

AMTECH SYSTEMS INC
Form 10-K
November 20, 2014

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, 2014

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, \$0.01 Par Value

(Title of Class)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act.

Yes No

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

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Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§229.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405) 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. [X]

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

Large accelerated filer [] Accelerated filer [X] Non-accelerated filer [] (do not check if a smaller reporting company) [] Smaller Reporting Company

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

As of March 31, 2014, the aggregate market value of the voting and non-voting stock held by non-affiliates of the registrant was approximately \$108,207,000, based upon the closing sales price reported by the NASDAQ Global Market on that date.

As of November 10, 2014, the registrant had outstanding 9,848,253 shares of Common Stock, \$0.01 par value.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Definitive Proxy Statement related to the registrant's 2014 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, 2014, are incorporated by reference into Items 10-14 of Part III of this Form 10-K.

AMTECH SYSTEMS, INC. AND SUBSIDIARIES

Table of Contents

<u>Part I</u>		
<u>Item 1.</u>	<u>Business</u>	<u>3</u>
<u>Item 1A.</u>	<u>Risk Factors</u>	<u>12</u>
<u>Item 1B.</u>	<u>Unresolved Staff Comments</u>	<u>27</u>
<u>Item 2.</u>	<u>Properties</u>	<u>27</u>
<u>Item 3.</u>	<u>Legal Proceedings</u>	<u>27</u>
<u>Item 4.</u>	<u>Mine Safety Disclosures</u>	<u>27</u>
 <u>Part II</u>		
<u>Item 5.</u>	<u>Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	<u>29</u>
<u>Item 6.</u>	<u>Selected Financial Data</u>	<u>30</u>
<u>Item 7.</u>	<u>Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	<u>31</u>
<u>Item 7A.</u>	<u>Quantitative and Qualitative Disclosures about Market Risk</u>	<u>45</u>
<u>Item 8.</u>	<u>Financial Statements and Supplementary Data</u>	<u>47</u>
<u>Item 9.</u>	<u>Changes in and Disagreements with Accountants on Accounting and Financial Disclosure</u>	<u>77</u>
<u>Item 9A.</u>	<u>Controls and Procedures</u>	<u>77</u>
<u>Item 9B.</u>	<u>Other Information</u>	<u>79</u>
 <u>Part III</u>		
<u>Item 10.</u>	<u>Directors, Executive Officers and Corporate Governance</u>	<u>79</u>
<u>Item 11.</u>	<u>Executive Compensation</u>	<u>79</u>
<u>Item 12.</u>	<u>Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	<u>79</u>
<u>Item 13.</u>	<u>Certain Relationships and Related Transactions, and Director Independence</u>	<u>79</u>
<u>Item 14.</u>	<u>Principal Accounting Fees and Services</u>	<u>79</u>
 <u>Part IV</u>		
<u>Item 15.</u>	<u>Exhibits and Financial Statement Schedules</u>	<u>79</u>
	<u>Signatures</u>	<u>80</u>

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 (“the Company” or “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,” “intends,” “believes,” “estimates,” “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 1A. RISK FACTORS.” These and many other factors could affect Amtech's future operating results and financial condition, and could cause actual results to differ materially from expectations based on forward-looking statements made in this document or elsewhere by Amtech or on its behalf. All references to “we,” “our,” “us,” or “Amtech” refer to Amtech Systems, Inc. and its subsidiaries.

PART I

ITEM 1. BUSINESS

OUR COMPANY

We are a leading, global manufacturer of capital equipment, including thermal processing, silicon wafer handling automation, and ion implant equipment and related consumables used in fabricating solar cells, LED and semiconductor devices. Semiconductors, or semiconductor chips, are fabricated on silicon wafer substrates, sliced from ingots, and are part of the circuitry, or electronic components, of many products including solar cells, computers, telecommunications devices, automotive products, consumer goods, and industrial automation and control systems. The Company's wafer handling, thermal processing and consumable products currently address the diffusion, oxidation, and deposition steps used in the fabrication of solar cells, LEDs, semiconductors, microelectromechanical systems (MEMS) and the polishing of newly sliced silicon wafers.

Our major emphasis in the solar industry is the development of thermal processes, deposition and ion implant equipment for solar cell manufacturing, which we believe, collectively, are key to driving higher cell efficiencies. The markets we serve are experiencing rapid technological advances and are, historically, cyclical. Therefore, future profitability and growth depend on our ability to develop or acquire and market profitable new technology products, and on our ability to adapt to cyclical trends.

We believe our product portfolio, developed through a track record of technological innovation as well as the successful integration of key acquisitions, reduces the cost of solar cell manufacturing by increasing solar cell efficiency, increasing throughput and increasing yields. We have been providing manufacturing solutions to the semiconductor industry for over 30 years and have leveraged our semiconductor technology and industry presence to capitalize on growth opportunities in the solar industry. Our customers use our equipment to manufacture solar cells, semiconductors, silicon wafers and MEMS, which are used in end markets such as solar power, telecommunications, consumer electronics, computers, automotive and mobile hand-held devices. Through our acquisition in 2011 of a controlling interest in Kingstone Technology Hong Kong Limited (“Kingstone”), we have expanded our development efforts in the area of solar ion implant. To complement our research and development efforts, we also sell our equipment to, and coordinate certain development efforts with, research institutes, universities and customers.

For fiscal 2014, we recognized net revenue of \$57 million, which included \$28 million of solar revenue or approximately 49% of our total revenue. These results compare to \$35 million of net revenue for fiscal 2013, which

included \$17 million of solar revenue or approximately 50% of our total revenue. Our order backlog as of September 30, 2014 and 2013 was \$29 million and \$27 million, respectively, a 7% increase. Our backlog as of September 30, 2014 included approximately \$21 million of orders and deferred revenue from our solar industry customers compared to \$17 million from our solar industry customers as of September 30, 2013. Because our orders are typically subject to cancellation

3

or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales in subsequent periods, nor is backlog any assurance that we will realize revenue or profit from completing these orders.

Orders from the solar industry totaled \$34 million during fiscal 2014, compared to \$21 million and \$13 million in fiscal 2013 and 2012, respectively. The solar book to bill ratio for fiscal years 2014 and 2013 was 1.0:1 and 2.1:1, respectively.

We operate in two business segments: (i) solar and semiconductor equipment and (ii) polishing supplies. For information regarding net revenue, operating income and identifiable assets attributable to each of our two business segments, see Note 8 of the Notes to Consolidated Financial Statements included herein and "ITEM 7, MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS" in this Annual Report. For information on the products of each segment, see "Solar and Semiconductor Equipment Products" and "Polishing Supplies Products" within this "ITEM 1. BUSINESS" section. For information regarding risks to our business, see "ITEM 1A. RISK FACTORS."

COMPETITIVE STRENGTHS

We believe that our competitive strengths include:

Market Leader in Solar Thermal Processing Systems. We are a leading supplier of thermal processing systems to the global solar cell market and count many of the world's leading solar cell manufacturers as customers. Since we entered the solar market in 2006, we have shipped more than 500 diffusion furnaces globally. Our diffusion furnaces, along with our PECVD equipment, enable our customers to produce high quality solar cells with higher efficiencies and lower total cost of ownership.

Technology Enabling High Efficiency, Low Cost Solar Cell Manufacturing. Our technology platform provides key components to the solar cell manufacturing industry that enable lower cost of ownership and improved customer economics by increasing solar cell efficiency, increasing throughput, increasing yields, reducing labor costs, enhancing quality and cutting operating and maintenance expenses. We are continually developing next-generation process technology for solar cell manufacturing to further drive increased efficiency and lower cost which is expected to ultimately lead to grid parity.

Key Equipment Supplier to the World's Leading Solar Cell Manufacturers. We have developed a large and growing global customer base and currently provide systems and equipment to many of the world's leading solar cell manufacturers. Asia represents one of the largest and fastest growing solar cell manufacturing regions in the world and for fiscal year 2014, Asian customers represented 45% of our net revenues. We believe our alignment with many of the leading Asian global solar cell manufacturers represents a significant endorsement of our technology value proposition, which in turn, we believe, will help us pursue our strategy of expanding our product suite to capture a greater percentage of capital spent in building future solar cell manufacturing capacity.

Track Record of Successful Acquisitions, Integration and New Product Development. Over the course of our history, we have built a leading technology platform based on the successful integration of six strategic acquisitions, several value-added collaboration and partnership agreements as well as an aggressive internal product innovation program. We believe that our track record of success illustrates our ability to both maintain our technology leadership and expand our customer base going forward. Select acquisitions include:

• Tempres Systems, acquired in 1994 and based in Vaassen, The Netherlands, and Bruce Technologies, acquired in July 2004 and based in North Billerica, Massachusetts. Our market-leading horizontal diffusion furnace systems are sold under these well-known and respected brand names to customers for use in solar cell and semiconductor manufacturing. In addition, our customers have come to rely upon the leading Tempres and Bruce solutions for

chemical vapor deposition and automation equipment.

R2D Automation, acquired in October 2007 and based in Clapiers, France - R2D develops and manufactures solar and semiconductor automation solutions. We believe R2D has enhanced our addressable market by increasing our product offerings under the Tempress brand to the global solar cell manufacturing industry, while also expanding sales into the semiconductor market.

4

Kingstone, a majority interest in Hong Kong-based Kingstone Technology Limited, acquired in 2011, which owns 100% of Kingstone Semiconductor Company Ltd, a Shanghai-based technology company specializing in ion implant solutions for the solar and semiconductor industries. The combination of our Tempres annealing expertise in horizontal diffusion furnaces and Kingstone's expertise in ion implant technology creates a more complete and complementary solution for our solar customers. We believe that the acquisition of Kingstone supports our strategy to provide our customers with next-generation process technologies that enable the development of higher-efficiency, lower cost solar cells.

Strength of Management. We are led by a highly experienced management team. Our Executive Chairman, Jong S. Whang, has over 40 years of industry experience, including 33 years with Amtech and our Chief Executive Officer and President, Fokko Pentinga, has over 30 years of industry experience. Our general managers have an average of over 20 years of solar and semiconductor industry experience. The experience of our leadership team is derived from years of industry experience while at leading companies such as Samsung, Westinghouse, Texas Instruments, LG Semicon Company, and ASM International. Our collective team includes 18 Ph.D.'s.

Financial Strength and Stability. We have a strong balance sheet, with significant liquidity and no debt. Our conservative approach to capital structure and liquidity has contributed to our ability to successfully serve the cyclical semiconductor and solar industries for over 30 years. As a result, our customers are confident that they can depend on us as a long-term supplier and strategic partner.

GROWTH STRATEGY

Capitalize on Growth Opportunities in the Solar Industry by Leveraging Our Leading Diffusion Furnace Market Share, Top-Tier Customer Relationships, and Track Record of Technological Innovation. We believe that long-term growth in the solar industry will be driven by several macro-economic factors, such as volatile energy prices, limited non-renewable energy resources, government incentives for solar generated electricity, increasing environmental awareness, energy security concerns and the expected decrease in the cost of solar energy. As the solar market continues to develop, advances in process technology will be vital to remaining competitive. We intend to continue leveraging our leading market position, relationships with leading global solar cell customers and demonstrated track record of technical innovation to maximize sales of our current and next-generation technology solutions.

Develop Multi-Product Solutions to Expand Our Addressable Market. We are focused on acquiring, developing and licensing new products across our business in response to customer needs in the solar market. As we add to our product portfolio, we plan to continue expanding our offerings within the solar cell production process, thus capturing a greater percentage of capital spent on building global solar cell manufacturing capacity. Our successful development of PECVD equipment is a recent example of meeting our customers' needs and expanding the size of our addressable market.

Pursue Strategic Acquisitions That Complement Our Strong Platform. Over the course of our history, we have developed an acquisition strategy consistent with our focus of maintaining market leadership and a technology roadmap leading to higher efficiency and lower cost solar cells. Based on our acquisition strategy, we continue to evaluate potential technology, product and business acquisitions or joint ventures that are intended to increase our existing market share in the solar, semiconductor and LED industries and expand our addressable market. In evaluating these opportunities, our objectives include: enhancing our earnings and cash flows, adding complementary product offerings, actively expanding our geographic footprint, improving our production efficiency and enhancing our customer base.

Contribute to the Solar Industry's Mission of Reaching Grid Parity. We believe next-generation process technology for solar cell manufacturing is the driver to increasing efficiency and lowering manufacturing costs and is key to enabling grid parity, where the cost of solar generated electricity is on parity with traditional, non-renewable sources of energy such as coal and natural gas. Our next-generation solar cell process technology has a demonstrated track record of increasing our customers' solar cell conversion efficiency. We will continue to develop next-generation solar cell manufacturing process technology that will enable our customers to displace non-renewable energy.

RECENT DEVELOPMENTS

On October 21, 2014, the Company entered into an Agreement and Plan of Merger (the “Agreement”) by and among the Company, BTU International, Inc. (“BTU”), a Delaware corporation and BTU Merger Sub, Inc. (“Merger Sub”), a Delaware corporation, pursuant to which the Merger Sub will be merged with and into BTU, with BTU surviving as a wholly owned subsidiary of the Company. Pursuant to the agreement, Amtech will acquire all of the outstanding stock of BTU in an all-stock transaction. BTU stockholders will receive 0.3291 shares of Amtech common stock for every share of BTU stock and will own approximately 23.9% of the Company.

The addition of BTU will support our business model of growth through strategic acquisition and continuous innovation. The combination with BTU further positions the Company as a leading, global supplier of solar and semiconductor production and automation systems. The merger will also further advance our strategy to expand our technology portfolio in adjacent markets and creates a strong platform to drive the growth of our solar business. With the addition of BTU, the Company will have a more diversified and profitable revenue base, allowing the Company to better scale production and distribution of our solar technology to meet accelerating demand for next-generation technology solutions.

The transaction is expected to close sometime during the first quarter of 2015.

SOLAR AND SEMICONDUCTOR INDUSTRIES

Our systems and equipment are sold into two primary end-markets:

Solar. We provide process equipment and related cell manufacturing equipment to many of the world's leading solar cell manufacturers.

Within process equipment, our primary focus is on our existing solar diffusion furnace and the development of next-generation diffusion furnaces, including our proprietary N-type, ion implant and PECVD systems. Our N-type technology has been developed through a three-party research collaboration agreement with the Energy Research Centre of the Netherlands, or ECN, a leading solar research center in Europe and Yingli Green Energy Holding Company Limited, or Yingli, one of the world's leading vertically integrated photovoltaic (PV) product manufacturers. Additionally, our acquisition of Kingstone provides us with a technological foundation for execution of our product roadmap to compete in the future ion implant market. In 2012, we launched our PECVD system.

We also offer furnace automation and wafer handling systems used within the diffusion processing step of solar cell manufacturing. Our automation equipment includes mass wafer transfer systems, sorters, long-boat transfer systems, load station elevators, buffers and conveyers, which we sell both in connection with our diffusion furnaces and on a standalone basis.

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

Although the solar market has experienced tremendous growth over the past five years, it is characterized by short-term periods of rapid capacity expansion followed by periods of rapid contraction in our customers' capital

spending. When actual and expected end-user demand outstrips available capacity, this triggers the beginning of the next period of expansion.

Semiconductors. We provide diffusion equipment as well as handling, storage and automation equipment and related services to leading semiconductor manufacturers. Our products include horizontal and vertical diffusion furnaces used to produce semiconductors, silicon wafers and MEMS, as well as lapping equipment, polishing templates and wafer insert carriers, mass wafer transfer systems, loaders and sorters.

Although the semiconductor market has experienced significant growth over the past fifteen years, it remains cyclical by nature. The market is characterized by short-term periods of under or over utilization of capacity for most

semiconductors, including microprocessors, memory, power management chips and other logic devices. When capacity utilization decreases due to the addition of excess capacity, semiconductor manufacturers typically slow their purchasing of capital equipment. Conversely, when capacity utilization increases, so does capital spending.

Most semiconductor chips are built on a silicon wafer, and include multiple layers of circuitry that connect a variety of circuit components, such as transistors, capacitors and other components. To build a chip, the transistors, capacitors and other 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.

SOLAR AND SEMICONDUCTOR EQUIPMENT PRODUCTS

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

Horizontal Diffusion Furnaces. Through our subsidiaries, Tempres and Bruce Technologies, we produce and sell horizontal diffusion furnaces. Our horizontal furnaces currently address several steps in the solar and semiconductor manufacturing processes, including diffusion, phosphorus tetrachloride doping, or POCl_3 , boron tribromide, or BBR_3 , low-pressure chemical vapor deposition, or LPCVD, oxidation, and annealing.

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

Automation Products - Solar. Our automation technology products are used in several of the diffusion steps and in the anneal processing step of solar cell manufacturing. Our R2D Automation equipment includes mass wafer transfer systems, sorters, long-boat transfer systems, load station elevators, buffers and conveyers. We use a vacuum technology in our Comet Standalone and our Comet Full Automation solar wafer transfer systems designed to ensure high throughput, reduced breakage and thereby increased yield.

Plasma-Enhanced Chemical Vapor Deposition (PECVD). Our new solar PECVD product applies an anti-reflective coating to solar wafers; a coating critical to the efficiency of solar cells. PECVD layers are also used for passivation of the front and/or back side of the solar cell. This solar product adds another solar cell processing step to Amtech's offerings. We are exploring next-generation high-efficiency technology and dedicating our efforts to that process development.

Solar Ion Implant. Kingstone has developed an ion implant system specifically designed for the solar industry, which will contribute to higher efficiencies at a lower cost of ownership.

Automation Products - Semiconductor. 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. The top reactor chamber of a horizontal furnace can be as much as eight feet

from the floor on which the operator stands when manually loading wafer boats. Typical boats of 150mm to 300mm wafers weigh three to six pounds. Given these two factors, automating the wafer loading and unloading of a diffusion furnace improves employee safety and ergonomics in silicon wafer, solar cell and semiconductor manufacturing facilities.

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

Comet. Our Comet and Gemini series of wafer transfer systems include a wide range of throughputs and footprints to meet the needs of our customers who serve the semiconductor industry. Comet Sorter with Optical Character Recognition (OCR) is used in sorting, randomizing, compacting or tracking. The Comet Sorter is cassette to cassette with OCR front and back scribe functions, notch alignment and SECSII Gem communication. Comet ID Readers check tag carriers then read each wafer scribe. The Comet ID Reader sends the information to the host with SECSII Gem commands.

Small Batch Vertical Furnace. Our small batch, two-tube vertical furnace was developed internally with the active support from a large semiconductor manufacturer and long-term customer. The specifications for this furnace include a two-tube vertical furnace for wafer sizes of up to 200mm, with each tube having a small flat zone capable of processing 25-50 wafers per run. We are targeting niche applications, including research and development, while we continue to develop additional processes, since the competition in the large batch vertical furnace market is intense and our competitors are much larger and have substantially greater financial resources, processing knowledge and advanced technology.

POLISHING SUPPLIES PRODUCTS

Our polishing supplies division provides solutions to the lapping and polishing marketplace. Lapping is the process of abrading components with a high degree of precision for flatness, parallelism and surface finish. Common applications for this technology are silicon wafers for semiconductor products, sapphire substrates for LED lighting and mobile devices, silicon carbide for LED lighting, various glass and silica components for 3D image transmission, quartz and ceramic components for telecommunications devices, medical device components and computer hard disks. We manufacture the products described below in Pennsylvania and sell them under our PR Hoffman brand name.

Wafer Carriers. Carriers are work holders into which silicon and sapphire wafers or other materials are inserted for the purpose of holding them securely in place during the lapping and polishing processes. We produce carriers for our line of lapping and polishing machines, as well as for those machines sold by our competitors. Substantially all of the carriers we produce are customized for specific applications. Insert carriers, our most significant category of carriers, contain plastic inserts molded onto the inside edge of the work-holes of the carrier, which hold the wafers in place during processing. Although our standard steel carriers are preferred in many applications because of their durability, rigidity and precise dimensions, they are typically not suited for applications involving softer materials or when metal contamination is an issue. Insert carriers, however, are well suited for processing large semiconductor wafers, up to 450mm in diameter, and other fragile materials or where contamination is an issue, because they provide the advantages of steel carriers while reducing the potential for damage to the edges of such sensitive materials. Our insert carriers are used for double-sided lapping or polishing of wafers up to 450mm in diameter.

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

Double-Sided Planetary Lapping and Polishing Machines. Double-sided lapping and polishing machines are designed to process thin and fragile materials, such as semiconductor, sapphire and other wafer-like materials, precision optics, computer disk media and ceramic components for wireless communication devices, to exact tolerances of thickness, flatness, parallelism and surface finish. On average, we believe that we offer our surface processing systems with a lower cost of ownership than systems offered by our competitors. We target the LED, mobile device, semiconductor, optics, quartz, ceramics, medical, computer disk and metal working markets.

MANUFACTURING, RAW MATERIALS AND SUPPLIES

Our solar and semiconductor equipment manufacturing activities consist primarily of engineering design to meet specific and evolving customer needs, and procurement and assembly of various commercial and proprietary components into finished thermal processing systems and related automation in Vaassen, The Netherlands, Clapiers, France, and North Billerica, Massachusetts.

Our manufacturing activities in the polishing supplies and equipment business include laser-cutting and other fabrication steps in producing lapping and polishing consumables, including carriers, templates, gears, wear items and spare parts in Carlisle, Pennsylvania, from raw materials manufactured to our specifications by our suppliers. These products are engineered and designed for specific applications and to meet the increasingly tight tolerances required by our customers. Many items, such as proprietary components for our solar and semiconductor equipment and lapping plates, are also purchased from suppliers who manufacture these items to our specifications.

Final assembly and tests of our equipment and machines are performed within our manufacturing facilities. Quality control is maintained through inspection of incoming materials and components, in-process inspection during equipment assembly, testing of assemblies and final inspection and, when practical, operation of manufactured equipment prior to shipment.

Since much of our polishing supplies know-how relates to the manufacture of its products, this business' facility is equipped to perform a significantly higher percentage of the fabrication steps required in the production of its products. However, injection molding for our insert carriers and the manufacture of raw cast iron plates are subcontracted out to various third parties. Our polishing supplies business relies on key suppliers for certain materials, including two steel mills in Germany and Japan, an injection molder, a single-sourced pad supplier from Japan and an adhesive manufacturer. 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 to 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.

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 maintain or exceed the pace of such change by improving our products and our process technologies and by developing new technologies and products that compete effectively on the basis of price and performance. To assure that these technologies and products address current and future customer requirements, we obtain as much customer cooperation and input as possible, thus increasing the efficiency and effectiveness of our research and development efforts.

With our acquisition of Kingstone in February 2011, we expanded our development efforts in a future high efficiency cell processing technology based on the ion implant process. We believe that the acquisition of Kingstone is a critical addition in support of our strategy to provide our customers with next-generation process technologies that enable the development of higher-efficiency, lower cost solar cells.

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 research grants for research and development of products, which are netted against our research and development costs. Our expenditures (net of grants earned) that have been accounted for as research and development were \$6.3 million (11% of net revenue) for fiscal 2014, \$6.6 million (19.0% of net revenue) for fiscal 2013, and \$13.7 million (16.8% of net revenue) for fiscal 2012.

PATENTS

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

Product	Country (number of patents)	Expiration Date or Pending Approval
Systems and methods for charging solar cell layers	United States	Pending
Systems and methods for depositing and charging solar cell layers	United States (3)	Pending
Photovoltaic cell and method to produce photovoltaic cell	Netherlands	2030
Method for manufacturing a solar cell	Netherlands (3)	Pending
Systems for charging solar cell layers	United States	Pending
Systems and methods for charging solar cell layers	United States	2031
Systems and methods for charging solar cell layers	China	Pending
Systems and methods for charging solar cell layers	Korea	Pending
Systems and methods for charging solar cell layers	Malaysia	Pending
Method for producing semiconductor device	Taiwan	2030
Chemical Vapor Deposition system	Europe	Pending
RFID use in carrier products	United States	Pending
IBAL Model S-300	United States (2)	2019
IBAL Model S-300	United States (2)	2021
Lapping Machine adjustable mechanism	United States	2027
Lapping Machine adjustable mechanism	Germany	Pending
Lapping Machine adjustable mechanism	Japan	Pending
System and method of ion implantation	United States (2)	2030
System and method of ion implantation	United States	Pending
System and method of ion implantation	China (3)	2030
System and method of ion implantation	China (10)	Pending
Ion beam transportation	China (2)	2029
Ion beam transportation	China (8)	Pending
Wafer handling	China (2)	Pending
System and method of high voltage power supply	China	Pending
System and method of making solar cells	China (9)	Pending
Vacuum chamber apparatus and method of moving objects within vacuum	China (9)	Pending
Method of making and transporting SiC layer	China (2)	Pending
Device for securing heating wire	Netherlands	2025
Device for securing heating wire	Germany	2026
Heating element wire spacer	United States	2026
Potential damage-free asher	United States	2018

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

SALES AND MARKETING

Because of the highly technical nature of our products, we market our products primarily by direct customer contact through our sales personnel and through a network of domestic and international independent sales representatives and

distributors that specialize in solar and semiconductor equipment and supplies. Our promotional activities include direct

10

sales contacts, participation in trade shows, an internet website, advertising in trade magazines and the distribution of product brochures.

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

Payment terms of our parts, service and retrofit sales are generally net 30 days. The payment terms of equipment or systems sales vary depending on the size of the order and the size, reputation and creditworthiness of the customer. As a result, the financial terms of equipment sales can range from 80% due 30 days after shipment and 20% due 30 days after acceptance, to requiring a customer deposit 30 days after order placement, a portion due 30 days after shipment and the balance due 30 days after acceptance. Letters of credit are required of certain customers depending on the size of the order, creditworthiness of the customer and the customer's country of domicile.

During fiscal 2014, 79% of our net revenue came from customers outside of North America. This group represented 80% of revenues in fiscal 2013. In fiscal 2014, net revenue was distributed among customers in different geographic regions as follows: North America 21% (all of which is in the United States), Asia 45% (including 14% to China and 16% to Taiwan) and Europe 34% (including 16% to Germany). In fiscal 2014, two customers individually accounted for 18% and 11% of net revenue. In fiscal 2013, one customer accounted for 20% of net revenue. In fiscal 2012, one customer accounted for 11% of net revenue. Our business is not seasonal in nature, but is cyclical based on the capital equipment investment patterns of solar cell and semiconductor manufacturers. These expenditure patterns are based on many factors, including capacity utilization, anticipated demand, the development of new technologies and global and regional economic conditions. See "Part 1 Financial Information, Item 1. Consolidated Financial Statements, Footnote 9 Geographic Regions" for information regarding our net long-lived assets.

COMPETITION

We compete in several distinct equipment markets for solar cells, semiconductor devices, semiconductor wafers, MEMS and the market for lapping and polishing machines and supplies used in the LED, mobile devices and semiconductor markets. 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 these markets include the product'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.

The Solar Cell, Semiconductor Device, and MEMS Markets. Our thermal processing equipment and automation primarily compete with those produced by other original equipment manufacturers, some of which are well-established firms that are much larger and have substantially greater financial resources than we have. Some of our competitors have a diversified product line, making it difficult to quantify their sales of products that compete directly with our products. Competitors of our horizontal diffusion furnaces include Centrotherm GmbH, Koyo Systems Co. Ltd., Sandvik Thermal Process, Inc., a subsidiary of Sandvik AB, 48th Institute, Sevenstar Electronics, CVD Equipment, Inc., Semco Engineering S.A., S.C New Energy and Expertech, Inc. We are experiencing increased competition from local Chinese equipment manufacturers, including 48th Institute, S.C New Energy and Sevenstar Electronics, which may receive varying levels of financial support from the Chinese government. Our primary competitive advantages over such local manufacturers include our automation and higher-efficiency solar cell

production technologies which we develop in collaboration with customers and research institutes. Also, our furnaces and lapping and polishing machines face, to a limited extent, competition from equipment on the low-end of the price spectrum.

General Industrial Lapping and Polishing Machines, Supplies and Semiconductor Wafer Markets. We experience price competition for wafer carriers produced by foreign manufacturers for which there is very little publicly available information. As a result, we are intensifying our efforts to reduce the cost of our carriers and will continue to compete with other manufacturers of carriers by continuing to update our product line to keep pace with the rapid changes in our customers' requirements and by providing a high level of quality and customer service. We produce steel carriers, including insert carriers, on an advanced laser-cutting tool, which reduces our costs and lead times and increases our

control over quality. Competitors of our lapping and polishing machines and supplies include Peter Wolters and Speedfam, divisions of Novellus, Lapmaster International, LLC, Hamai Co., Ltd., Onse, Inc. and Eminess Technologies, Inc. Our strategy to enhance our sales of wafer carriers includes developing additional niche markets for templates and providing a high level of customer support and products at a lower cost than our competitors.

EMPLOYEES

As of September 30, 2014, we employed 262 people. Of these employees, 13 were based at our corporate offices in Tempe, Arizona, 39 at our manufacturing plant in Carlisle, Pennsylvania, 19 at our manufacturing plant in Billerica, Massachusetts, 89 at our operations in The Netherlands, 63 at our facilities in China and 39 at our facilities in France. Of the 39 people employed at our Carlisle, Pennsylvania facility, 22 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.

CORPORATE INFORMATION

We were incorporated in Arizona in October 1981, under the name Quartz Engineering & Materials, Inc. We changed to our present name in 1987. We conduct operations through four wholly-owned subsidiaries: Tempres Systems, Inc., or Tempres, a Texas corporation with all of its operations in Vaassen, The Netherlands, acquired in 1994 and subsequently reincorporated in The Netherlands; P.R. Hoffman Machine Products, Inc., or P.R. Hoffman, an Arizona corporation based in Carlisle, Pennsylvania, acquired in July 1997; Bruce Technologies, Inc., or Bruce Technologies, a Massachusetts corporation based in North Billerica, Massachusetts, acquired in July 2004; R2D Automation SAS, or R2D, a French corporation located near Montpellier, France, acquired in October 2007. We also own a 55% interest in Kingstone Technology Hong Kong Limited, or Kingstone, a Hong Kong-based company that owns 100% of Kingstone Semiconductor Company Ltd., located in Shanghai, China, acquired in February 2011.

AVAILABLE INFORMATION

Our internet website address is www.amtechsystems.com. Through our website, we make available, without charge, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports, as soon as reasonably practicable after such materials are electronically filed, or furnished to, the Securities and Exchange Commission, or the SEC. The information found on our website, or information that may be accessed through links on our website, are not part of this or any other report we file with, or furnish to, the SEC. In addition, our SEC filings are available at the SEC's website at <http://www.sec.gov>.

ITEM 1A. RISK FACTORS

Our business faces significant risks. Because of the following factors, as well as other variables affecting our operating results and financial condition, past performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. The following risk factors should be read in conjunction with the other information and risks set forth herein.

Risks Related to our Business and Industry.

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

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

- changes in global and regional economic conditions;
- changes in capacity utilization and production volume of manufacturers of solar cells, semiconductors, silicon wafers and MEMS;
- the profitability and capital resources of those manufacturers

- tariff and international trade barriers, including without limitation unfair trade proceedings against solar PV manufacturers in China
- challenges associated with marketing and selling manufacturing equipment and services to a diverse and diffuse customer base;
- the financial condition of solar PV customers and their access to affordable financing and capital; and
- the shift of solar and semiconductor production to Asia, where there often is increased price competition.

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

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

The purchasing decisions of our customers are highly dependent on their capacity utilization, which changes when new facilities are put into production, and with the level of demand for solar cells and semiconductors. Purchasing decisions are also impacted by changes in the economies of the countries which our customers serve, as well as the state of the worldwide solar and semiconductor industries. The timing, length and severity of the up-and-down cycles in the solar and semiconductor equipment industries are difficult to predict. The cyclical nature of our marketplace affects our ability to accurately budget our expense levels, which are based in part on our projections of future revenue.

When cyclical fluctuations result in lower than expected revenue levels, operating results are adversely affected. Cost reduction measures may be necessary in order for us to remain competitive and financially sound. During a down cycle, our operating results may be adversely affected if we are unable to make timely adjustments to our cost and expense structure to correspond to the prevailing market conditions; effectively manage the supply chain; and motivate and retain key employees. In addition, during periods of rapid growth, our operating results may be adversely affected if we are unable to increase manufacturing capacity and personnel to meet customer demand, which may require additional liquidity. We can provide no assurance that we can timely and effectively respond to the industry cycles. Our failure to timely and effectively respond to these cyclical changes could have a material adverse effect on our business.

The Company is exposed to risks as a result of ongoing changes specific to the solar industry.

A significant portion of the Company's business is to supply the solar market, which, in addition to the general industry changes described above, is characterized by ongoing changes specific to the solar industry, including:

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the varying energy policies of governments around the world and their influence on the rate of growth of the solar PV market, including the availability and amount of government incentives for solar power such as tax credits, feed-in tariffs, rebates, renewable portfolio standards that require electricity providers to sell a targeted amount of energy from renewable sources, and goals for solar installations on government facilities;

the need to continually decrease the cost-per-watt of electricity produced by solar PV products to or below competing sources of energy by, among other things, reducing operating costs and increasing throughputs for solar PV manufacturing, and improving the conversion efficiency of solar PV;

• the impact on demand for solar PV products arising from the cost of electricity generated by solar PV compared to the cost of electricity from the existing grid or other energy sources;

• the growing number of solar PV manufacturers and increasing global production capacity for solar PV, primarily in China as a result of increased solar subsidies and lower manufacturing costs;

- tariff and international trade barriers, including without limitation such barriers arising from any trade tensions between the United States and China and potential retaliatory actions;
- the varying levels of operating and industry experience among solar PV manufacturers and the resulting differences in the nature and extent of customer support services requested from the Company;
- challenges associated with marketing and selling manufacturing equipment and services to a diverse and diffuse customer base;
- the cost of polysilicon and other materials;
- access to affordable financing and capital by customers and end-users; and
- an increasing number of local equipment and parts suppliers based in Asia with certain cost and other advantages over suppliers from outside Asia.

In addition, current projections for global solar PV production exceed anticipated near-term end-use demand, which is heavily dependent on installed cost-per-watt, government policies and incentives, and the availability of affordable capital. An oversupply of solar PV may lead customers to delay or reduce investments in manufacturing capacity and new technology, and adversely impact the sales and/or profitability of our products. If the Company does not successfully manage the risks resulting from the ongoing changes occurring in the solar industry, its business, financial condition and results of operations could be materially and adversely affected.

The solar and semiconductor equipment industries are competitive and because we are relatively small in size and have fewer resources compared to our competitors, we may not be able to compete successfully with them.

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 in these markets. 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 often at a lower price than ours and use innovative technology to sell products into specialized markets. Furthermore, we face competition from Chinese equipment manufacturers, including 48th Institute and Sevenstar Electronics, which may receive greater support from Chinese customers and governmental agencies because they are locally based. Loss of competitive position could impair our prices, customer orders, revenue, gross margin and market share, any of which would negatively affect our financial position and results of operations. Our failure to compete successfully with these other companies would seriously harm our business. There is a risk that larger, better-financed competitors will develop and market more advanced products than those that we currently offer, or that competitors with greater financial resources may decrease prices thereby putting us under financial pressure. The occurrence of any of these events could have a negative impact on our revenue and results of operations.

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

We currently sell to a relatively small number of customers, and we expect our operating results will likely continue to depend on sales to a relatively small number of customers for the foreseeable future. Our operating results, therefore, depend on the ability of these customers to sell products that require our equipment in their manufacture. Many of our customer relationships have been developed over a short period of time and certain customers are in their early stages of development. The loss of sales to any of these customers would have a significant negative impact on our business. Our agreements with these customers may be canceled if we fail to meet certain product specifications, materially

breach the agreement, or in the event of bankruptcy, and our customers may seek to renegotiate the terms of current agreements or renewals. We cannot be certain that these customers will generate significant revenue for us in the future nor that these customer relationships will continue to develop. If our relationships with other customers do not continue to develop, we may not be able to expand our customer base or maintain or increase our revenue.

As of September 30, 2014, two customers individually represented 14% and 10% of accounts receivable. As of September 30, 2013, two customers individually represented 18% and 13% of accounts receivable. A significant change in the liquidity or financial position of any of our customers that purchase large systems could have a material impact on the collectability of our accounts receivable and our future operating results. A concentration of our receivables from

one or a small number of customers places us at risk. We attempt to manage this credit risk by performing credit checks, by requiring significant partial payments prior to shipment where appropriate and by actively monitoring collections. We also require letters of credit from certain customers depending on the size of the order, type of customer or its creditworthiness and its country of domicile. Our major customers may seek, and on occasion, may receive pricing, payment, intellectual property-related, or other commercial terms that are less favorable to the Company. If any one or more of our major customers does not pay us or continue business with us, it could adversely affect our financial position and results of operations.

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

Our backlog includes orders for large systems, such as our diffusion furnaces, with system prices of up to and in excess of \$1.0 million, depending on the system configuration, options and any special requirements of the customer. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for succeeding periods, nor is backlog any assurance that we will realize revenue or profit from completing these orders. Our financial position and results of operations could be materially and adversely affected should any large systems order be canceled prior to shipment, or not be accepted by the customer. Cancellations may result in inventory that we may not be able to sell or reuse if those products have been tailored for a specific customer's requirements and cannot then be sold without significant incremental cost. We have experienced cancellations in the past. We cannot provide any assurance that we will realize revenue or profit from our backlog or for which period net revenue will be recognized, if ever.

Because we depend on revenue from international customers, our business may be adversely affected by changes in the economies and policies of the countries or regions in which we do business.

During fiscal 2013, 80% of our net revenue came from customers outside of North America. During fiscal 2014, 79% of our net revenue came from customers outside of North America as follows:

• Asia - 45% (including China - 14% and Taiwan - 16%); and

• Europe – 34%.

Each region in the global solar and semiconductor equipment market exhibits unique characteristics that can cause capital equipment investment patterns to vary significantly from period to period. Our business and results of operations could be negatively affected by periodic local or international economic downturns, trade balance issues and political, social and military instability in countries such as China, India, South Korea, Taiwan and possibly elsewhere. In addition, we face competition from a number of suppliers based in Asia that have certain advantages over suppliers from outside of Asia. These advantages include lower operating, shipping and regulatory costs, proximity to customers, favorable tariffs and other government policies that favor local suppliers. Additionally, the marketing and sale of our products to international markets expose us to a number of risks, including, but not limited, to:

- increased costs associated with maintaining the ability to understand the local markets and follow their trends and customs, as well as develop and maintain effective marketing and distributing presence in various countries;
- the availability of advance payments made by our customers;
- difficulty in providing customer service and support in these markets;
- difficulty in staffing and managing overseas operations;

- longer sales cycles and time collection periods;
- fewer or weaker legal protections for our intellectual property rights;
- failure to develop appropriate risk management and internal control structures tailored to overseas operations;
- difficulty and costs relating to compliance with the different or changing commercial and legal requirements of our overseas markets;
- fluctuations in foreign currency exchange and interest rates, particularly in Asia and Europe;
- longer sales cycles and time collection periods;
- fewer or weaker legal protections for our intellectual property rights;

failure to obtain or maintain certifications for our products or services in these markets; and
international trade barriers such as export requirements, tariffs, taxes and other restrictions and expenses.

Our business may be adversely affected by significant exchange rate fluctuations and changes in foreign laws

Our net foreign currency transaction gains or losses were less than \$0.1 million in each of the fiscal years ended September 30, 2014 and 2013. While our business generally 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, especially as we continue to expand operations into other countries. Such risk includes possible losses due to currency exchange rate fluctuations, possible future prohibitions against repatriation of earnings, or proceeds from disposition of investments. Our wholly-owned subsidiary, Tempres Systems, has conducted its operations in The Netherlands since 1995. In October 2007, we completed our acquisition of R2D, a French company. In February 2011, we completed our acquisition of Kingstone, a company with China-based operations. As a result of these acquisitions in Europe and Asia, the risk associated with foreign currency translation gains and losses has increased. Operations of these companies are subject to the taxation policies, employment and labor laws, transportation regulations, import and export regulations and tariffs, possible foreign exchange restrictions and international monetary fluctuations. Changes in such laws and regulations may have a material adverse effect on our revenue and costs. We are subject to the Foreign Corrupt Practices Act, which may place us at a competitive disadvantage to foreign companies that are not subject to similar regulations. We could be adversely affected by violations of applicable anti-corruption laws or violations of our internal policies designed to ensure ethical business practices.

We are exposed to risks associated with an uncertain global economy.

Uncertain global economic conditions and slowing growth in China, Europe and the United States, along with difficulties in the financial markets, national debt concerns in various regions and government austerity measures, pose challenges to the industries in which we operate. Economic uncertainty and related factors, including unemployment, inflation and fuel prices, exacerbate negative trends in business and consumer spending and may cause our customers to push out, cancel, or refrain from placing orders for equipment or services. This may, in turn, reduce our net sales, reduce backlog, and affect our ability to convert backlog to sales. Uncertain market conditions, difficulties in obtaining capital, or reduced profitability may also cause some customers to scale back operations, exit businesses, merge with other manufacturers, or file for bankruptcy protection and potentially cease operations, which can also result in lower sales and/or additional inventory or bad debt expense for us. These conditions may similarly affect key suppliers, impairing their ability to deliver parts and potentially causing delays or added costs for delivery of our products. In addition, these conditions may lead to strategic alliances by, or consolidation of, other equipment manufacturers, which could adversely affect our ability to compete effectively. Uncertainty about future economic and industry conditions also makes it more challenging for us to forecast our operating results, make business decisions, and identify and prioritize the risks that may affect our businesses, sources and uses of cash, financial condition and results of operations. We may be required to implement additional cost reduction efforts, including restructuring activities, and/or modify our business model, which may adversely affect our ability to capitalize on opportunities in a market recovery. If we do not timely and appropriately adapt to changes resulting from the uncertain macroeconomic environment and industry conditions, or to difficulties in the financial markets, our business, financial condition and results of operations may be materially and adversely affected.

Natural disasters, outbursts of infectious diseases, terrorist attacks and threats or actual war may negatively impact all aspects of our operations, revenue, costs and stock price.

Natural disasters such as earthquakes, floods, severe weather conditions or other catastrophic events, or outbreaks of infectious diseases may severely affect our operations or those of our suppliers and customers. Such catastrophic events or future disasters may have a material adverse effect on our business.

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

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

The revenue of our solar and semiconductor equipment business is comprised primarily of sales of horizontal diffusion furnaces and our automation products. Our automation products are useable almost exclusively with horizontal diffusion furnaces. A significant part of our growth strategy involves expanding our sales to the solar industry. The solar industry is subject to risks relating to industry shortages of polysilicon, (which we discuss further herein), the continuation of government incentives, the availability of specialized capital equipment, global energy prices and rapidly changing technologies offering alternative energy sources and manufacturing processes. If the demand for solar industry products declines, the demand by the solar industry for our products would also decline and our financial position and results of operations would be harmed.

There is a trend in the semiconductor industry, related to the trend to produce smaller chips on larger wafers, towards the use in semiconductor manufacturing facilities of newer technology, such as vertical diffusion furnaces. Vertical diffusion furnaces are more efficient than horizontal diffusion furnaces in certain manufacturing processes for smaller chips on larger wafers. To the extent that the trend to use vertical diffusion furnaces over horizontal diffusion furnaces continues, our revenue may decline and our corresponding ability to generate income may be adversely affected.

We may not be able to manage the business successfully through severe business cycles.

We may be unable to successfully expand or contract our business to meet fluctuating demands. Market fluctuations place significant strain on our management, personnel, systems and resources. In fiscal years 2010 and 2011, we purchased additional equipment and real estate to significantly expand our manufacturing capacity and hired additional employees to support an increase in manufacturing, field service, research and development and sales and marketing efforts. During fiscal years 2012 through 2014, the rapid decline in demand has caused us to reduce headcount in manufacturing and field service and to reduce certain research and development costs. To successfully manage our growth, we believe we must effectively:

- maintain the appropriate number and mix of permanent, part-time, temporary and contract employees to meet the fluctuating demand for our products;
- train, integrate and manage personnel, particularly process engineers, field service engineers, sales and marketing personnel, and financial and information technology personnel to maintain and improve skills and morale;
- retain key management and augment our management team, particularly if we lose key members;
- continue to enhance our customer resource and manufacturing management systems to maintain high levels of customer satisfaction and efficiencies, including inventory control;
- implement and improve existing and new administrative, financial and operations systems, procedures and controls;
- expand and upgrade our technological capabilities; and
- manage multiple relationships with our customers, suppliers and other third parties.

We may encounter difficulties in effectively managing the budgeting, forecasting and other process control issues presented by rapidly changing cycles. If we are unable to manage these cycles effectively, we may not be able to take advantage of market opportunities, develop new technologies for the production of solar cells and other products, satisfy customer requirements, execute our business plan or respond to competitive pressures.

If governmental subsidies decline or if demand for solar energy declines, our Company may not be able to continue making substantial investments in our organization to develop new products for the solar industry which may have a

material adverse effect on our business.

The solar energy sector is dependent upon governmental subsidies, some of which have been scaled back and are not guaranteed to continue. A further decline in these subsidies could reduce our ability to make investments in our Company and grow our business in this market. The solar industry is currently facing overcapacity in production. This overcapacity has a significant adverse impact on the demand for the capital equipment we supply to this industry. As a result of these risks there is no assurance that we will realize a return on these investments which may have a material effect on our business.

17

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

Historically, our product development has been accomplished through cooperative efforts with key customers. Our relationships with some customers are substantially dependent on personal relations and other contacts established by either our Executive Chairman or our President and Chief Executive Officer. Our relationships with major European customers that are strategically important to the development and testing of our N-type technology solar diffusion furnace and PECVD equipment are substantially dependent upon our President and Chief Executive Officer, Mr. Fokko Pentinga. 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.

Furthermore, it may not be feasible for any successor to maintain the same business relationships that our Executive Chairman, Mr. J.S. Whang, has established. Even though we are the beneficiary of life insurance policies on the life of Mr. Whang, in the amount of \$2.0 million, there is no assurance that such amount will be sufficient to cover the cost of finding and hiring a suitable replacement for Mr. Whang. If we were to lose the services of either Mr. Whang or Mr. Pentinga for any reason, it could have a material adverse effect on our business.

We also depend on the management efforts of our officers and other key personnel and on our ability to attract and retain key personnel. 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 needed to meet customer requirements.

Success in the solar and semiconductor equipment industries depends, in part, on continual improvement of existing technologies and rapid innovation of new solutions. For example, the solar industry continues to develop new technologies to increase the efficiencies and lower the costs of solar cells. Also, the semiconductor industry continues to shrink the size of semiconductor devices. These and other evolving customer needs require us to continually respond with new product developments.

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 and win market acceptance. We must also manufacture these new products in a timely and cost-effective manner. To realize future growth through technical innovations in the solar and semiconductor industries, we must either acquire the technology through product development, merger and acquisition activity or through the licensing of products from our technology partners. Potential disruptive technologies could have a material adverse effect on our business if we do not successfully 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.

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

We continually evaluate potential acquisitions and consider acquisitions an important part of our future growth strategy. In the past, we have made acquisitions of, or significant investments in, other businesses with synergistic products, services and technologies and plan to continue to do so in the future. Acquisitions, including our acquisition of R2D and Kingstone, involve numerous risks, including, but not limited to:

- difficulties and increased costs in connection with integration of geographically diverse personnel, operations, technologies and products of acquired companies;
- diversion of management's attention from other operational matters;
- the potential loss of our key employees and the key employees of acquired companies;
- disagreement with joint venture or strategic alliance partners;
- failure to comply with laws and regulations as well as industry or technical standards of the overseas markets into which we expand;

- our inability to achieve the intended cost efficiency, level of profitability or other intended strategic goals for the acquisitions, strategic investments, joint ventures or other strategic alliances;
- lack of synergy, or inability to realize expected synergies, resulting from the acquisition;
- the risk that the issuance of our common stock, if any, in an acquisition or merger could be dilutive to our shareholders, if anticipated synergies are not realized;
- acquired assets becoming impaired as a result of technological advancements or worse-than-expected performance of the acquired company;
- inability to complete proposed transactions as anticipated or at all and any ensuing obligation to pay a termination fee;
- the potential impact of the announcement or consummation of a proposed transaction on relationships with third parties;
- potential changes in our credit rating, which could adversely impact the Company's access to and cost of capital;
- reductions in cash balances and/or increases in debt obligations to finance activities associated with a transaction, which reduce the availability of cash flow for general corporate or other purposes;
- inadequacy or ineffectiveness of an acquired company's internal financial controls, disclosure controls and procedures, and/or environmental, health and safety, anti-corruption, human resource, or other policies or practices; and
- unknown, underestimated and/or undisclosed commitments or liabilities.

Our financial position and results of operations may be materially harmed if our R&D investments do not result in timely new products that can be sold at favorable prices and obtain market acceptance.

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, functionality and cost of ownership of our products to keep pace with competitive products and to satisfy customer demands for improved performance, features and functionality. There can be no assurance that revenue from future products or enhancements will be sufficient to recover the development costs associated with such products or enhancements, or that we will be able to secure the financial resources necessary to fund future development. Research and development costs are typically incurred before we confirm the technical feasibility and commercial viability of a product, and not all development activities result in commercially viable products. 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. In addition, from time to time we receive funding from government agencies for certain strategic development programs to increase our research and development resources and address new market opportunities. As a condition to this government funding, we may be subject to certain record-keeping, audit, intellectual property rights-sharing and/or other obligations. If we do not successfully manage risks resulting from diversification and entry into new markets and industries, our business, financial condition and results of operations could be materially and adversely affected.

If we fail to maintain optimal inventory levels, our inventory obsolescence costs could increase, our liquidity could be significantly reduced or our revenue could decrease, any of which could have a material adverse effect on our business, financial condition and results of operations.

While we must maintain sufficient inventory levels to operate our business successfully and meet our customers' demands, accumulating excess inventory may have a significant unfavorable impact on our operating results and financial condition. Changing customer demands, supplier lead-times and uncertainty surrounding new product launches expose us to risks associated with excess inventory or shortages. Demand for products can change rapidly and unexpectedly. Our products are manufactured using a wide variety of purchased parts and raw materials and we must maintain sufficient inventory levels to meet the demand for the products we sell. During peak years in the solar and semiconductor industries, increases in demand for capital equipment results in longer lead-times for many important system components. Future increases in demand could cause delays in meeting shipments to our customers. Because of the variability and uniqueness of customer orders, we try to avoid maintaining an extensive inventory of

materials for manufacturing. However, long lead-times for important system components during industry upturns sometimes require us to carry higher levels of inventory and make larger purchase commitments than we would otherwise make. We may be unable to sell sufficient quantities of products in the event that market demand changes, resulting in increased risk of excess inventory that could lead to obsolescence or reduced liquidity as we fulfill our purchase commitments. On the other hand, if we do not have a sufficient inventory of a product to fulfill customer orders, we may lose orders or customers, which may adversely affect our business, financial condition and results of operations. We cannot assure

that we can accurately predict market demand and events to avoid inventory shortages or inventories and purchase commitments in excess of our current requirements.

Supplier capacity constraints, supplier production disruptions, supplier quality issues or price increases could increase our operating costs and adversely impact the competitive positions of our products.

We use a wide range of materials and services in the production of our products including custom electronic and mechanical components, and we use numerous suppliers of materials. Although we make what we believe are reasonable efforts to ensure that parts are available from multiple suppliers, this may not always be practical or possible. Accordingly, some key parts are being procured from a single supplier or a limited group of suppliers. Key vendors include suppliers of controllers, quartz and silicon carbide for our diffusion systems, two steel mills capable of producing the types of steel to the tolerances needed for our wafer carriers, an injection molder that molds plastic inserts into our steel carriers, an adhesive manufacturer that supplies the critical glue and a pad supplier that produces a unique material used in the manufacture of our polishing templates. We also rely on third parties for certain machined parts, steel frames and metal panels and other components used particularly in the assembly of solar and semiconductor production equipment.

Because the selling price of some of our systems exceeds \$1.0 million, the delay in the shipment of even a single system could cause significant variations in our quarterly revenue. In the event of supplier capacity constraints, production disruptions, or failure to meet our requirements concerning quality, cost or performance factors, we may transfer our business to alternative sourcing which could lead to further delays, additional costs or other difficulties. 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, our financial position and results of operations may be materially and adversely affected.

If the practice of requiring certain customers to make advance payments when they place orders with us ceases, or if our customers fail to meet their payment obligations, we may experience increased needs to finance our working capital requirements and may be exposed to increased credit risk, which may materially and adversely affect our financial position and results of operations.

We require many of our customers to make an advance payment representing a percentage of their orders, which is a business practice that helps us manage our accounts receivable, prepay our suppliers and reduce the amount of funds that we need to finance our working capital requirements. We cannot assure that this practice will not cease in the future. If this practice ceases, we may not be able to secure additional financing on a timely basis or on terms acceptable to us or at all. Currently, a significant portion of our revenue is derived from credit sales to our customers, generally with payments due within less than three months after shipment. As a result, any future decrease in the use of cash advance payments by our customers may negatively impact our short-term liquidity and, coupled with increased credit sales to a small number of major customers, expose us to additional and more concentrated credit risk since a significant portion of our outstanding accounts receivable is derived from sales to a limited number of customers. We may need to from time to time commence legal proceedings to recover accounts receivables from customers, which may also increase our cost. Although we have been able to maintain adequate working capital primarily through cash from operations and a follow-on offering, any failure by our customers to settle outstanding accounts receivable in the future could materially and adversely affect our cash flow, financial condition and results of operations.

We may not be able to generate sufficient cash flows or obtain access to external financing necessary to fund and expand our operations as planned.

Cash flows may be insufficient to provide adequate working capital in the future and we may require additional financing for further implementation of our growth plans. There is no assurance that any additional financing will be available if and when required, or, even if available, that it would not materially dilute the ownership percentage of the then existing shareholders, result in increased expenses or result in covenants or special rights that would restrict our operations.

We may incur impairment charges to goodwill or long-lived assets.

We have acquired, and may acquire in the future, goodwill and other long-lived intangible assets. Goodwill and purchased intangible assets with indefinite useful lives are not amortized, but are reviewed for impairment at least annually, typically during the fourth quarter of each fiscal year, and more frequently when events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The review compares the fair value for each of our reporting units to its associated carrying value, including goodwill. Factors that could lead to impairment of goodwill

20

and intangible assets include adverse industry or economic trends, reduced estimates of future cash flows, declines in the market price of our common stock, changes in our strategies or product portfolio, and restructuring activities. Our valuation methodology for assessing impairment requires management to make judgments and assumptions based on historical experience and projections of future operating performance. We may be required to record a charge to earnings during the period in which an impairment of goodwill or amortizable intangible assets is determined to exist, which could materially and adversely affect our results of operations.

Most of our production, storage, and administrative facilities are located in close proximity to one another in The Netherlands. Any damage or disruption at these facilities could have a material adverse effect on our business, financial condition and results of operations.

Our production, storage and administrative facilities are located in close proximity to one another in The Netherlands. A natural disaster or other unanticipated catastrophic event, including flood, power interruption, and war, could significantly disrupt our ability to manufacture our products and operate our business. If any of our production facilities or equipment were to experience any significant damage or downtime, we would be unable to meet our production targets, our business would suffer, and it could have a material adverse effect on our business, financial condition and results of operations.

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

Our success is dependent in part on our technology and other proprietary rights. We own various United States and international patents and have additional pending patent applications relating to some of our products and technologies. Protecting and defending our patents domestically, and especially internationally, is costly. In addition, the process of seeking patent protection is lengthy and expensive. Therefore, we cannot be certain that pending or future applications will actually result in issued patents, or that issued patents will be of sufficient scope or strength to provide meaningful protection or commercial advantage to us. Other companies and individuals, including our larger competitors, may develop technologies that are similar or superior to our technology or design around the patents we own or license. We also maintain trademarks on certain of our products and claim copyright protection for certain proprietary software and documentation. However, we can give no assurance that our trademarks and copyrights will be upheld or will successfully deter infringement by third parties. The patent covering technology that we license and use in our manufacture of insert carriers has expired, which may have the effect of diminishing or eliminating any competitive advantage we may have with respect to this manufacturing process.

We attempt to protect our trade secrets and other proprietary information through confidentiality agreements with our customers, suppliers, employees and consultants and through other security measures. We also maintain exclusive and non-exclusive licenses with third parties for the technology used in certain products. However, these employees, consultants and third parties may breach these agreements, and we may not have adequate remedies for wrongdoing. In addition, the laws of certain territories, such as China, 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.

We may face intellectual property infringement claims that could be time-consuming and costly to defend and could result in our loss of significant rights and the assessment of treble damages.

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. 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.

Some of these claims may lead to litigation. We cannot assure that we will prevail in these actions, or that other actions alleging misappropriation or misuse by us of third-party trade secrets, infringement by us of third-party patents and trademarks or the validity of our patents, will not be asserted or prosecuted against us. Intellectual property litigation, regardless of outcome, is expensive and time-consuming, could divert management's attention from our business and have a material negative effect on our business, operating results or financial condition. If there is a successful claim of infringement against us, we may be required to pay substantial damages (including treble damages if we were to be found to have willfully infringed a third party's patent) to the party claiming infringement, incur costs to develop non-

infringing technology, stop selling or using technology that contains the allegedly infringing intellectual property or, enter into royalty or license agreements that may not be available on acceptable or commercially practical terms, if at all. Our failure to develop non-infringing technologies or license the proprietary rights on a timely basis could harm our business. Parties making infringement claims on future issued patents may be able to obtain an injunction that would prevent us from selling or using our technology that contains the allegedly infringing intellectual property, which could harm our business.

Failure to manage our growth, or otherwise develop appropriate internal organizational structures, internal control environment and risk monitoring and management systems in line with our fast growth could result in a material adverse effect on our business, prospects, financial condition and results of operations.

Our business and operations have been expanding rapidly. Significant management resources must be expended to develop and implement appropriate structures for internal organization and information flow, an effective internal control environment and risk monitoring and management systems in line with our fast growth as well as to hire and integrate qualified employees into our organization. It is challenging for us to hire, integrate and retain qualified employees in key areas of operations, such as engineers and technicians who are familiar with the industries. In addition, disclosure and other ongoing obligations associated with being a public company further increase the challenges to our finance, legal and accounting team. It is possible that our existing risk monitoring and management system could prove to be inadequate. If we fail to appropriately develop and implement structures for internal organization and information flow, an effective internal control environment and a risk monitoring and management system, we may not be able to identify unfavorable business trends, administrative oversights or other risks that could materially and adversely affect our business, prospects, financial condition and results of operations.

If we fail to maintain an effective system of internal controls, we may not be able to accurately report our financial results or prevent fraud. As a result, our stockholders could lose confidence in our financial reporting, which could have a negative impact on our business and the price of our common stock.

To maintain compliance with Section 404 of the Sarbanes-Oxley Act of 2002 we have assessed, strengthened and tested our system of internal controls. Despite our conclusion that our system of internal controls was effective as of September 30, 2014, we must continue to maintain our processes and systems and adapt them to changes in our business as it evolves. This continuous process of maintaining and adapting our internal controls and complying with Section 404 is expensive, time-consuming and requires significant management attention. We cannot be certain that our internal control measures will continue to provide adequate control over our financial reporting processes and ensure compliance with Section 404. Furthermore, as our business changes, our internal controls may become more complex and we may require significantly more resources to ensure our internal controls remain effective. In addition, if we reduce a portion of our workforce, as we have done recently, our ability to adequately maintain our internal controls may be adversely impacted. Failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm our operating results or cause us to fail to meet our reporting obligations. If we or our independent registered public accounting firm identify material weaknesses, the disclosure of that fact may result in negative investor perceptions of our Company and could cause a decline in the market price of our stock.

Unsatisfactory performance of, or defects in our products may cause us to incur additional warranty expenses, damage our reputation and cause our sales to decline.

As of September 30, 2012, 2013 and 2014, our accrued warranty costs amounted to \$2.7 million, \$1.5 million and \$0.6 million, respectively. Our assumptions regarding the durability and reliability of our products may not be accurate, and because our products have relatively long warranty periods, we cannot assure you that the amount of accrued warranty by us for our products will be adequate in light of the actual performance of our products. If we

experience a significant increase in warranty claims, we may incur significant repair and replacement costs associated with such claims. Furthermore, widespread product underperformances or failures will damage our reputation and customer relationships and may cause our sales to decline, which in turn could have a material adverse effect on our financial condition and results of operations.

We face the risk of product liability claims or other litigation, which could be expensive and may divert management's attention from running our business.

The manufacture and sale of our products, which, in our customers' operations, involve toxic materials and robotic machinery, involve the risk of product liability claims. In addition, a failure of one of our products at a customer site could interrupt the business operations of our customer. Our existing insurance coverage limits may not be adequate to protect us from all liabilities that we might incur in connection with the manufacture and sale of our products if a successful product liability claim or series of product liability claims were brought against us. We may also be involved in other legal proceedings or claims and experience threats of legal action from time to time in the ordinary course of our business.

Where appropriate, we intend to vigorously defend all claims. However, any actual or threatened claims, even if not meritorious or material, could result in the expenditure of significant financial and managerial resources. The continued defense of these claims and other types of lawsuits could divert management's attention away from running our business. In addition, required amounts to be paid in settlement of any claims, and the legal fees and other costs associated with their defense or also settlement, cannot be estimated and could, individually or in the aggregate, materially harm our financial condition. We may also experience higher than expected warranty claims.

We are subject to environmental regulations, and our inability or failure to comply with these regulations could result in significant costs or the suspension of our ability to operate portions of our business.

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

Regulations related to conflict minerals could adversely impact our business.

The Dodd-Frank Wall Street Reform and Consumer Protection Act contains provisions to improve transparency and accountability concerning the supply of certain minerals, known as conflict minerals, originating from the Democratic Republic of Congo (DRC) and adjoining countries. As a result, the SEC has adopted annual disclosure and reporting requirements for those companies who use conflict minerals mined from the DRC and adjoining countries in their products. These new requirements require companies to conduct due diligence efforts to determine whether products contain such conflict minerals, with initial disclosure requirements beginning in May of 2014. Our supply chain is complex and we may be unable to verify the origins for all metals used in our products. As a result, we may be unable to certify that our products are conflict mineral free.

Our results of operations are difficult to predict, and if we do not meet the market expectations, the price of the our stock will likely decline.

Our results of operations are difficult to predict and have fluctuated from time to time in the past. We expect that our results of operations may continue to fluctuate from time to time in the future. It is possible that our results of operations in some reporting periods will be below market expectations. If our results of operations for a particular reporting period are lower than the market expectations for such reporting period, investors may react negatively, and as a result, the price of our stock may materially decline.

Breaches or failures of our information technology systems may have a negative impact on our operating results and our reputation.

We may be subject to breaches or failures of our information technology systems caused by computer viruses, unauthorized access, sabotage, vandalism, terrorism or accident. Compromise of our information technology networks could result in unauthorized release of our confidential or proprietary information, or that of our customers and suppliers, as well as employee personal data. Breach of our information systems' security or failure of our systems may also cause a disruption in our manufacturing systems and other operations, and may cause us to fail to meet our financial reporting obligations.

23

The Company's income taxes are subject to variables beyond our control.

The Company's net income and cash flow may be adversely affected by conditions affecting income taxes which are outside the Company's control. Examples of the potential uncontrollable circumstances that could affect our tax rate:

The Company sells and operates globally in the United States, Europe and Asia. Disagreement could occur on the jurisdiction of income and taxation among different governmental tax authorities. Potential areas of dispute may include transfer pricing, intercompany charges and intercompany balances.

• Tax rates may increase and, therefore, have a material adverse effect on our earnings and cash flows.

Risks Related to the Pending Merger with BTU

Failure to complete the merger could negatively affect the Company's stock price and future business and operations. If the merger is not completed for any reason, the Company may be subject to a number of material risks, including the following:

• It may be required under certain circumstances to pay BTU a termination fee of \$1.32 million or an expense reimbursement amount of up to \$1 million.

• The price of its common stock may decline.

• Costs related to the merger, such as financial advisory, legal, accounting and printing fees, must be paid even if the merger is not completed.

Failure to complete the merger with BTU will subject the Company to financial risks and could cause the Company's stock price to decline

If the merger with BTU is not completed for any reason, the Company will be subject to a number of material risks, including:

• Under the merger agreement, the Company could be required to pay BTU a termination fee of \$1.32 million if the Company terminates the merger agreement in the event its board of directors has withdrawn, qualified, amended or modified its recommendation of the merger adversely to BTU or if the Company enters into certain other acquisition transactions.

• The Company's stock price may decline for various reasons, including whether the merger was terminated due to factors adversely affecting us, to the extent that the Company's shares are trading at a higher level than they might have been in the absence of the merger, and the potential for substantial sales of the Company's stock by short-term investors after any termination of the merger agreement.

• Costs related to the merger, such as legal, accounting and/or investment banking fees, must be paid even if the merger is not completed, and could be substantial.

• The benefits that we expect to realize from the merger would not be realized, and we may have foregone attractive business opportunities as a result of the covenants in the merger agreement.

• The diversion of management attention and the possible disruption of our business between the signing of the merger agreement and its termination, may make it difficult for the Company to regain its financial and market position if the merger does not occur.

• If the merger agreement is terminated, we may be unable to find another business willing to engage in a similar transaction on terms as favorable as those set forth in the merger agreement, or at all. This could limit our ability to pursue our strategic goals and growth strategy.

The combined company may not realize the benefits that the Company currently anticipates from the combination with BTU

Although the Company and BTU intend that the combined company will benefit from synergies and other benefits as a result of the merger, those benefits may not be realized or may be delayed. The success of the transaction will depend on, among other things, our ability to realize anticipated cost savings and to combine the businesses of the Company and BTU in a manner that does not materially disrupt the Company's and BTU's existing customer relationships nor

otherwise result in decreased revenues and that allows us to capitalize on the growth opportunities of a combined company. If we are unable to achieve these objectives, the anticipated benefits of the merger may not be realized fully or at all or may take longer to realize than expected.

BTU and the Company have operated and, until the completion of the mergers, will continue to operate, independently. It is possible that the integration process could result in the loss of key employees, the disruption of the Company's or BTU's ongoing businesses or inconsistencies in standards, controls, procedures and policies that could adversely affect the Company's ability to maintain relationships with customers and employees or to achieve the anticipated benefits of the merger. To realize the benefits of the merger, we may need to retain BTU's key employees.

The accomplishment of these post-merger objectives will involve considerable risk, including:

- The potential disruption of each company's ongoing business and the potential distraction of their respective management teams.
- The difficulty of incorporating acquired technology and rights into BTU's products and services, as applicable.
- Unanticipated expenses related to the integration process.
- Potential unknown liabilities associated with the merger, including litigation.

Our operating results and financial conditions could be adversely affected by failing to succeed in addressing these challenges or any other problems encountered in connection with the merger.

Uncertainty regarding the merger could disrupt the Company's business

The merger will happen only if stated conditions are met, including approval by the Company's stockholders and the absence of any material adverse effect in the business of the Company and BTU. Many of the conditions are outside the Company's control, and both parties also have stated rights to terminate the merger agreement. Accordingly, the completion of the merger is not guaranteed. This uncertainty may cause disruption to the Company's and BTU's businesses. This could have a material adverse effect on the Company, regardless of whether the merger is ultimately completed. Moreover, diversion of management focus and resources from the day-to-day operation of the Company's business to matters relating to the transaction could have a material adverse effect on the Company's business. Failure to retain key employees could diminish the anticipated benefits of the merger

The success of the merger will depend in part on the retention of personnel critical to the business and operations of the combined company due to, for example, their technical skills or management expertise. Employees may experience uncertainty about their future role with the Company and BTU until strategies with regard to these employees are announced or executed. This uncertainty may cause the Company to lose employees and may make it more difficult to attract new employees as necessary to operate the Company's business before the closing of the transaction. If the Company is unable to retain and attract key personnel, it could face operational disruptions, loss of customers, loss of key expertise or know-how, and unanticipated additional recruitment and training costs. The merger may go forward in certain circumstances even if the Company or BTU suffers a material adverse effect. In general, either the Company or BTU can refuse to complete the merger if a material adverse effect occurs with regard to the other party before the closing. However, neither party may refuse to complete the merger on that basis as a result of any change, event, circumstance or condition resulting from certain conditions specified in the merger agreement. If adverse changes occur, but the Company and BTU still complete the merger, the Company's stock price may suffer.

The Company will be subject to contractual restrictions while the merger is pending. Subject to certain exceptions, the Company has agreed to operate its business in the ordinary course prior to closing. See "The Merger Agreement" for a description of the restrictive covenants applicable to the Company.

The merger agreement limits the Company's ability to pursue acquisition proposals.

The merger agreement prohibits Amtech from initiating, soliciting, knowingly encouraging or knowingly facilitating certain third-party acquisition proposals. See "The Merger Agreement". These provisions might discourage

a potential acquirer that might have an interest in acquiring all or a significant part of Amtech from considering or proposing such an acquisition.

The ability of BTU to engage in discussions with third parties making unsolicited offers to acquire BTU may affect the potential to complete the merger and could cause financial and operations risks for the Company

While the merger agreement generally prohibits BTU from entering into or soliciting any other business combination proposal with a party other than the Company, BTU may engage in discussions with certain third parties making unsolicited offers to acquire the Company in compliance with the provisions of the merger agreement. This could cause financial, operational, and reputational harm to the Company. Its stock price may suffer and it may harm future growth initiatives.

The market price of Amtech's common stock may decline as a result of the merger

The market price of the Company's common stock may decline as a result of the merger for a number of reasons, including:

- The integration of the BTU by the Company may be unsuccessful.

- The Company may not achieve the perceived benefits of the merger as rapidly as, or to the extent, anticipated by financial or industry analysts.

- The effect of the merger on the Company's financial results may not be consistent with the expectations of financial or industry analysts.

These factors are, to some extent, beyond the Company's control. In addition, for any of BTU's stockholders who hold their shares in certificated form, there will be a time period between the effective time of the merger and the time when such stockholders actually receive book-entry shares evidencing the Company's common stock. Until book-entry shares are received, such stockholders will not be able to sell their shares of Company common stock in the open market and, thus, will not be able to avoid potential losses resulting from any decline in the market price of the Company's common stock during this period.

Holders of the Company's common stock will have a reduced ownership and voting interest after the merger and will exercise less influence over management.

Holders of the Company's common stock currently have the right to vote in the election of the board of directors and on other matters affecting the Company. Upon the completion of the merger, each BTU stockholder who receives shares of the Company's common stock will become a stockholder of the Company. It is currently expected that the former stockholders of BTU as a group will receive shares in the merger. As a result, current stockholders of the Company as a group will own a small percentage of the outstanding shares of the Company's common stock immediately after the merger. Because of this, current stockholders may have less influence than they now have on the management and policies of the Company.

Litigation related to the merger could cause the Company to incur substantial costs and divert management's attention and resources

In connection with the announcement of the merger agreement, the Company learned that two separate putative stockholder class action complaints were filed in the Court of Chancery of the State of Delaware. The first was filed on November 4, 2014, purportedly on behalf of BTU's public stockholders, against the members of the BTU Board, Amtech and Merger Sub. The complaint generally seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting defendants from consummating the Merger, other forms of equitable relief, and compensatory damages. While the Company believes that the claims are without merit, it intends to defend against the litigation vigorously on behalf of the BTU Board.

The second was filed on November 17, 2014, purportedly on behalf of BTU's public stockholders, against BTU, the BTU board, Amtech and Merger Sub. The complaint generally seeks, among other things, injunctive relief prohibiting the defendants from consummating the Merger, compensatory damages for alleged breaches of fiduciary duties, and other forms of equitable relief. While the Company also believes these claims are without merit, it intends to defend against the litigation vigorously.

These matters may cause the company to incur substantial costs and divert management’s attention from operational matters. Additionally, no outcome is certain, so additional harm could potentially result to the Company or BTU from this litigation.

In the past, securities class action litigation often has been brought against a company following periods of volatility in the market price of its securities or in connection with strategic transactions. The Company may in the future be the target of further securities litigation. Any securities litigation could result in substantial costs and could divert the attention and resources of the Company’s management.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

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

Location	Use	Size	Monthly Rent	Lease Expiration
Solar and Semiconductor Equipment Segment				
Tempe, AZ	Corporate	15,000 sf	Owned	N/A
Billerica, MA	Office, Mfg. & Warehouse	17,000 sf	\$10,000	8/31/2017
Vaassen, The Netherlands	Office, Warehouse & Mfg.	54,000 sf	Owned	N/A
Vaassen, The Netherlands	Warehouse	23,000 sf	\$12,000	3/31/2015
Vaassen, The Netherlands	Warehouse	23,000 sf	\$6,000	3/31/2015
Clapiers, France	Office, Mfg. & Warehouse	12,000 sf	\$10,000	9/30/2016 (1)
Shanghai, China	Office, Warehouse & Mfg.	13,000 sf	\$12,000	3/31/2015
Shanghai, China	Office, Warehouse & Mfg.	13,000 sf	\$12,000	9/30/2015
Polishing Supplies Segment				
Carlisle, PA	Office & Mfg.	22,000 sf	\$11,000	6/30/2019

(1) This lease can be canceled by the Company with six months' notice.

ITEM 3. LEGAL PROCEEDINGS

On October 21, 2014, the Company entered into an Agreement and Plan of Merger (the “Merger Agreement”) with BTU International, Inc. (“BTU”) and BTU Merger Sub, Inc., a wholly owned subsidiary of Amtech (“Merger Sub”). The Merger Agreement provides that, upon the terms and subject to the conditions set forth in the Merger Agreement, Merger Sub will merge with and into BTU (the “Merger”), with BTU continuing as the surviving corporation and a wholly owned subsidiary of the Company. Shortly after the Company entered into the Merger Agreement with BTU, the Company learned that two separate putative stockholder class action complaints were filed in the Court of Chancery of the State of Delaware.

The first was filed on November 4, 2014, purportedly on behalf of BTU's public stockholders, against the members of the BTU Board, the Company and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by causing BTU to enter into the Merger Agreement and by approving the merger, and that the Company and Merger Sub aided and abetted such alleged breaches of fiduciary duties. In addition, the complaint alleges that the Merger Agreement improperly favors the Company and unduly restricts BTU's ability to negotiate with other potential bidders. The complaint generally

27

seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting the Company, Merger Sub, and BTU from consummating the Merger, other forms of equitable relief, and compensatory damages. The Company believes that the claims are without merit and it intends to defend against the litigation vigorously on behalf of the Company and Merger Sub.

The second was filed on November 17, 2014, purportedly on behalf of BTU's public stockholders, against BTU, the BTU board, the Company and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by failing to engage in a competitive sale and bidding process, and that the Company and Merger Sub aided and abetted such alleged breaches of fiduciary duties. The complaint further alleges that these fiduciary breaches gave the Company an unfair advantage by failing to solicit other potential acquirers. The complaint generally seeks, among other things, injunctive relief prohibiting the defendants from consummating the Merger, compensatory damages for alleged breaches of fiduciary duties, and other forms of equitable relief. While the Company also believes these claims are without merit, it intends to defend against the litigation vigorously.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

MARKET INFORMATION

Our common stock, par value \$0.01 per share ("Common Stock"), is trading on the NASDAQ Global Market (formerly the NASDAQ National Market), under the symbol "ASYS." On November 10, 2014, the closing price of our Common Stock as reported on the NASDAQ Global Market was \$10.09 per share. The following table sets forth the high and low bid price at which the shares of our Common Stock traded for each quarter of fiscal 2014 and 2013, as reported by the NASDAQ Global Market.

	Fiscal 2014		Fiscal 2013	
	High	Low	High	Low
First quarter	\$9.21	\$6.19	\$3.42	\$2.90
Second quarter	\$13.74	\$6.87	\$4.85	\$3.24
Third quarter	\$13.00	\$7.58	\$7.93	\$3.21
Fourth quarter	\$12.37	\$8.47	\$7.70	\$5.44

COMPARISON OF STOCK PERFORMANCE

The following line graph compares cumulative total shareholder return, assuming reinvestment of dividends, for: the Company's Common Stock, the NASDAQ Composite Index and the NASDAQ Industrial Index. Because the Company did not pay dividends on its Common Stock during the measurement period, the calculation of the cumulative total shareholder return on the Company's Common Stock did not include dividends. The following graph assumes that \$100 was invested on October 1, 2009.

HOLDERS

As of November 10, 2014, there were 429 shareholders of record of our Common Stock. Based upon a recent survey of brokers, we estimate there were approximately an additional 3,963 beneficial shareholders who held shares in brokerage or other investment accounts as of that date.

DIVIDENDS

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

SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS

The following table sets forth certain information, as of September 30, 2014, concerning outstanding options and rights to purchase Common Stock granted to participants in all of the Company's equity compensation plans and the number of shares of Common Stock remaining available for issuance under such equity compensation plans.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders (1)	1,063,324	7.37	1,042,492
Equity compensation plans not approved by security holders	—	—	—
Total	1,063,324		1,042,492

(1) Represents the 1998 Employee Stock Option Plan, the 2007 Employee Stock Incentive Plan and the Non-Employee Director Stock Option Plan and any respective amendments to each thereto.

COMPANY PURCHASES OF EQUITY SECURITIES

There were no purchases of equity securities in fiscal 2014.

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.

	Years Ended September 30,				
	2014	2013	2012	2011	2010
Operating Data:					
Net revenue	\$56,501	\$34,798	\$81,539	\$246,705	\$120,019
Gross profit	\$11,626	\$4,313	\$9,193	\$90,657	\$42,712
Operating income (loss) ⁽¹⁾	\$(13,089)	\$(19,994)	\$(32,984)	\$38,279	\$15,909
Net income (loss) attributable to Amtech Systems, Inc. ⁽²⁾	\$(13,047)	\$(20,069)	\$(23,031)	\$22,882	\$9,563
Earnings (loss) per share attributable to Amtech Systems, Inc.:					
Basic earnings (loss) per share	\$(1.34)	\$(2.11)	\$(2.43)	\$2.41	\$1.06
Diluted earnings (loss) per share	\$(1.34)	\$(2.11)	\$(2.43)	\$2.34	\$1.04
Order backlog	\$28,522	\$26,766	\$18,703	\$85,892	\$94,427
Balance Sheet Data:					
Cash and cash equivalents	\$27,367	\$37,197	\$46,726	\$67,382	\$56,764
Working capital	\$32,289	\$42,861	\$58,832	\$89,797	\$65,638
Total assets	\$89,904	\$110,947	\$129,022	\$205,865	\$136,101
Total current liabilities	\$33,136	\$41,334	\$42,611	\$80,794	\$50,816
Total equity	\$53,588	\$66,803	\$84,051	\$122,331	\$84,243

(1) Includes \$0.3 million and \$3.7 million of expense related to inventory write-downs in fiscal 2014 and 2013, respectively. Includes \$12.8 million of expense related to inventory write-downs and loss contracts for inventory purchase commitments, and \$5.4 million of impairment charges in fiscal 2012. Includes \$2.9 million of expense related to reacquired shares in fiscal 2011.

(2) Includes \$1.7 million, \$2.0 million, \$5.6 million and \$0.9 million of losses in fiscal 2014, 2013, 2012 and 2011, respectively, resulting from the 55% controlling interest in Kingstone acquired February 18, 2011.

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

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

Introduction

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

• **Overview:** a summary of our business.

• **Results of Operations:** a discussion of operating results.

• **Liquidity and Capital Resources:** an analysis of cash flows, sources and uses of cash, financial position and off-balance sheet arrangements.

• **Contractual Obligations and Commercial Commitments:** a list of obligations and commercial commitments.

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

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

Overview

We operate in two segments: (i) the solar and semiconductor equipment segment and (ii) the polishing supplies segment. In our solar and semiconductor equipment segment, we are a leading supplier of thermal processing systems, including related automation, parts and services, to the solar/photovoltaic, semiconductor, silicon wafer and MEMS industries and also offer PECVD (plasma-enhanced chemical vapor deposition) equipment to the solar market. In our polishing supplies segment, we produce consumables and machinery for lapping (fine abrading) and polishing of materials, such as sapphire substrates, optical components, silicon wafers, numerous types of crystalline materials, ceramics and metal components. Since the 2011 acquisition of Kingstone, we have advanced the development of an ion implanter to provide our solar customers with a more complete solution for their next-generation high-efficiency solar cell production.

Our customers are primarily manufacturers of solar cells and integrated circuits. The solar cell and semiconductor industries are cyclical and historically have experienced significant fluctuations. Our revenue is impacted by these broad industry trends. In 2012 through 2014, the solar cell industry experienced a structural imbalance between supply and demand and has negatively impacted our results of operations. The current supply/demand imbalance and global economic conditions have continued to negatively impact sales in the solar equipment market and have caused our customer to significantly slow or push out their capacity expansion plans, and it is difficult to predict when the overall market will improve.

Our strategy has been, and continues to be, to grow the Company through strategic product development and acquisitions. In addition to internal product development, we have acquired companies with complementary products or products that serve adjacent process steps. In October 2007, we acquired R2D Automation SAS, which allowed us to provide our diffusion furnaces with integrated automation that is also sold as a stand-alone product. In February 2011, we acquired a 55% ownership interest in Kingstone Technology Hong Kong, Limited ("Kingstone"), a holding company that owns 100% of Kingstone Semiconductor Company Ltd., a Shanghai-based technology company specializing in ion implant solutions for the solar industry. In October 2014, we entered into a definitive agreement to acquire BTU International, Inc., a global supplier and technology leader of advanced thermal processing equipment and processes to the electronics and alternative energy manufacturing markets with operations in North Billerica, Massachusetts and

32

Shanghai, China with direct sales and service in the USA, Asia and Europe. The transaction is expected to close in the second quarter of Fiscal 2015.

33

Results of Operations

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

	Years Ended September 30,				
	2014	2013	2012		
Net revenue	100.0	% 100.0	% 100.0	%	
Cost of sales	78.9	% 77.1	% 73.0	%	
Write-down of inventory	0.5	% 10.5	% 12.7	%	
Losses on inventory purchase commitments	—	% —	% 3.0	%	
Gross margin	20.6	% 12.4	% 11.3	%	
Selling, general and administrative	32.6	% 48.4	% 28.3	%	
Impairment and restructuring charges	—	% 2.5	% 6.7	%	
Research and development	11.1	% 19.0	% 16.8	%	
Operating loss	(23.1)% (57.5)% (40.5)%	
Interest and other income, net	—	% 0.5	% —	%	
Loss before income taxes	(23.1)% (57.0)% (40.5)%	
Income tax provision (benefit)	2.2	% 5.3	% (6.5)%	
Net loss	(25.3)% (62.3)% (34.0)%	
Add: net loss attributable to noncontrolling interest	2.2	% 4.7	% (5.6)%	
Net loss attributable to Amtech Systems, Inc.	(23.1)% (57.6)% (28.4)%	

Fiscal 2014 compared to Fiscal 2013

Net Revenue

Net revenue is recognized upon shipment or installation of products using proven technology and upon acceptance of products using new technology. In addition, spare parts sales are recognized upon shipment. Service revenue is recognized upon completion of the service activity or ratably over the term of the service contract. Since the majority of our revenue is generated from large thermal systems sales, revenue and operating income can be significantly impacted by the timing of system shipments, the net impact of revenue deferral on those shipments, and recognition of revenue based on customer acceptances. See Critical Accounting Policies – Revenue Recognition.

Segment	Years Ended September 30,				
	2014	2013	Inc (Dec)	%	
	(dollars in thousands)				
Solar and semiconductor equipment segment	\$45,848	\$26,368	\$19,480	74	%
Polishing supplies segment	10,653	8,430	2,223	26	%
Total net revenue	\$56,501	\$34,798	\$21,703	62	%

Net revenue for the years ended September 30, 2014 and 2013 were \$56.5 million and \$34.8 million, respectively; an increase of \$21.7 million or 62%. Revenue from the solar and semiconductor equipment segment increased 74% due primarily to increased shipments of n-type technology equipment to the solar industry in fiscal 2014 and an upturn in our semiconductor customers' capital equipment purchases. These increases were partially offset by deferred revenue related to the significant amount of new product shipped including PECVD systems. Net revenue from the solar market was \$27.6 million and \$17.4 million in fiscal 2014 and 2013, respectively; a 58% increase.

Higher revenues from the polishing supplies segment resulted from significant increases in sales of polishing templates which are used in single-sided polishing processes. Sales of polishing templates have improved, due primarily to the increased demand for sapphire substrates used in LED lighting and mobile communication devices.

Backlog and Orders

Our backlog as of September 30, 2014 and 2013 was \$28.5 million and \$26.8 million, respectively. Our backlog as of September 30, 2014 included approximately \$20.9 million of orders and deferred revenue from our solar industry customers compared to \$17.1 million as of September 30, 2013. New orders booked in fiscal 2014 were \$61.3 million compared to \$43.6 million in fiscal 2013. As the majority of the backlog is denominated in Euros, the weakening of the Euro during fiscal 2014 resulted in a decrease in backlog of approximately \$2.3 million. At the end of fiscal 2014, two customers individually accounted for 31% and 13% of our total backlog, respectively. At the end of fiscal 2013, two customers individually accounted for 53% and 13% of our total backlog, respectively.

The orders included in our backlog are generally credit approved customer purchase orders expected to ship within the next twelve months. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for subsequent periods, nor is backlog any assurance that we will realize revenue or profit from completing these orders. Our backlog also includes revenue deferred pursuant to our revenue recognition policy, derived from orders that have already been shipped but which have not met the criteria for revenue recognition.

Gross Profit and Gross Margin

Gross profit is the difference between net revenue and cost of goods sold. Cost of goods sold consists of purchased material, labor and overhead to manufacture equipment or spare parts and the cost of service and support to customers for warranty, installation and paid service calls. Gross margin is gross profit as a percent of net revenue.

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

Segment	Years Ended		Inc (Dec)	%	%
	2014	2013			
	(dollars in thousands)				
Solar and semiconductor equipment segment	\$7,212	\$1,583	\$5,629	356	%
Polishing supplies segment	4,414	2,730	1,684	62	%
Total gross profit	\$11,626	\$4,313	\$7,313	170	%

Gross profit for the years ended September 30, 2014 and 2013 was \$11.6 million and \$4.3 million respectively; an increase of \$7.3 million or 170%. Gross margin for fiscal 2014 increased to 21% from 12% in fiscal 2013, respectively. Gross margin for the solar and semiconductor equipment segment was 16% in fiscal 2014, compared to 6% in fiscal 2013. In the solar and semiconductor equipment segment, fiscal 2013 inventory write-downs were \$3.7 million. In fiscal 2014, use of previously written down inventory had a \$4.0 million favorable impact. Partially offsetting this improvement was recognition of previously-deferred revenue from relatively low-margin new product shipments. In fiscal 2014, we had a net profit deferral of \$6.1 million compared to a net recognition of previously-deferred profit of \$7.5 million in fiscal 2013.

Gross margin from our polishing supplies segment was 41% and 32% in fiscal 2014 and 2013, respectively. Higher margins in this segment resulted primarily from improved operational efficiencies associated with increased sales of polishing templates.

Selling, General and Administrative Expenses

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

35

Segment	Years Ended			
	September 30,		Inc (Dec)	%
	2014	2013		
	(dollars in thousands)			
Solar and semiconductor equipment segment	\$ 16,191	\$ 13,737	\$ 2,454	18 %
Polishing supplies segment	2,233	3,093	(860)	(28)%
Total selling, general and administrative expenses	\$ 18,424	\$ 16,830	\$ 1,594	9 %

Total selling, general and administrative (SG&A) expenses for the years ended September 30, 2014 and 2013 were \$18.4 million and \$16.8 million respectively. This includes \$0.8 million and \$2.5 million of stock-based compensation expense for the respective fiscal years 2014 and 2013. The decrease in stock-based compensation expense was offset by bad debt expense of \$1.3 million related to financial difficulties encountered by certain customers, higher legal and consulting expenses, primarily related to activity leading to the pending merger with BTU International, and increased commission expenses due to higher revenues. SG&A expenses in the solar and semiconductor equipment segment include higher allocated corporate costs in fiscal 2014 compared to fiscal 2013.

SG&A expenses in the polishing supplies segment include allocated corporate costs. The decrease in SG&A expenses in the polishing supplies segment was due to lower allocation of corporate costs, partially offset by increased commissions related to higher revenues.

Impairment and Restructuring Charges

Restructuring charges for the year ended September 30, 2013 were \$0.9 million, related primarily to severance costs. There were no impairment charges for the year ended September 30, 2013 and there were no impairment or restructuring charges in fiscal 2014.

Research and Development

Research and development expenses consist of the cost of employees, consultants and contractors who design, engineer and develop new products and processes as well as materials, supplies and facilities used in producing prototypes. Reimbursement of research and development costs in the form of governmental research and development grants are netted against these expenses when certain requirements of the grant are met.

	Years Ended			
	September 30,		Inc (Dec)	%
	2014	2013		
	(dollars in thousands)			
Research and development	\$ 10,863	\$ 8,459	\$ 2,404	28 %
Grants earned	(4,572)	(1,865)	(2,707)	145 %
Net research and development	\$ 6,291	\$ 6,594	\$(303)	(5)%

Research and development ("R&D") expense (net of grants earned) for the fiscal year ended September 30, 2014 decreased \$0.3 million compared to fiscal 2013. Gross R&D spending increased due primarily to higher activity in the development of equipment for the solar industry as well as ion implant technology for markets other than solar. Increased R&D spending was partially offset by increased recognition of grants earned. We receive reimbursements through governmental research and development grants which are netted against these expenses.

As described in Note 6 to the Consolidated Financial Statements included in this filing, our Kingstone subsidiary has entered into an agreement for the development of ion implanters for markets other than solar. Depending on its

progress, this development project may result in an increase in research and development expenses.

36

Income Tax Provision

Our effective tax rate was negative 9.5% and negative 9% in fiscal 2014 and 2013, respectively. The effective tax rate is the ratio of total income tax expense (benefit) to pre-tax income (loss). The negative effective tax rates in fiscal 2014 and 2013 were due primarily to increasing the valuation allowance on the current period net operating losses and establishing an allowance on all deferred tax assets related to France in 2014 and The Netherlands in 2013. The valuation allowance was recorded due to cumulative losses in China, The Netherlands and France. The effective tax rate in 2014 and 2013 were lower than the 34% U.S. tax rate primarily due to the valuation allowance on net operating losses in China (related to the ion implant research and development), The Netherlands and France.

The Financial Accounting Standards require 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 carryback and carryforward periods. According to those standards, it is difficult to conclude that a valuation allowance is not needed when the negative evidence includes cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of the review, where cumulative losses had been incurred, we concluded that it was appropriate to establish a full valuation allowance for net deferred tax assets in the Netherlands and China in fiscal 2013 and France in 2014. Available tax planning strategies cause us to believe that it is more likely than not that the deferred tax assets related to the United States tax jurisdiction will be realized despite cumulative losses there.

Our future effective income tax rate depends on various factors, such as the amount of income (loss) in each tax jurisdiction, tax regulations governing each region, non-tax deductible expenses incurred as a percent of pre-tax income and the effectiveness of our tax planning strategies. At the end of 2011 we restructured our European operations to lower the tax rate on the Netherlands operations from 35% to a marginal rate of 25% and to as low as 5% on income derived from qualified new technologies, as we intend to permanently reinvest future Dutch earnings in our foreign operations. The effect of the restructure on our tax rate depends on the amount of income or loss earned in the Netherlands, as well as the portion of such income that can be demonstrated to have been derived from qualified new technologies, as well as the factors mentioned above.

Fiscal 2013 compared to Fiscal 2012

Net Revenue

Net revenue consists of revenue recognized upon shipment or installation of products using proven technology and upon acceptance of products using new technology. In addition, spare parts sales are recognized upon shipment. Service revenue is recognized upon completion of the service activity or ratably over the term of the service contract. Since the majority of our revenue is generated from large thermal systems sales, revenue and operating income can be significantly impacted by the timing of system shipments, the net impact of revenue deferral on those shipments, and recognition of revenue based on customer acceptances. See Critical Accounting Policies – Revenue Recognition.

Segment	Years Ended			
	September 30,		Inc (Dec)	%
	2013	2012		
	(dollars in thousands)			
Solar and semiconductor equipment segment	\$ 26,368	\$ 73,102	\$(46,734)	(64)%
Polishing supplies segment	8,430	8,437	(7)	— %
Total net revenue	\$ 34,798	\$ 81,539	\$(46,741)	(57)%

Net revenue for the years ended September 30, 2013 and 2012 were \$34.8 million and \$81.5 million, respectively; a decrease of \$46.7 million or 57%. Revenue from the solar and semiconductor equipment segment decreased 64% due to the continued supply / demand imbalance in the solar market as well as the fiscal 2013 cyclical downturn in our semiconductor customers' capital equipment purchases. Net revenue from the solar market was \$17.4 million and \$44.2

37

million in fiscal 2013 and 2012, respectively; a 61% decrease. Demand for products from our polishing supplies segment was consistent from fiscal 2012 to fiscal 2013.

Backlog and Orders

Our backlog as of September 30, 2013 and 2012 was \$26.8 million and \$18.7 million, respectively. Our backlog as of September 30, 2013 included approximately \$17.1 million of orders and deferred revenue from our solar industry customers compared to \$13.8 million as of September 30, 2012. New orders booked in fiscal 2013 were \$43.6 million compared to \$40.9 million in fiscal 2012. As the majority of the backlog is denominated in Euros, the strengthening of the Euro during fiscal 2013 resulted in an increase in backlog of approximately \$0.9 million. At the end of fiscal 2013, two customers individually accounted for 53% and 13% of our total backlog, respectively. At the end of fiscal 2012, one customer accounted for 10% of our total backlog. In fiscal 2013, our order pipeline remained slow with the exception of a large order for n-type cell technology and PECVD equipment.

The orders included in our backlog are generally credit approved customer purchase orders expected to ship within the next twelve months. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for subsequent periods, nor is backlog any assurance that we will realize revenue or profit from completing these orders. Our backlog also includes revenue deferred pursuant to our revenue recognition policy, derived from orders that have already been shipped but which have not met the criteria for revenue recognition.

Gross Profit and Gross Margin

Gross profit is the difference between net revenue and cost of goods sold. Cost of goods sold consists of purchased material, labor and overhead to manufacture equipment or spare parts and the cost of service and support to customers for warranty, installation and paid service calls. Gross margin is gross profit as a percent of net revenue.

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

Segment	Years Ended			
	September 30,		Inc (Dec)	%
	2013	2012		
	(dollars in thousands)			
Solar and semiconductor equipment segment	\$ 1,583	\$ 6,458	\$(4,875)	(75)%
Polishing supplies segment	2,730	2,735	(5)	— %
Total gross profit	\$4,313	\$ 9,193	\$(4,880)	(53)%

Gross profit for the years ended September 30, 2013 and 2012 was \$4.3 million and \$9.2 million respectively; a decrease of \$4.9 million or 53%. Gross margin for fiscal 2013 and 2012 was 12% and 11%, respectively, due primarily to inventory write-downs and losses on inventory purchase commitments of \$3.7 million and \$12.8 million in fiscal 2013 and 2012, respectively. The margins were also adversely affected by a significant reduction in manufacturing capacity utilization due to the cyclical decline in demand for our products. These items were only partially offset by the higher gross margins realized from the significant portion of net revenue resulting from recognition of previously deferred revenue upon customer acceptance. In fiscal 2013, we had a net recognition of previously-deferred profit of \$7.5 million compared to \$16.1 million in fiscal 2012. Gross profit on products from our

polishing supplies segment was consistent from fiscal 2012 to fiscal 2013.

Selling, General and Administrative Expenses

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

Segment	Years Ended September 30,			
	2013	2012	Inc (Dec)	%
	(dollars in thousands)			
Solar and semiconductor equipment segment	\$ 13,737	\$ 20,861	\$(7,124)	(34)%
Polishing supplies segment	3,093	2,194	899	41 %
Total selling, general and administrative expenses	\$ 16,830	\$ 23,055	\$(6,225)	(27)%

Total selling, general and administrative (SG&A) expenses for the years ended September 30, 2013 and 2012 were \$16.8 million and \$23.1 million respectively, a decrease of \$6.2 million or 27%. The decrease in SG&A expenses was due, in part, to lower commissions and shipping expenses related to lower revenues and also reflects significant company-wide cost control initiatives to reduce salaries, professional fees, travel and insurance expense. Partially offsetting the decrease in SG&A expenses is an increase in stock compensation expense to \$2.5 million in fiscal 2013 from \$1.8 million in fiscal 2012. The increase in stock compensation expense is due to the June 2013 acceleration of vesting and the cancellation of certain stock options.

Impairment and Restructuring Charges

Restructuring charges for the year ended September 30, 2013 were \$0.9 million. There were no impairment charges in fiscal 2013. The company's cost-cutting efforts in fiscal 2013 included reductions-in-force which resulted in restructuring charges related primarily to severance costs. Impairment charges for the year ended September 30, 2012 were \$5.4 million. In our periodic assessment of long-lived assets in the fourth quarter of fiscal 2012, we identified an impairment of the goodwill in two of our reporting units that serve the solar equipment market resulting in a \$4.7 million impairment charge, due primarily to the supply / demand imbalance in the solar equipment market. Also, in fiscal 2012, a \$0.7 million impairment charge was recorded for assets related to a product development project.

Research and Development

Research and development expenses consist of the cost of employees, consultants and contractors who design, engineer and develop new products and processes as well as materials, supplies and facilities used in producing prototypes. Reimbursement of research and development costs in the form of governmental research and development grants are netted against these expenses when certain requirements of the grant are met.

	Years Ended September 30,			
	2013	2012	Inc (Dec)	%
	(dollars in thousands)			
Research and development	\$ 8,459	\$ 14,723	\$(6,264)	(43)%
Grants earned	(1,865)	(1,029)	(836)	81 %
Net research and development	\$ 6,594	\$ 13,694	\$(7,100)	(52)%

Research and development costs (net of grants earned) for the fiscal year ended September 30, 2013 decreased \$7.1 million compared to fiscal 2012. Decreased spending in research and development relates primarily to reduced activity and cost control efforts in solar research. We receive reimbursements through governmental research and development grants which are netted against these expenses. The increase in grants earned resulted primarily from grant funding for development of the solar ion implanter.

As described in Note 6 to the Consolidated Financial Statements included in this filing, our Kingstone subsidiary has entered into an agreement for the development of ion implanters for a non-solar application in China. Depending on its progress, this development project may result in a significant increase in research and development expenses.

Income Tax Provision

Our effective tax rate was negative (9%) in fiscal 2013 and 16% in 2012. The effective tax rate is the ratio of total income tax expense (benefit) to pre-tax income (loss). The negative effective tax rate in fiscal 2013 was due primarily to establishing an allowance on all deferred tax assets related to The Netherlands income taxes. The valuation allowance was recorded due to cumulative losses in The Netherlands. The effective tax rate in 2012 was lower than the 34% U.S. tax rate primarily due to the valuation allowance on net operating losses in China (related to the ion implant research and development) and the 25% tax rate applicable to the losses in The Netherlands.

The Financial Accounting Standards require 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 carryback and carryforward periods. According to those standards, it is difficult to conclude that a valuation allowance is not needed when the negative evidence includes cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of the review, we concluded during fiscal 2013 that it was appropriate to establish a full valuation allowance for net deferred tax assets in the Netherlands and China, where cumulative losses have been incurred. Available tax planning strategies cause us to believe that it is more likely than not that the deferred tax assets related to the United States tax jurisdiction will be realized despite cumulative losses there.

Our future effective income tax rate depends on various factors, such as the amount of income (loss) in each tax jurisdiction, tax regulations governing each region, non-tax deductible expenses incurred as a percent of pre-tax income and the effectiveness of our tax planning strategies. At the end of 2011 we restructured our European operations to lower the tax rate on the Netherlands operations from 35% to a marginal rate of 25% and to as low as 5% on income derived from qualified new technologies, as we intend to permanently reinvest future Dutch earnings in our foreign operations. The effect of the restructure on our tax rate depends on the amount of income or loss earned in the Netherlands, as well as the portion of such income that can be demonstrated to have been derived from qualified new technologies, as well as the factors mentioned above.

Liquidity and Capital Resources

As of September 30, 2014 and 2013, cash and cash equivalents were \$27.4 million and \$37.2 million, respectively. As of September 30, 2014 and 2013, cash and cash equivalents held by our foreign subsidiaries was \$7.5 million and \$14.8 million, respectively. All cash and cash equivalents held by our foreign subsidiaries can be distributed without incurring any significant taxes. As of September 30, 2014 and 2013, restricted cash was \$2.4 million and \$5.1 million, respectively. Restricted cash decreased due to the use of funds received from grants for the non-solar ion implant development project, and a decrease in customer deposits requiring bank guarantees collateralized by cash. Our working capital was \$32.3 million as of September 30, 2014 and \$42.9 million as of September 30, 2013. The decline in working capital results primarily from the net loss in 2014. The decrease in cash was primarily cash used in operating activities of \$11.1 million and \$0.5 million of cash used in investing activities which are discussed below. Our ratio of current assets to current liabilities was 2.0:1 as of September 30, 2014 and September 30, 2013. We expect to make a tax payment of approximately \$5 million which is due in 2015.

See information below regarding payments expected as a result of contractual obligations. We have never paid dividends on our Common Stock. Our present policy is to apply cash to investments in product development, acquisitions or expansion; consequently, we do not expect to pay dividends on Common Stock in the foreseeable

future. We believe that our current cash and other sources of liquidity discussed below are adequate to support operations for at least the next 12 months.

The success of our growth strategy is dependent upon the availability of additional capital resources on terms satisfactory to management. Our sources of capital in the past have included the sale of equity securities, which include common and preferred stock sold in private transactions and public offerings, capital leases and long-term debt. There can be no assurance that we can raise such additional capital resources on satisfactory terms. We believe that our principal sources of liquidity discussed above are sufficient to support operations.

	Fiscal Years Ended September 30,		
	2014	2013	2012
	(dollars in thousands)		
Net cash used in operating activities	\$(11,081)	\$(9,953)	\$(12,438)
Net cash used in investing activities	\$(462)	\$(178)	\$(1,542)
Net cash provided by (used in) financing activities	\$1,481	\$(238)	\$(4,108)