Amtech's Annual Report on Form 10-K for the year ended September 30, 1991.
- G Incorporated by reference to Amtech's Current Report on Form 8-K, filed with the Securities and Exchange Commission on May 17, 1999.
- H Incorporated by reference to Amtech's Form S-8 Registration Statement (related to the Amended and Restated 1995 Stock Option Plan), filed with the Securities and Exchange Commission on August 9, 1996.
- I Incorporated by reference to Amtech's Form S-8 Registration Statement (related to the Non-Employee Director Stock Option Plan), filed with the Securities and Exchange Commission on August 9, 1996.
- J Incorporated by reference to Amtech's Annual Report on Form 10-K for the year ended September 30, 1993.
- K Incorporated by reference to Amtech's Form S-8 Registration Statement (related to the 1998 Employee Stock Option Plan), filed with the Securities and Exchange Commission on February 11, 2003.
- L Incorporated by reference to Amtech's Current Report on Form 8-K, filed with the Securities and Exchange Commission on September 22, 2000.
- M Incorporated by reference to Amtech's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2001.
- N Incorporated by reference to Amtech's Current Report on Form 8-K, filed with the Securities and Exchange Commission on July 15, 2004.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

AMTECH SYSTEMS, INC.

By: /s/ JONG S. WHANG  
Jong S. Whang,  
*President and Chief Executive Officer*

January 13, 2005

## POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints JONG S. WHANG and ROBERT T. HASS, and each of them, his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person hereby ratifying and confirming all that said attorneys-in-fact and agents, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report on Form 10-K has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ JONG S. WHANG</u> Jong S. Whang	Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	January 13, 2005
<u>/s/ ROBERT T. HASS</u> Robert T. Hass	Vice President — Finance, Chief Financial Officer and Director (Principal Financial & Accounting Officer)	January 13, 2005
<u>/s/ ALVIN L. KATZ</u> Alvin L. Katz	Director	January 13, 2005
<u>/s/ ROBERT F. KING</u> Robert F. King	Director	January 13, 2005
<u>/s/ BRUCE R. THAW</u> Bruce R. Thaw	Director	January 13, 2005



# AMTECH SYSTEMS, INC.

## **EXECUTIVE OFFICERS**

**J.S. WHANG**  
PRESIDENT,  
CHIEF EXECUTIVE OFFICER  
AND DIRECTOR

**ROBERT T. HASS**  
VICE PRESIDENT – FINANCE,  
CORPORATE SECRETARY  
AND DIRECTOR

## **INDEPENDENT DIRECTORS**

**ALVIN L. KATZ**  
DIRECTOR AND ADJUNCT PROFESSOR  
OF BUSINESS MANAGEMENT  
FLORIDA ATLANTIC UNIVERSITY  
BOCA RATON, FLORIDA

**ROBERT F. KING**  
DIRECTOR AND PRESIDENT  
OF KING ASSOCIATES  
SURPRISE, ARIZONA

**BRUCE R. THAW**  
DIRECTOR AND  
ATTORNEY AT LAW  
FARMINGDALE, NEW YORK

## **CORPORATE INFORMATION**

### **CORPORATE OFFICES**

131 SOUTH CLARK DRIVE  
TEMPE, ARIZONA 85281  
TEL: (480) 967-5146  
FAX: (480) 968-3763

E-MAIL: [Corporate@AmtechSystems.com](mailto:Corporate@AmtechSystems.com)

### **LEGAL COUNSEL**

SQUIRE, SANDERS & DEMPSEY LLP  
TWO RENAISSANCE SQUARE  
40 NORTH CENTRAL AVE., SUITE 2700  
PHOENIX, ARIZONA 85004

### **TRANSFER AGENT & REGISTRAR**

COMPUTERSHARE TRUST COMPANY  
350 INDIANA STREET, SUITE 800  
GOLDEN, CO 80401  
TEL: (303) 262-0600  
FAX: (303) 262-0603

E-MAIL: [inquire@computershare.com](mailto:inquire@computershare.com)

WEBSITE: <http://www-us.computershare.com/>

### **INDEPENDENT AUDITORS**

KPMG LLP  
ONE ARIZONA CENTER  
400 E. VAN BUREN STREET, SUITE 1100  
PHOENIX, ARIZONA 85004-2207  
TEL: (602) 253-2000  
FAX: (602) 252-0011

### **STOCK MARKET INFORMATION**

LISTED ON NASDAQ NATIONAL MARKET

COMMON STOCK SYMBOL: ASYS

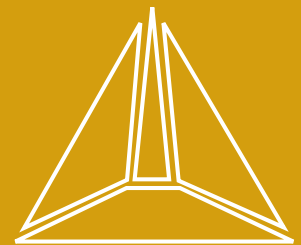
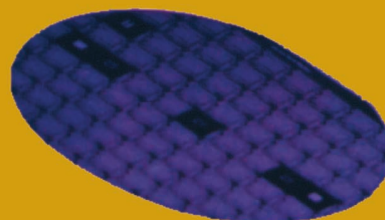
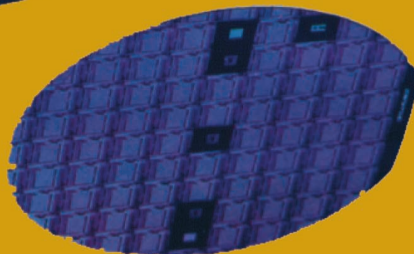
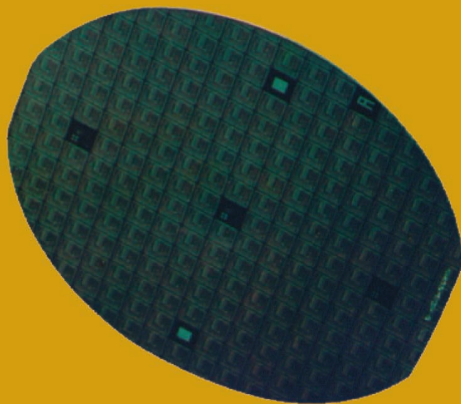
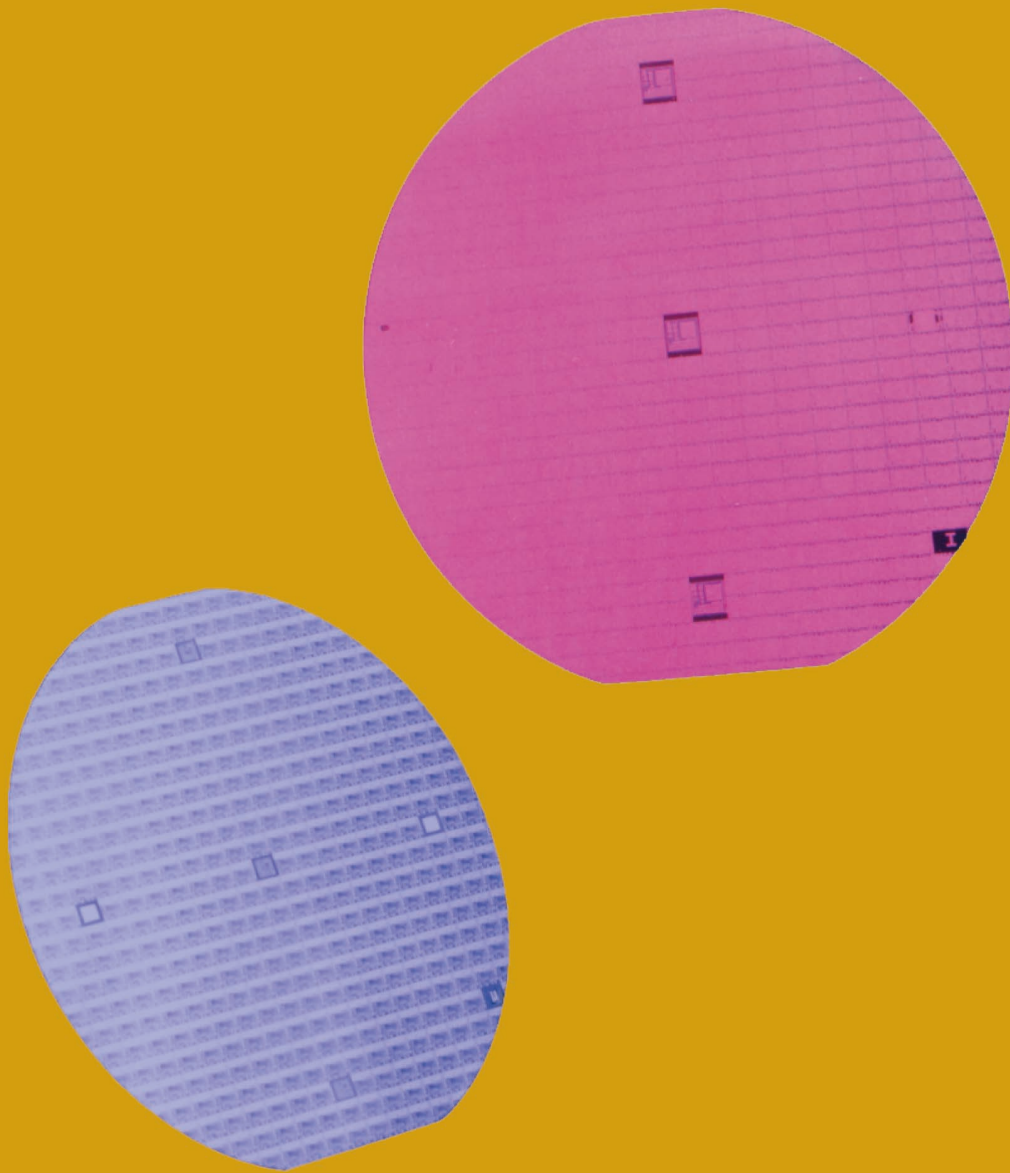
WEBSITE: [WWW.NASDAQ.COM](http://WWW.NASDAQ.COM)

## **SUBSIDIARIES**

**BRUCE TECHNOLOGIES, INC.**  
BILLERICA, MASSACHUSETTS

**TEMPRESS SYSTEMS, INC.**  
HEERDE, THE NETHERLANDS

**P.R. HOFFMAN MACHINE PRODUCTS, INC.**  
CARLISLE, PENNSYLVANIA



AMTECH SYSTEMS, INC.

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