AMTECH GROUP

Supplying Essential Semiconductor Solutions Worldwide

2022 ANNUAL REPORT

Dear Shareholders,

Our fiscal 2022 results reflect another strong year for Amtech, with $114 million in bookings, $106 million in revenue and $51 million in backlog exiting the year. To place this in perspective, despite challenges during the year, including the Shanghai lockdown in the fiscal third quarter, revenue for the year grew 25% with a growing backlog. Driving our backlog growth is the strengthening and diversification of electric vehicle ("EV") related demand across multiple product lines, primarily for our US operations. While we are encouraged to see this strength continuing into 2023, ongoing challenges continue, including pandemic-related disruptions to labor and supply chain, rising costs, and logistics issues.

While we are dealing with these multi-faceted challenges, we are seeing evidence that our strategy to align our divisions to high-growth megatrend markets, such as EV, is taking hold. In fiscal 2022, we saw a four-fold increase in bookings related to EV applications, with participation expanded to multiple product lines across all our divisions. We believe this strategic alignment to megatrend growth, at multiple intersection points, creates a strong and more durable foundation for value creation in the coming years.

Within the semiconductor segment, we have seen a meaningful uptick in demand for our high temperature belt furnaces, driven by multiple high-volume applications serving the EV market. These applications include thermal processing of EV sensors, battery cooling assemblies, and power module substrates. However, following nearly nine straight quarters of strong demand for our advanced packaging products, we have begun to see a softening in new orders as customers digest existing capacity and evaluate capital spending projects in light of changing market conditions. In addition, in high-volume SMT applications, we are seeing a rapid shift in global strategy as our customers look to mitigate multifaceted risks. While this is presently causing delays and disruptions to order flow, we feel this redistribution of the customer base will present a great opportunity in the near future.

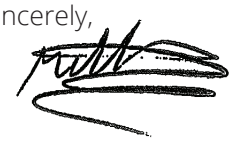
In the Materials and Substrate segment, we continue to see strong demand for our consumable products, driven by the ramp in silicon carbide wafer capacity. As we have said in the past, this will be a fluctuating multi-year capacity expansion cycle, as individual customers ramp wafer capacity, then digest, then ramp again. As evidence of this, as we enter fiscal 2023, we are seeing a stabilization of consumable demand while existing wafer capacity is fully utilized, and we expect to see a subsequent step-up in demand as the next phase of wafer capacity expansion is brought online.

To enhance the ability for Amtech to capitalize on these opportunities, we were able to execute a sale-leaseback of our Massachusetts manufacturing facility in June 2022. We are very pleased with the cash generation resulting from this transaction, and we are working closely with our Board of Directors on our capital allocation plans, which include further investments in our capacity, evaluating back-up and alternative manufacturing sites, product development, management information systems, M&A and strategic share repurchases. In addition, we have undertaken steps to optimize operational efficiency to reduce risk from supply chain and geopolitical disruptions. We expect to realize benefits from our initiatives towards the end of this year to include greater optimized capacity, reduced backlog and lead times.

Most recently we were able to act on such an opportunity with the addition of Entrepix, Inc. to the Amtech Group. The acquisition, completed in January 2023, extends our position in chemical mechanical polishing ("CMP") and compound semiconductor in breadth as well as depth – with a new, adjacent product offering in wafer cleaning and technology leadership in CMP. We expect Entrepix's expertise in CMP to advance Amtech's penetration into key capital equipment buyers and to accelerate the maturity and adoption of the related equipment and consumables already in our portfolio. Entrepix has an impressive record for financial performance and is expected to create meaningful value for our shareholders from day one. We take this as an important step, but one of many.

As we look ahead, we are confident our leadership in growth markets creates a significant opportunity to drive increased profitability and shareholder value as demand accelerates. We appreciate the contribution of our employees worldwide, and, together, we look forward to the opportunities ahead of us, with the constant objective to increase the long-term value of Amtech for all our shareholders.

Sincerely,



Michael Whang
Chief Executive Officer

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, 2022

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	**86-0411215**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
131 South Clark Drive, Tempe, Arizona	**85288**
(Address of principal executive offices)	(Zip Code)

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

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.01 per share	ASYS	NASDAQ Global Select Market

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). ☒ Yes ☐ No

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

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

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

As of March 31, 2022, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the voting and non-voting stock held by non-affiliates of the registrant was approximately $113,239,072, based upon the closing sales price reported by the NASDAQ Global Market on that date.

As of November 23, 2022, the registrant had outstanding 14,000,154 shares of Common Stock, $0.01 par value.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Definitive Proxy Statement related to the registrant's 2023 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, 2022, are incorporated by reference into Items 10-14 of Part III of this Form 10-K.

AMTECH SYSTEMS, INC. AND SUBSIDIARIES

Table of Contents

DEFINITIONS

Acronyms and defined terms used in the text include the following:

Term	Meaning
2007 Plan	The 2007 Employee Stock Incentive Plan
2022 Plan	Amtech Systems, Inc. 2022 Equity Incentive Plan
3D	Three dimensional
401(k) Plan	The Amtech Systems, Inc. 401(k) Plan
5G	Fifth generation of mobile communications
Amtech	Amtech Systems, Inc. and Subsidiaries
Board	The Board of Directors of Amtech Systems, Inc.
Bruce Technologies	Bruce Technologies, Inc.
BTU	BTU International, Inc.
CARES Act	Coronavirus Aid, Relief, and Economic Security Act
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CMP	Chemical Mechanical Polishing
Common Stock	Our common stock, par value $0.01 per share
Company	Amtech Systems, Inc. and Subsidiaries
COSO	Committee of Sponsoring Organizations of the Treadway Commission
COVID-19	A novel coronavirus strain commonly referred to as “coronavirus”
DBC	Direct Bond Copper
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EPS	Earnings (loss) per share
ERISA	Employee Retirement Income Security Act of 1974
EV	Electric vehicle
Exchange Act	Securities Exchange Act of 1934, as amended
FDIC	Federal Deposit Insurance Corporation
GAAP	Generally Accepted Accounting Principles in the United States
Intersurface Dynamics	Intersurface Dynamics, Inc.
ISO 9001:2015	International standard that specifies requirements for a quality management system
IoT	Internet of things
LED	Light-emitting diode
MEMS	Microelectromechanical systems
mm	Millimeter
NIGPP	National Integrated Group Pension Plan and Trust Fund
Note __	Note __ to the consolidated financial statements
O-S-D	Optoelectronic Sensors & Discrete
our	Amtech Systems, Inc. and Subsidiaries
PCAOB	Public Company Accounting Oversight Board

Power Semiconductor	The fundamental component of modern power electronic circuitry. Power semiconductors perform the same tasks as regular semiconductors — only on a much larger scale. These high-performance components are capable of handling extremely high electrical currents, voltages, and frequencies. They are used in, but not limited to the following applications: electric vehicles, wireless communication, advanced control of electric drives, advanced computer systems, antennas, automobile sensors, broadband wireless, consumer and industrial electronics, and more. They form an indispensable part of electrical appliances, machines, and systems.
PR Hoffman	P.R. Hoffman Machine Products, Inc.
Proxy Statement	Amtech's Proxy Statement to be filed with the SEC in connection with its 2023 Annual Meeting of Shareholders
R2D	R2D Automation SAS
RD&E	Research, development and engineering
Registrant	Amtech Systems, Inc.
RF	Radio Frequency
ROU	Right-of-use
SEC	Securities and Exchange Commission
Securities Act	Securities Act of 1933, as amended
Semi	Semiconductor
SEO	Search engine optimization
SG&A	Selling, general and administrative expenses
SiC	Silicon carbide
SiC/LED	Our former SiC/LED reportable segment
SMT	Surface-mount technology
SoLayTec	SoLayTec B.V.
SSP	Standalone selling price
Subsidiaries	Subsidiaries of Amtech Systems, Inc. listed on Exhibit 21 hereto
Tempress	Tempress Systems, Inc.
TTV	Total thickness variation
UK	United Kingdom
us	Amtech Systems, Inc. and Subsidiaries
U.S.	The United States of America
USA PATRIOT act	The Uniting and Strengthening America by Providing Appropriate Tools to Restrict, Intercept, and Obstruct Terrorism Act of 2001
we	Amtech Systems, Inc. and Subsidiaries
xEV	Hybrid and electric vehicles

Cautionary Note Regarding Forward-Looking Statements

Our discussion and analysis in this Annual Report on Form 10-K, our 2022 Annual Report to Shareholders, our other reports that we file with the SEC, our press releases and in public statements of our officers and corporate spokespersons contain "forward-looking" statements within the meaning of Section 27A of the Securities Act, Section 21E of the Exchange Act, and the Private Securities Litigation Reform Act of 1995. Forward-looking statements give our or our officers' current expectations or forecasts of future events. You can identify these statements by the fact that they do not relate strictly to historical or current events. You can also identify forward-looking statements by discussions of strategy, plans or intentions of management. We have tried, wherever possible, to identify such statements by using words such as "may," "plan," "anticipate," "seek," "will," "expect," "intend," "estimate," "believe," "continue," "predict," "potential," "project," "should," "would," "could," "likely," "future," "target," "forecast," "goal," "observe," and "strategy" or the negative thereof or variations thereon or similar terminology relating to the uncertainty of future events or outcomes. Any expectations based on these forward-looking statements are subject to risks and uncertainties and other important factors. Some factors that could cause actual results to differ materially from those anticipated include, among others, future economic conditions, including changes in the markets in which we operate; changes in demand for our services and products; our revenue and operating performance; difficulties in successfully executing our growth initiatives; difficulties in executing on our strategic efforts with respect to our material and substrate business segment; the effects of competition in the markets in which we operate, including the adverse impact of competitive product announcements or new entrants into our markets and transfers of resources by competitors into our markets; the cyclical nature of the semiconductor industry; pricing and gross profit pressures; control of costs and expenses; risks associated with new technologies and the impact on our business; legislative, regulatory, and competitive developments in markets in which we operate; possible future claims, litigation or enforcement actions and the results of any such claim, litigation proceeding, or enforcement action; business interruptions, including those related to the COVID-19 pandemic and the cybersecurity incident that occurred in April 2021; the potential impacts of the COVID-19 pandemic, including ongoing logistical and supply chain challenges, and any future pandemic on our business operations, financial results and financial position; the severity, magnitude and duration of the COVID-19 pandemic, including impacts of the pandemic and of businesses' and governments' responses to the pandemic on our operations and personnel, including any future Chinese government mandated shutdown in Shanghai; risks of future cybersecurity incidents; and the other factors included in this Annual Report on Form 10-K, including those referenced under the headings "Business," "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" or referenced from time to time in our filings with the SEC. The occurrence of the events described, and the achievement of expected results, depend on many events, some or all of which are not predictable or within our control. 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.

Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based on our or our officers' current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to certain risks and uncertainties. In light of these risks and uncertainties, there can be no assurance that the forward-looking information contained in this Annual Report on Form 10-K will in fact transpire or prove to be accurate. You should not place undue reliance on these forward-looking statements, which speak only as of the date they were made.

The Company undertakes no obligation to update or publicly revise any forward-looking statement whether as a result of new information, future developments or otherwise after the date of this Annual Report on Form 10-K. All subsequent written or oral forward-looking statements attributable to the Company or persons acting on its behalf are expressly qualified in their entirety by this cautionary statement. You are advised, however, to consult any further disclosures we make on related subjects in our subsequently filed Form 10-Q and Form 8-K reports and our other filings with the SEC. Also note that we provide a cautionary discussion of risks, uncertainties and possibly inaccurate assumptions relevant to our business under "Item 1A. Risk Factors" of this Annual Report on Form 10-K. We note these factors for investors as permitted by the Private Securities Litigation Reform Act of 1995. You should understand it is not possible to predict or identify all such factors.

Unless the context indicates otherwise, the terms "Amtech," the "Company," "we," "us" and "our" refer to Amtech Systems, Inc., an Arizona corporation, together with its subsidiaries.

PART I

ITEM 1. BUSINESS

OUR COMPANY

We are a leading, global manufacturer of capital equipment, including thermal processing and wafer polishing, and related consumables used in fabricating semiconductor devices, such as silicon carbide (SiC) and silicon power devices, analog and discrete devices, electronic assemblies, and light-emitting diodes (LEDs). We sell these products to semiconductor device and module manufacturers worldwide, particularly in Asia, North America and Europe. Our strategic focus is on semiconductor growth opportunities in power electronics, sensors and analog devices leveraging our strength in our core competencies in thermal and substrate processing. We are a market leader in the high-end power chip market (SiC substrates, 300mm horizontal thermal reactors, and electronic assemblies used in power, RF, and other advanced applications), developing, and supplying essential equipment and consumables used in the semiconductor industry.

We categorize each of our subsidiaries into one of two reportable segments, based primarily on the industries they serve:

Reportable Segment	% of 2022 Consolidated Net Revenue
Semiconductor	83%
Material and Substrate	17%

These reportable segments are comprised of the following four wholly-owned subsidiaries:

Semiconductor:

- Bruce Technologies, a Massachusetts corporation based in North Billerica, Massachusetts, acquired in July 2004; and
- BTU, a Delaware corporation based in North Billerica, Massachusetts, with operations in China, Malaysia and the UK, acquired in January 2015.

Material and Substrate:

- PR Hoffman, an Arizona corporation based in Carlisle, Pennsylvania, acquired in July 1997; and
- Intersurface Dynamics, a Connecticut corporation based in Bethel, Connecticut, acquired in March 2021.

Our strategic focus in the semiconductor industry is the development of equipment for thermal processing and deposition for semiconductor manufacturing, specifically focusing on substrate, fabrication, packaging and surface-mount technology ("SMT"). The markets we serve are experiencing technological advances and are, historically, cyclical. Therefore, future profitability and growth depend on our ability to invest in, develop and/or acquire and market new technology products and on our ability to adapt to cyclical trends.

Integrated circuits, optoelectronic, sensor, and discrete (O-S-D) components, such as power chips, LEDs, and some MEMS, are semiconductor devices fabricated on silicon and compound semiconductor wafer substrates, such as silicon carbide. Semiconductor chips are part of the circuitry of many products including inverters, onboard charging, computers, telecommunications devices, automotive electronics and sensors, consumer electronics, and industrial automation and control systems. LEDs manufactured using our equipment are used in industrial, commercial and residential lighting. Our thermal processing and consumable products currently address the diffusion and deposition steps used in the fabrication of semiconductors, LEDs, MEMS and the polishing of newly sliced silicon and compound semiconductor wafers, as well as the packaging and assembly of the electronic components and assemblies. Our reflow ovens provide key thermal processing steps for both semiconductor packaging and electronics assembly. Key

end-markets for these packages and assemblies include: electric vehicles and charging infrastructure, renewable energy, communications, automotive electronics and sensors, computing and networking, and consumer and industrial electronics.

Our Material and Substrate segment provides solutions to the lapping and polishing marketplace for SiC power chip applications, LED, optics, ceramics and photonics. Lapping and polishing are the processes 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, compound substrates, like silicon carbide wafers, for LED and power device applications, sapphire substrates for LED lighting and mobile devices, various glass and silica components for 3D image transmission, quartz and ceramic components for telecommunications devices, medical device components and optical and photonics applications.

We believe our product portfolio, developed through a track record of technological innovation as well as the successful integration of key acquisitions, provides exceptional value to semiconductor manufacturing by increasing yields, efficiency and throughput. 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. Our customers use our equipment to manufacture semiconductor chips, silicon and compound semiconductor wafers and MEMS, which are used in end markets such as telecommunications (5G), consumer and industrial electronics (IoT and embedded devices), computing (data centers), automotive electronics and sensors (xEV), and mobile devices (smart devices). To complement our research and development efforts, we also sell our equipment to, and coordinate certain development efforts with, research institutes, universities and customers.

The semiconductor industry is cyclical and historically has experienced significant fluctuations. Our revenue is impacted by these broad industry trends.

In March 2020, the outbreak of COVID-19 was recognized as a pandemic by the World Health Organization, and the outbreak became increasingly widespread, including in all of the markets in which we operate. We continue to monitor the impact of COVID-19 on all aspects of our business. We are a company operating in a critical infrastructure industry, as defined by the U.S. Department of Homeland Security. Consistent with federal guidelines and with foreign government, state and local orders to date, we have continued to operate across our footprint throughout the COVID-19 pandemic. Following the onset of COVID-19 and its negative effects on our business, most prominently reflected in our second, third and fourth quarter fiscal 2020 results, global economic conditions improved during fiscal 2021, resulting in increased demand for our products and services, which led to our earnings for fiscal 2021 substantially exceeding our fiscal 2020 results. There remain many unknowns and we continue to monitor the expected trends and related demand for our products and services and have and will continue to adjust our operations accordingly.

On March 28, 2022, the Chinese government issued a mandatory shutdown in Shanghai, the location of one of our manufacturing facilities. The factory was allowed to partially reopen in May 2022 and was fully reopened on June 1, 2022. Upon reopening on June 1, 2022, the factory was able to operate at near full capacity for the entire month of June. We were able to make up the shipments missed in the fourth quarter and are now operating at normal capacity levels. Additionally, given the uncertainty surrounding the COVID-19 pandemic and the emergence of variations thereof, there can be no assurance that our Shanghai facility will be allowed to remain open on a consistent basis.

For information regarding net revenue, operating income and identifiable assets attributable to each of our two reportable segments, see Note 18 of the Notes to Consolidated Financial Statements included in "Item 8. Financial Statements and Supplementary Data" 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 reportable segment, see "Semiconductor Products" and "Material and Substrate Products" within this "Item 1. Business" section. For information regarding risks to our business, see "Item 1A. Risk Factors."

Our fiscal year is from October 1 to September 30. Unless otherwise stated, references to the years 2022, 2021 and 2020 relate to the fiscal years ended September 30, 2022, 2021 and 2020, respectively.

ACQUISITION

On March 3, 2021, we acquired 100% of the issued and outstanding capital stock of Intersurface Dynamics, a Connecticut-based manufacturer of substrate process chemicals used in various manufacturing processes, including semiconductors, silicon and compound semiconductor wafers, and optics, for a cash purchase price of $5.3 million. Intersurface Dynamics' results of operations are included in our Material and Substrate segment from the date of acquisition.

GROWTH AND INVESTMENT STRATEGY

We continue to invest in research and development and have introduced new products in fiscal 2022, with additional new products expected in fiscal 2023, to expand our offerings and addressable market. As we move past the pandemic interruptions, we have a renewed objective to grow our revenue and expand our operations through organic growth, while at the same time pursuing strategic acquisitions. Historically, we have grown our business primarily through acquisitions, including the businesses that currently comprise our two reportable segments in the Semiconductor and Material and Substrate industries: Bruce Technologies, BTU, PR Hoffman and Intersurface Dynamics. The businesses we own and operate today have provided substantial returns on our original investments. Our acquisition of BTU demonstrates our ability to unlock value in a company, to grow revenue and improve the performance of acquired assets. Our 2021 acquisition of Intersurface Dynamics bolstered our offerings in the substrate consumables space and incorporated wafer processing coolants and chemicals to our existing consumable and machine product lines. While we continue to believe this inorganic growth strategy is the backbone of who Amtech is as a company, we also have a complimentary strategy of pursuing organic growth, particularly during times when we lacked sufficient capital resources to pursue growth through acquisitions. We intend to accomplish these parallel objectives through the pursuit of the following strategies:

Grow consumables revenue to reduce vulnerability to semiconductor business cycles. The semiconductor industry is highly cyclical, and the conditions of this industry remain volatile. All participants have been subject to these fluctuations in demand, but they can be particularly problematic for equipment suppliers who rely on capacity expansion for many orders. These sharp business cycles not only impact short-term financial results but can also weaken the strength of suppliers as they reduce their organizations to align with the reduced production demand. Our line of consumables products, including templates, carriers, polishing-related chemicals and spare parts, generates continuous revenue streams regardless of capacity expansions as they are used in equipment already in service. In an effort to minimize both the financial shortfalls and organizational harm of these business cycles, we are seeking to increase the consumables portion of our business. Our initial focus is on aggressively growing the consumable business in our Materials and Substrate division, which was approximately 15% of our consolidated revenue in fiscal 2022. In addition, we are working to transform the aftermarket sales business in our Semiconductor division, leveraging the strength of our expansive installed base to increase higher-margin sales of replacement parts and services. Similar efforts will be made at our Material and Substrate segment, though the existing installed base is on a much smaller scale.

Increase the portion of our product line portfolio tied to high-growth, megatrend end markets such as EV. We believe the opportunity for organic growth through strategic alignment to projects tied to megatrends is an opportunity that exists across all our divisions. In the Material and Substrate division, processing of SiC substrates is directly tied to the production of power modules used in electric vehicles and in other green technology applications such as wind and solar power. Our Semiconductor division has multiple intersections with EV production, including the use of our diffusion furnaces and surface-mount technology reflow products to manufacture power semiconductors and our high-temp furnaces used in Direct Bond Copper (DBC) applications used in power modules. In order to increase the portion of our business tied to these high-growth megatrends, we are employing multiple tactics and strategies, including strategic selling and customer-centric product development.

Enhance and invest in legacy business operations. Our legacy business is key to funding both organic and inorganic growth opportunities across our divisions. Throughout 2022, we have been re-enforcing Amtech's core values, purpose and methods across all divisions and locations, including an emphasis on continuous improvement and problem-solving. We have increased cross-divisional sharing of resources and expertise, such as best practices and global sourcing. This strategy has been developed by our CEO and CFO, in conjunction with our Vice President of Operations, Vice President of Sales and Customer Service, Segment Managers and Corporate Director of Strategic

Marketing, to ensure these advancements are implemented uniformly across all Amtech operations. Additionally, we have made capacity investments at several of our locations and expect to make future investments upon the expiration of the two-year leaseback of our Massachusetts facility (see Note 8). We are also evaluating our management information systems and needs in order to allow for greater efficiencies and to ensure our infrastructure can support our future growth plans. During fiscal 2023, we intend to focus on further investments to strengthen and expand our manufacturing capacity, including evaluating back-up and alternative manufacturing sites as well as contract manufacturing, to meet anticipated growth demands from the Silicon Carbide industry segment, and to both increase our efficiency and reduce single-point failure risks to our business.

Pursue strategic acquisitions that complement our strong platform. As discussed above, we have historically pursued an acquisition strategy consistent with our focus of maintaining market leadership and technology innovation that addresses the continued growth in the semiconductor industry. As part of this strategy, we continually evaluate potential technology, product and business acquisitions or joint ventures that we believe will increase our existing market share in the semiconductor and SiC industries and expand our addressable market. In evaluating these opportunities, our objectives include enhancing our earnings and cash flows, adding complementary product offerings, expanding our geographic footprint, improving our production efficiency and expanding our customer base. As a result, we continue to manage our balance sheet to maintain adequate liquidity so that we may react quickly as these opportunities arise. During 2021, we completed the acquisition of Intersurface Dynamics, which incorporated numerous coolants and chemical products to our existing consumable and machine product lines.

SEMICONDUCTOR AND MATERIAL AND SUBSTRATE OPERATIONS

We provide diffusion and reflow thermal systems as well as wafer polishing equipment and related services to leading semiconductor manufacturers. Our products include horizontal diffusion furnaces used to produce semiconductors, such as analog, sensors, and discrete devices, and MEMS, as well as double-sided lapping and polishing equipment, double-sided lapping and polishing carriers, and single side polishing templates.

As demand for increasingly sophisticated electronic devices continues, new technologies such as electric vehicles, artificial intelligence, advanced power management, advances in consumer electronics, 5G communications, and IoT will help drive future growth. Electronic equipment continues to become more complex, yet end users demand smaller, lighter and less expensive devices. This trend, in turn, requires increased performance and reduced cost of ownership requirements of electronic assemblies, printed circuit boards and semiconductors. In response to these developments, manufacturers are increasingly employing more sophisticated production and assembly techniques requiring more advanced manufacturing equipment, such as that supplied by our subsidiary, BTU.

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. We believe the continued expansion of our consumable product offerings, primarily in our Material and Substrate segment, will enable us to partially offset some of these cyclical effects.

SEMICONDUCTOR PRODUCTS

Our furnace equipment is manufactured in our facilities in Massachusetts and China. The following paragraphs describe the products that comprise our current product lines in our semiconductor business:

Horizontal Diffusion Furnaces. Through Bruce Technologies, we produce and sell 200mm and 300mm horizontal diffusion and deposition furnaces. Our horizontal furnaces currently address several steps in the semiconductor manufacturing process, including diffusion, high temperature oxidation (used in silicon power chips), 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 is often configured through a range of options to meet the requirements of our customers' particular process needs. The horizontal furnaces utilize a

combination of existing industry and proprietary technologies and are sold primarily to semiconductor customers. Our products are capable of processing all currently existing wafer sizes.

Continuous Thermal Processing Systems. Through BTU, we produce and sell thermal processing systems used in the solder reflow and curing stages of printed circuit board assembly as well as systems for the thermal processes used in advanced semiconductor packaging. Our printed circuit board assembly products are used primarily in the advanced, high-density segments of the market that utilize surface mount technology.

Flip-chip reflow provides the physical and electronic bond of the semiconductor device to its package. Our range of convection reflow systems, utilizing patented closed loop convection technology, are rated at up to 400°C and operate in air or nitrogen atmospheres. These products are manufactured at our ISO 9001:2015 certified facility in Shanghai, China and utilize forced impingement convection technology to transfer heat to the substrate. Using configurable heating elements of up to eight kilowatts, they can process substrates in dual lane, dual speed configurations, thereby enabling our customers to double production without increasing the machine's footprint. These products are available in four models based on the heated lengths of thermal processing chambers. Heated length is based on the required production rate and loading requirements.

High-Temperature Belt Furnace. We also produce and sell high-temperature belt furnaces, which have been manufactured in Massachusetts for over six decades with ISO 9001:2015 quality certification safe-guarding that each unit is subject to exacting build and test criteria. These furnaces operate at temperatures up to 1180°C and are capable of processing in controlled atmospheres, such as nitrogen, argon and hydrogen. Applications include direct bond copper, furnace brazing, annealing, glass to metal sealing, sintering and heat-treating for diverse markets including automotive, semiconductors, aerospace and medical.

Aqua Scrub Flux Management. In 2021, we began offering our innovative Aqua Scrub Flux Management technology for our reflow ovens. The system continuously extracts flux-laden oven atmosphere from the reflow oven process chamber which is then passed through the Aqua Scrub system removing flux and returning clean atmosphere back to the reflow oven chamber. The aqueous-based scrubbing solution utilizes industry standard detergents for the rinse agent concentrate making it environmentally friendly. The system can be easily retrofitted to existing reflow ovens in the field due to its stand-alone design and small footprint.

Selective Soldering. In March 2021, BTU entered into a distribution agreement with Hentec Industries, making BTU the exclusive distributor for Hentec products in Asia. BTU's primary focus will be on the Hentec selective soldering product lines.

FUTURE SEMICONDUCTOR PRODUCTS

The following paragraphs describe products currently in the final stages of development that we expect to begin offering to customers during fiscal year 2023 as part of our Semiconductor product lines:

Reflow. Our BTU division has begun a project to replace the current Pyramax reflow product with a next-generation platform. This updated platform will address areas of the market not currently served by the Pyramax line and provide existing customers with additional enhancements and capabilities. This next-generation platform will be launched in mid-2023 with full production commencing early 2024.

APEX Host Management System. Our horizontal diffusion furnaces utilize a supervisory software system called APEX. We are nearing the final stages of a project to replace the current version, as it runs on a Unix operating system. This updated version will provide several new enhancements to our horizontal diffusion product line. This version will also provide an upgrade option for our existing base of customers.

MATERIAL AND SUBSTRATE PRODUCTS

Our Material and Substrate segment manufactures the products described below in Pennsylvania and Connecticut and sells them under our PR Hoffman and Intersurface Dynamics brand names.

Substrate Carriers. We manufacture carriers in a variety of sizes and materials. Sizes range from 3 to 38 inches in diameter using a variety of special steels, laminates and extruded polymer raw materials. Silicon wafers, compound semiconductor wafers, and large optics require these special insert carriers. These carriers combine the strength of hardened steel as the processing backbone with a softer plastic material in the work holes known as an insert. Inserts are permanently molded into the work holes via a pressurized process. These inserted work holes provide smoother processing, improved wafer total thickness variation (TTV) and improved wafer edge quality. Insert carriers are available for all wafer sizes from 75mm to 450mm and can be made from hardened and tempered carbon steel or specialized stainless steel when metal contamination is a processing concern. Insert carriers are widely accepted as the industry solution for both prime wafer and reclaim wafer manufacturers when dual sided lapping or polishing are utilized in their front-end wafer process.

Substrate Polishing Templates. Our polishing templates are used to securely hold silicon carbide, silicon, sapphire or other wafer materials in place during single-sided wax-free polishing processes. Polishing templates are customized for specific applications and are manufactured to extremely tight tolerances. We offer a variety of options to provide the best solution for each specific process. Polishing templates are manufactured for all brands of tools and virtually any wax-free customer process. Critical front-end wafer surface specifications are finalized during the polishing process.

Double-Sided Lapping and Polishing Machines. Double-sided lapping and polishing machines are designed to process materials such as silicon wafers, sapphire and other wafer-like materials, precision optics, computer disks, ceramic components, specialty metal products 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 compound substrate, semiconductor, optical sapphire, glass, quartz, ceramics, medical, computer disk and metal-working markets. Our largest double-sided polishing machine was introduced in fiscal 2022, and has the capacity to handle 8-inch wafers, representing a 25% increase over our next largest tool. In addition, several enhancements have been added to provide our customers the ability to use the system for compound semiconductor substrates such as SiC. True 4-way planetary motion allows us to increase material removal rate and provide better flatness. We designed this new system with increased downforce to provide the necessary pressure when lapping or polishing compound semiconductors. We have also developed other enhancements, such as chilled base plates to keep the system at lower temperatures during the processing cycles.

Single-Sided Polisher. We have developed a new single-side batch polisher to specifically to address the challenges in polishing compound semiconductor substrates, such as silicon carbide. Silicon carbide material is much harder than traditional silicon and requires additional capabilities not found on existing batch polishing systems in the market. Our single-side polishing equipment was designed to handle SiC wafers with a low cost of ownership and has enhanced throughput and cost of ownership when compared to single wafer CMP systems.

Substrate Process Chemicals. Through Intersurface Dynamics, we produce and sell substrate process chemicals which are used to achieve specific surface morphologies on a variety of materials. Our substrate process chemical customers include some of the world's largest manufacturers of semiconductor devices, silicon wafers, precision optics, ophthalmic lens, advanced displays and flat glass. We offer three different product lines: Tensor Series Products, Vector Series Products, and Challenge Series Products. Tensor Series Products are used by manufacturers of integrated circuits in applications such as cleaning, etching, dicing and CMP. Vector Series Products were designed specifically for grinding, sawing, lapping, cleaning, etching and polishing semiconductor materials such as silicon wafers. Challenge Series Products address similar processes for manufacturers of precision optics, technical ceramics and advanced displays helping to achieve optimum yields.

MANUFACTURING, RAW MATERIALS AND SUPPLY CHAIN

Our semiconductor 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 in North Billerica, Massachusetts and Shanghai, China.

Our manufacturing activities in the polishing business include laser-cutting and other fabrication steps in producing lapping and polishing consumables, including carriers, templates, gears, wear items and spare parts in our ISO 9001:2015 certified facility 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 semiconductor equipment and lapping plates, are purchased from suppliers who manufacture these items to our specifications. Additional manufacturing activities related to our polishing and lapping machines include procurement and assembly of various commercial and proprietary components into finished polishing and lapping machines.

Final assembly and tests of our 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 these products, our Carlisle 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 and machine motors are subcontracted out to various third parties. Our polishing supplies business relies on key suppliers for certain materials, including specialized steel mills in Germany and Japan, an injection molding machine, 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 seek to maintain appropriate inventory levels of key raw materials and parts.

Beginning in 2019 and throughout 2022, we experienced increased lead-times for various parts and services across both our reportable segments. In response to these increased lead-times, we have increased the amount of on-hand inventory and purchase order commitments related to long lead-time items. We have also increased on-hand inventory of certain parts as part of a strategy to mitigate supply chain risk. Despite these strategic increases, there can be no assurance that we will have enough inventory on-hand at the time we receive orders and that we will not incur delays in production time. Additionally, we may order items prior to receiving a customer order, which could result in increased inventory reserve expenses.

During 2021 and 2022, we were also affected by the global shipping container shortage, which resulted in logistical challenges primarily related to shipments to and from China and, to a lesser extent, in other geographies including the U.S. and Europe. These challenges led to shipment delays to our customers as well as increased freight charges for both customer and vendor shipments. While improving, we expect these shipping trends to continue into fiscal 2023.

CUSTOMERS AND SEASONALITY

Our customers are primarily manufacturers of semiconductor substrates and devices and electronic assemblies. Additionally, our Material and Substrate segment also serves customers in the ceramics and optics industries. During 2022, 64% of our net revenue came from customers outside of North America. This group represented 73% of revenues in 2021. In 2022, net revenue was distributed among customers in different geographic regions as follows:

- North/South America 36% (27% of which is in the United States)
- Asia 44% (including 17% in China, 14% in Taiwan and 7% in Malaysia)
- 20% in Europe (including 10% in Austria and 4% in Germany)

Two Semiconductor customers accounted for 14% and 12% of our net revenues in 2022. In 2021, two Semiconductor customers accounted for 14% and 13% of our net revenues.

Our business is not seasonal in nature, but is cyclical based on the capital equipment investment patterns of semiconductor manufacturers. These expenditure patterns are based on many factors, including capacity utilization, anticipated demand, the development of new technologies and global and regional economic conditions. Historically, these cycles typically last between 10-17 quarters, with each complete cycle made up of a contraction phase of about 4-6 quarters, followed by an expansion phase of approximately 6-11 quarters.

SALES AND MARKETING

Due to the highly technical nature of our products, we market our products primarily by direct customer contact through our sales personnel and through a network of domestic and international independent sales representatives and distributors that specialize in semiconductor equipment and supplies. Our promotional activities include direct sales contacts, participation in trade shows, advertising in trade magazines and digital marketing including website SEO and pay-per-click advertising.

We use a mix of direct sales, representatives and distributors globally. Manufacturer representatives provide sales coverage in specific geographic regions and are paid a commission when products are sold. 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 semiconductor equipment do not stock a significant amount of our products, as the inventory they hold is generally limited to parts needed to provide timely repairs to customers. Our manufacturer representatives and distributors are closely managed by our global sales team.

Historically, each of our segments have been responsible for their own sales and marketing activities, including managing sales personnel and representative and distributor relationships, however, as we continue to refocus and grow our organization, we are developing opportunities for increased collaboration and teamwork across our divisions. These cross-segment collaboration opportunities will continue to be a focus at all levels and departments of our organization, as we believe they can lead to greater efficiencies while reducing operating costs. These efforts are further coordinated by our Vice President of Sales and Customer Service, who oversees all sales and marketing activities at each division.

RESEARCH, DEVELOPMENT AND ENGINEERING

The markets we serve are characterized by rapidly-evolving industry standards and technological change. To compete effectively, 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 are competitive based on 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. In addition, we look for strategic acquisitions that will provide us with new technologies to compete effectively in the markets in which we operate.

RD&E expenses may vary from period to period depending on the engineering projects in process. Expenses related to engineers working on strategic projects or sustaining engineering projects are recorded in RD&E. However, 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 goods sold.

In 2022, 2021 and 2020, we recorded RD&E expense of $6.4 million, $6.0 million and $3.3 million, respectively. We plan to continue to develop new products and invest in upgrades to existing products to stay competitive in the markets we serve. As a result, we saw increased RD&E expenses in 2021 and 2022 and expect to continue to increase our capital expenditures and RD&E expenses in fiscal 2023 and beyond for these upgrades as well as for the development of new products. As a result of these RD&E efforts, we introduced several new products as well as upgraded products during fiscal 2022, with additional products expected in fiscal 2023. We periodically receive research grants for research and development of products, which are netted against our research, development and engineering costs. Grants received were immaterial in 2022, 2021 and 2020.

COMPETITION

We compete in several distinct equipment markets for semiconductor devices, semiconductor substrates, MEMS, semiconductor packaging, and electronics assembly, as well as the markets for supplies used in power semiconductor applications. 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, cost-effectiveness, overall reliability, ease of use and maintenance, contamination and defect control and the level of technical service and support.

The Semiconductor and MEMS Markets. Equipment produced by our Semiconductor reportable segment primarily competes with those produced by other original equipment manufacturers. Some of these manufacturers are well-established firms that are much larger and have substantially greater financial and other resources than we have with which to pursue development, engineering, manufacturing, marketing and distribution of their products. Additionally, these manufacturers may generally be better situated to withstand adverse economic or market conditions. Competitors of our horizontal diffusion furnaces include Centrotherm GmbH and CVD Equipment, Inc.

Our principal competitors for printed circuit board assembly equipment and advanced semiconductor packaging vary by product application. The principal competitors for solder reflow systems are ITW/EAE Vitronics-Soltec, Heller, Folungwin, ERSA, Shenzhen JT Automation Equipment Co., Ltd. and Rehm. The principal competitors for advanced semiconductor packaging are ITW/EAE Vitronics-Soltec and Heller. Our in-line, controlled atmosphere furnaces compete primarily against products offered by Centrotherm and SierraTherm/Schmid Thermal Systems. We also face competition from emerging low-cost Asian manufacturers and other established European manufacturers.

Although price is a factor in buying decisions, we believe that technological leadership, process capability, throughput, safer designs, uptime, mean time-to-repair, cost of ownership and after-sale support have become increasingly important factors to purchasers of our products. As such, we believe we compete primarily on the basis of these criteria, rather than on the basis of price alone.

General Industrial Lapping and Polishing Machines, Supplies and Semiconductor Substrate Markets. Our Material and Substrate reportable segment experiences price competition for wafer carriers from 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 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 advanced laser-cutting tools, which reduces our costs and lead times and increases our control over quality. Competitors of our lapping and polishing machines and consumable supplies include Lapmaster Wolters (aka PSS), Speedfam Co. Ltd., Hamai Co., Ltd., Onse, Inc. and Eminess Technologies, Inc. Our new single-sided polishing machine, introduced in fiscal 2022, will compete with products offered by Gigamat, Applied Materials, Inc. and Revasum, Inc. However, we believe the automation options available with our new machine will differentiate our product from others in the market. Our strategy to enhance our sales of wafer carriers and templates includes developing new applications in close collaboration with our customers, continuous improvement of our existing products and providing a high level of customer support and products that deliver greater value to our customers.

The competitive landscape in the substrate process chemical industry is varied, ranging from large multinational companies to small regional or regionally-focused companies. Intersurface Dynamics competes with much larger companies, such as Entegris, Inc. and Cabot. Our acquisition of Intersurface Dynamics coupled with PR Hoffman's product line allows us to be our customers' sole provider for their polishing processes, by providing the machinery, carriers, templates and slurry.

HUMAN CAPITAL

The Amtech Values

Amtech is focused on growth: company growth and employee growth. To encourage that growth, Amtech's Chief Executive Officer and Chief Financial Officer developed Amtech's core values, which are communicated to employees on a regular basis. These core values include the following:

- 360° Accountability – Hold yourself and others accountable, even if they are at levels above you in the organization; accountability is not one direction.
- Goal Oriented – Actions and work are driven by established goals, whether self-created or management-driven.
- Sense of Urgency – We perform our work each day with a sense of immediate action and speed, without sacrificing quality. We look for and resolve problems quickly and proactively.
- Trust in Each Other – We can be confident in our expectations of each other in terms of performance, commitment, and follow-through.

Amtech's Employees

Our employees are critical to our success as a leading, global manufacturer of capital equipment and related consumables used in fabricating semiconductor devices. To continue producing and delivering high-quality products and services to our customers, and to compete and succeed in the highly competitive and continually evolving markets in which we operate, it is critical that we continue to attract, retain and develop a diverse group of talented individuals at all levels of our organization.

Our management seeks to align employment levels with the needs of our business. We believe we have the appropriate human capital resources to successfully operate and execute our growth and investment strategy. As of September 30, 2022, we employed 327 people. We also employ individuals on a temporary full-time basis and use the services of contractors as necessary. Of our 327 total employees, 36% were engaged in manufacturing, 20% were engaged in sales and service, 14% were engaged in research, development and engineering, and 30% were engaged in other roles. Our employees were based out of the following locations:

- Tempe, Arizona corporate offices — 11
- Bethel, Connecticut manufacturing plant — 6
- North Billerica, Massachusetts manufacturing plant — 99
- Carlisle, Pennsylvania manufacturing plant — 49
- Shanghai, China manufacturing plant — 142
- Other Asia-Pacific offices — 11
- UK office — 9

Of the 49 people employed at our Carlisle, Pennsylvania facility, 24 were represented by the United Auto Workers Union - Local 1443. We have a three-year agreement with this union, which expires on September 30, 2025. We expect this agreement to be renewed prior to expiration. We have never experienced a work stoppage or strike, and other than employees at the Carlisle facility, no other employees are represented by a union. At select business units, we have hired certain highly specialized employees under employment contracts that specify a term of employment, pay and other benefits. We consider our employee relations to be good.

Talent Acquisition and Retention

The future growth and success of our company largely depends on our ability to attract, train and retain qualified professionals. As part of our effort to do so, we offer competitive rewards, compensation and benefits, including an employee equity award program, performance-based bonuses, health and wellness benefits, retirement benefits, flexible schedules and holiday and paid time off. We understand that effective compensation and benefits programs are important in retaining high-performing and qualified individuals. Management is currently working with a consulting firm to study the competitiveness of our compensation programs for non-executive employees relative to their roles and responsibilities and the geographies they work in. Additionally, we continue to assess our healthcare and retirement benefits each year in order to provide competitive benefits to our employees.

We know that retention of high-performing employees benefits us and our customers. We are committed to helping our employees develop in their careers and thrive within the Company. Management provides regular performance reviews to ensure our employees are receiving timely and constructive feedback, as well as rewards based on their performance. These performance reviews also assess each employee's performance as it relates to Amtech's Values. We believe these programs and efforts contribute to attracting and retaining a talented and driven workforce.

Turnover

In 2022, our total employee turnover was 12.4%, of which approximately 71.1% was voluntary. Approximately 14.8% of voluntary turnover were employees that retired from the workforce. The average tenure of our employees is approximately 10 years and approximately 46.5% of our employees have been employed with us for more than 10 years. In 2021, our total employee turnover was 14.9%, of which approximately 75.0% was voluntary. Approximately 18.2% of voluntary turnover were employees that retired from the workforce.

Diversity, Equity, and Inclusion

Amtech is dedicated to building a diverse workforce, fostering a culture built on the principle of inclusion, and maintaining a workplace free from discrimination. We strongly believe that a diversity of experience, perspectives and backgrounds will lead to a better environment for our employees and better products and service for our customers. Amtech's commitment to diversity covers our Board of Directors, our leadership team and all teams and functions across our global locations.

Health and Safety

It is our highest priority to keep our employees, customers and suppliers safe. We provide our employees with ongoing safety training to ensure safety policies and procedures are communicated and implemented in an effective and timely manner.

During the ongoing COVID-19 pandemic, it is and has been our top priority to protect the safety and well-being of our employees and their families, our customers and our communities. Our commitment to this was evidenced by our response to the pandemic. We implemented work-from-home options for all our office personnel, where possible, and added additional shifts to reduce personnel in the building. Additionally, at all of our facilities we followed enhanced safety and health protocols, including performing health checks and temperature screenings, practicing social distancing, providing personal protective equipment and increasing facility cleanings.

PATENTS

The following table shows our material patents and the expiration date of each patent:

Product	Countries	Expiration Date or Pending Approval
Ultrafast gas bearing-based reactive ion etching	Europe	2030
Convection furnace thermal profile enhancement	United States	2023
Lapping machine adjustable mechanism	Various	2027
RFID-containing carriers used for silicon wafer quality	United States	2030
Polishing machine wafer holder	Various	2037
Devices, Systems and Methods for Flux Removal from Furnace Process Gas	Various	2038

To 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 allege we are infringing the intellectual property rights of such third parties.

AVAILABLE INFORMATION

We file our annual report on Form 10-K, quarterly reports on Form 10-Q, Current Reports on Form 8-K, proxy statements, and other documents (including registration statements) with the SEC under the Securities Exchange Act of 1934 or the Securities Act of 1933, as applicable. Our SEC filings are available to the public on the SEC's website at *www.sec.gov* and through The Nasdaq Global Select Market, 165 Broadway, New York, New York 10006, on which our common stock is listed.

AMTECH WEBSITE

In addition to the information contained in this Report, extensive information about Amtech can be found at *www.amtechsystems.com*, including information about our management team, products and services, and corporate governance practices. The corporate governance information on our website includes our Code of Conduct, Corporate Governance guidelines and the charters for each of the committees of the Board. In addition, amendments to these documents and waivers granted to directors and executive officers under the Code of Conduct, if any, will be posted in this area of the website. In addition, our filings with the SEC, as well as Section 16 filings made by any of our executive officers or directors with respect to Amtech's common stock, are available free of charge on our website as soon as reasonably practicable after the filing is electronically filed with, or furnished to, the SEC.

These details about our website and its content are only for information. The contents of our website are not, nor shall they be deemed to be, incorporated by reference in this Report. Further, our references to website URLs are intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

There are many factors that affect our business, financial condition, operating results and cash flows, as well as the market price for our securities. The following is a description of important factors that may cause our actual results of operations in future periods to differ materially from those currently expected or discussed in forward-looking statements set forth in this Report. The risks and uncertainties described below are not the only risks we face. We operate in a continually changing business environment. Additional risks and uncertainties not presently known to us or that we may currently deem immaterial also may impair our business operations. Forward-looking statements and such risks, uncertainties and other factors speak only as of the date of this Report, and we expressly disclaim any obligation or undertaking to update or revise any forward-looking statement contained herein, to reflect any change in our expectations with regard thereto, or any other change in events, conditions or circumstances on which any such statement is based, except to the extent otherwise required by law. The following risk factors should be read in conjunction with all of the other information in this Annual Report on Form 10-K, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and related notes.

Risks Related to the Semiconductor Industry

There is ongoing volatility in the semiconductor equipment industry.

The semiconductor equipment industry is highly cyclical and volatile. As such, demand for, and the profitability of, our products can change significantly from period to period as a result of numerous factors, including the following:

- changes in global and regional economic conditions;
- the shift of semiconductor production to Asia, where there often is increased price competition;
- tariffs, quotas and international trade barriers;
- changes in capacity utilization and production volume of manufacturers of semiconductors, silicon wafers and MEMS;
- the profitability and capital resources of those manufacturers; and
- challenges associated with marketing and selling manufacturing equipment and services to a diverse and diffuse customer base.

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 our products, as well as our customers' capital expenditure budgets. Purchasing decisions are also impacted by changes in the economies of the countries served by our customers, as well as the state of the worldwide industries in which we operate or expect to operate in the future. The timing, length and severity of the up-and-down cycles in the semiconductor equipment industry are difficult to predict. Additionally, we generally experience a one-to-two quarter lag between upturns/downturns experienced by larger equipment manufacturers.

When cyclical fluctuations result in lower than expected revenue levels, our 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 our 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, and our failure to do so could have a material adverse effect on our business.

The semiconductor equipment industry is highly competitive and, because we are relatively small in size and have fewer financial and other 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 with extensive financial resources and research, engineering, manufacturing,

marketing and customer service and support capabilities that are greater than ours. We face competition from companies whose strategy is to provide a broad array of products, some of which compete with the products and services we offer. These competitors may bundle their products in a manner that discourages customers from purchasing our products. In addition, we face competition from 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. We also face competition from Chinese equipment manufacturers that may receive greater support than we do from Chinese customers and governmental agencies because they are locally based. In addition, our local Chinese competitors may offer lower prices and more liberal payment terms than ours. Loss of our competitive position due to any of these factors could impair our prices, customer orders, revenue, gross margin and market share, any of which would negatively affect our business, financial position and results of operations.

Risks Related to Our Business and Our Operations

Business interruptions, including those related to COVID-19, have had an adverse impact on our operations, including among others, our manufacturing and supply chain, sales and product development, and could have an adverse impact on our business, financial condition and results of operations in future periods.

The COVID-19 pandemic and the resulting containment measures have caused economic and financial disruptions globally, including in most of the regions in which we sell our products and conduct our business operations. Beginning in the second half of fiscal 2020, the COVID-19 pandemic negatively impacted consumer and business spending generally and has significantly contributed to deteriorating macroeconomic conditions. We continue to experience significant supply constraints seen industry-wide due to component shortages which have resulted in extended lead times and higher supply chain costs. The magnitude and duration of the disruption, its continuing impact on us, and resulting decline in global business activity is uncertain.

While we continue to monitor and assess the impact on our business from the spread of COVID-19 and related new strains and the ever evolving actions implemented by governments across the globe, our global operations have returned to normal. The degree to which COVID-19 impacts our future business and operations will depend on future developments, which are highly uncertain and cannot be predicted with confidence, including the duration, spread and severity of the outbreak, new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others. In particular, the continued spread and/or resurgence of COVID-19 globally and/or the emergence of new strains of COVID-19, such as the Omicron BA.5 variant, could result in a widespread health crisis and/or change in consumer behavior that could adversely affect the global economy and financial markets, resulting in an economic downturn, and could also adversely impact our operations, including, without limitation, our manufacturing and supply chain, sales and product development operations, particularly our prospective sales if the Semiconductor and Material and Substrate segments we seek to serve suffer long-term damage. Such an economic downturn could have an adverse impact on the successful and timely implementation of our strategic growth plan and on our business, financial condition and results of operations. We are similarly unable to predict the extent to which the pandemic impacts our customers, suppliers and other partners and their financial conditions, but adverse effects on these parties could also adversely affect us.

Finally, the impact of COVID-19 can also exacerbate other risks discussed in this Risk Factors section and throughout this report, which could in turn have a material adverse effect on us. Developments related to COVID-19 have been unpredictable, and additional impacts and risks may arise that we are not aware of or able to respond to appropriately.

We may not be able to generate sufficient cash flows or obtain access to external financing necessary to fund existing operations and our growth plan.

Cash flows may be insufficient to provide adequate working capital in the future and we may require additional financing to fund existing operations as well as our growth plan. 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 our then existing shareholders, result in increased expenses or result in covenants or special rights that would restrict our operations.

We may not be able to manage our 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. To successfully manage our growth through such market fluctuations, 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 business cycles. If we are unable to effectively manage our business through these cycles, we may not be able to take advantage of market opportunities, develop new technologies and other products, satisfy customer requirements, execute our business plan or respond to competitive pressures.

Our inability to attract, train and retain effective employees and management could harm our business.

Our success depends upon the continued contributions of our executive officers and certain other employees, many of whom have many years of experience with us and would be extremely difficult to replace. We must also attract and retain experienced and highly skilled engineering, sales and marketing and managerial personnel. Competition for qualified personnel is intense in our industry, and we may not be successful in hiring and retaining these people. If we lost the services of our executive officers or our other highly qualified and experienced employees or cannot attract and retain other qualified personnel, our business could suffer as a result of less effective management due to loss of accumulated knowledge of our business or through less successful products due to a reduced ability to design, manufacture and market our products.

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.

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

- difficulties and increased costs in connection with integration of geographically diverse personnel, operations, technologies and products;
- disruption of our ongoing operations and diversion of management's attention from other operational matters;
- the potential loss of our key employees and the key employees of acquired companies or difficulty in integrating employees;
- the potential loss of our key customers and suppliers and the key customers and suppliers 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 likelihood that the issuance of our common stock, if any, in an acquisition or merger could be dilutive to our existing shareholders;
- impairment of acquired assets 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 and any other associated transaction expenses;
- 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 our access to and cost of capital;
- potential litigation that may arise in connection with an acquisition;
- 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 and other risks associated with acquired businesses or assets.

Any of these risks could have a material adverse effect on our business, results of operations, financial condition, or cash flows, particularly in the case of a large acquisition. Moreover, our resources are limited and our decision to pursue a transaction has opportunity costs; accordingly, if we pursue a particular transaction, we may need to forgo the prospect of entering into other transactions that could help us achieve our financial or strategic objectives. No assurance can be given that we will be able to successfully complete future strategic acquisitions if we cannot reach agreement on acceptable terms or for other reasons. We may have to incur debt, issue equity securities or a combination of the foregoing to pay for any future acquisitions, the issuance of which could involve the imposition of restrictive covenants or be dilutive to our existing shareholders.

Our reliance on sales to a few major customers, often on credit terms, places us at financial risk.

We currently sell to a relatively small number of customers and expect to do so for the foreseeable future. Therefore, our operating results depend on the ability of these customers to sell products that require our equipment in their manufacture. Many of our customer relationships have developed over a short period of time and certain ones are in the early stages of development. The loss of sales to any of these customers would have a significant negative impact on our business. Additionally, our customers may cancel their agreements with us if we fail to meet certain product specifications, materially breach agreements or encounter insolvency or bankruptcy. They also may seek to renegotiate the terms of current agreements or renewals. We cannot be certain our existing customers will generate significant revenue for us in the future or that these new customer relationships will continue to develop. If we are unable to maintain or expand our customer base, we may not be able to maintain or increase our revenue.

In addition to having a relatively limited number of customers, we manufacture a limited number of products for each of our customers. If we lose any of our largest customers (as we have in the past from time to time), experience a significant reduction in sales to any such customers or no longer manufacture a particular product line for one of our largest customers, we would experience a significant reduction in our revenue.

As of September 30, 2022, one Semiconductor customer individually represented 12% of our accounts receivable. A concentration of our receivables from one or a small number of customers places us at risk. In such a scenario, 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. We attempt to manage this credit risk 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 or other commercial terms that are less favorable to us than the current terms we

customarily obtain. If any one or more of our major customers were to seek to re-negotiate their agreements on more favorable terms, or not pay us or continue business with us, it could adversely affect our business, financial position and results of operations.

Our customers could cancel or fail to accept a large system order.

Our backlog includes orders for large systems, such as our horizontal diffusion furnaces, with system prices of up to and in excess of $1.0 million, depending on the system configuration, options and any other configuration requirements of the customer. Some orders include multiple systems. 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. 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 quickly resell. We have experienced cancellations in the past. We cannot provide any assurance that we will realize revenue or profit from our backlog.

Manufacturing interruptions or delays could affect our ability to meet customer demand and lead to higher costs.

Our business depends on timely supply of equipment, services and related products that meet the rapidly changing technical and volume requirements of our customers. Some key parts to our products are subject to long lead times and/or are obtainable only from a single supplier or limited group of suppliers. Cyclical industry conditions and the volatility of demand for manufacturing equipment increase capital, technical, operational and other risks for us and for companies throughout our supply chain. Further, these conditions may cause some suppliers to scale back operations, exit businesses, merge with other companies, file for bankruptcy protection or possibly cease operations. We also may experience significant interruptions of our manufacturing operations, delays in our ability to deliver products or services or increased costs as a result of any of the following:

- the failure or inability of suppliers to deliver sufficient quantities of quality parts on a cost-effective and timely basis;
- volatility in the availability and cost of materials, including rare earth elements;
- difficulties or delays in obtaining required import or export approvals;
- information technology or infrastructure failures; and
- natural disasters or other events beyond our control (such as earthquakes, floods or storms, regional economic downturns, pandemics, social unrest, political instability, terrorism, or acts of war), particularly where we conduct manufacturing operations.

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.

In 2022, 64% of our net revenue came from customers outside of North America as follows: Asia - 44% (including China - 17%, Taiwan - 14% and Malaysia - 7%); and Europe - 20%.

Each geographic region in which we, our customers, and our suppliers operate 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, Russia, India, South Korea, Taiwan, Ukraine 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 the following:

- increased costs associated with maintaining the ability to understand the local markets and follow their trends and customs, as well as developing and maintaining an effective marketing and distributing presence;
- limitations on our ability to require advance payments from our customers;
- difficulty in providing customer service and support in local markets;

- difficulty in staffing and managing overseas operations;
- longer sales cycles and 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;
- 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.

Though our business has not been materially affected in the past by currency fluctuations, there is a risk that it may be materially adversely affected in the future. Such risk includes possible losses due to currency exchange rate fluctuations, future prohibitions against repatriation of earnings, or proceeds from disposition of investments.

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 and government austerity measures in certain regions, pose challenges to the industries in which we operate. Related factors, including unemployment, inflation and fuel prices, exacerbate negative trends in business and consumer spending and may cause our customers to delay, cancel, or refrain from placing orders for equipment or services. These actions may, in turn, reduce our net sales, reduce backlog, and negatively affect our ability to convert backlog to sales. Uncertain market conditions, difficulties in obtaining capital, or reduced profitability also may cause some customers to scale back operations, exit businesses, merge with other manufacturers, or file for bankruptcy protection and potentially cease operations, which can 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 these 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.

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.

While we must maintain sufficient inventory levels to operate our business successfully, meet our customers' demands, and mitigate the possible impact of supply chain issues, 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. 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, which can change rapidly and unexpectedly. During peak years of our business, increases in demand for capital equipment result in longer lead times for many important system components. Future increases in demand could cause delays in meeting the shipment requirements or expectations of 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 otherwise would 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. Conversely, 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 may not be able to accurately predict market demand to avoid inventory shortages or build inventories and issue 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 numerous suppliers covering a wide range of materials and services in the production of our products including custom electronic and mechanical components. Key vendors include suppliers of controllers, quartz and silicon carbide for our diffusion systems, steel mills capable of producing the types of steel to the tolerances needed for our wafer carriers, an injection molding machine 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 our production equipment. Although we strive to ensure that parts are available from multiple suppliers, we procure some key parts from a single supplier or a limited number of suppliers. Thus, at times, certain parts may not be available in sufficient quantities, or on a timely and cost-efficient basis, to adequately meet our needs and the needs of our customers.

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 business, financial position and results of operations may be materially and adversely affected.

Our income taxes are subject to variables beyond our control.

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

- We sell and operate 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.
- We are subject to a Chinese withholding tax on certain non-tangible charges made under our transfer pricing agreements. The interpretation of what charges are subject to the tax and when the liability for the tax occurs has varied and could change in the future.
- Tax rates may increase or new tax rates may be implemented (i.e., a global minimum rate), and, therefore, have a material adverse effect on our earnings and cash flows.

Our officers, directors and largest shareholders could choose to act in their best interests and not necessarily those of our other shareholders.

Our directors, executive officers and holders of five percent or more of our outstanding common stock and their affiliates represent a significant portion of our common stock held as of September 30, 2022, and, therefore, have significant influence over our management and corporate policies. These shareholders have significant influence over all matters submitted to our shareholders, including the election of our directors and approval of business combinations, and could potentially initiate or delay, deter or prevent a change of control. Circumstances may occur in which the interests of these shareholders may conflict with the interests of Amtech or those of our other shareholders, and these shareholders may cause us to take actions that align with their interests. Should conflicts of interest arise, we can provide no assurance that these shareholders would act in the best interests of our other shareholders or that any conflicts of interest would be resolved in a manner favorable to our other shareholders. In addition, involvement of certain activist shareholders may impact our ability to recruit and retain talent or otherwise distract management or make decisions that we believe are in the long-term interest of all shareholders.

Information security breaches or failures of our information technology systems may have a negative impact on our operations and our reputation.

We may be subject to information security breaches or failures of our information technology systems caused by advanced persistent threats, unauthorized access, sabotage, vandalism, terrorism or accident. Compromises and failure to our information technology networks and systems could result in unauthorized release of our confidential or proprietary information, or that of our customers and suppliers, as well as employee personal data. The costs to protect against or alleviate breaches and systems failures require significant human and financial capital expenditures, which in turn could potentially disrupt our continuing operations, increase our liability as a result of compromises to personally identifiable information, and may lead to a material and adverse effect on our financial reporting, reputation and business.

On April 12, 2021, we detected a data incident in which attackers acquired data and disabled some of the technology systems used by one of our subsidiaries. Following an investigation by our retained external counsel and third-party forensic, incident response, and security professionals, we determined that the unauthorized third-party gained access to certain personal information relating to employees and their beneficiaries for some of our operations. There was no indication of any misuse of this information. Working alongside our security professionals, we were able to bring our subsidiary's systems online with enhanced security controls. We have deployed an advanced next generation anti-virus and endpoint detection and response tool, as well as Managed Detection & Response services. We remain committed to protecting the security of the personal information entrusted to us and providing high-quality products and service to our customers; however, there can be no guarantees that these measures will be successful in preventing future incidents.

This incident could still result in future legal claims or proceedings, regulatory investigations or actions, and other types of liability under laws that protect the privacy and security of personal information, including federal, state and foreign data protection and privacy regulations, violations of which could result in significant judgments against us, penalties and fines. The cost of investigating, mitigating and responding to data incidents and complying with any applicable breach notification obligations to individuals, regulators, customers and others, including the April 2021 data incident, could be significant. We recorded approximately $1.1 million of expense related to this incident, which is included in selling, general and administrative expenses, in fiscal 2021. We filed an insurance claim during the fourth quarter of fiscal 2021 related to the incident and during 2022 signed a final settlement agreement with our insurer resulting in total reimbursement of approximately $0.6 million, which has been paid in full. Such insurance may not be available to us in the future on economically reasonable terms, or at all. Further, defending a suit, regardless of its merit, could be costly, divert management attention and harm our reputation.

Natural disasters, outbreaks of infectious diseases, terrorist attacks, wars and threats of war may negatively impact our operations, revenue, costs, and stock price.

Natural disasters such as earthquakes, floods, severe weather conditions, outbreaks of infectious diseases in addition to COVID-19 or other catastrophic events may severely affect our operations or those of our suppliers and customers. 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, 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 and/or result in increased volatility in the worldwide financial markets and economy. They also could result in economic recession either globally or in the markets in which we operate. Any of these occurrences could have a significant adverse impact on our business, financial position and results of operations.

The extended closure of our Shanghai manufacturing facility as a result of the Chinese government's mandatory shutdown of Shanghai may have an adverse impact on our operations, including among others, our ability to manufacture products from that location and meet customer demand and other contractual requirements, and may have an adverse impact on our business, financial condition and results of operations.

On March 28, 2022, the Chinese government issued a mandatory shutdown in Shanghai, the location of one of our manufacturing facilities. The factory was allowed to partially reopen in May 2022 and fully reopened on June 1, 2022. After the reopening on June 1, 2022, the factory was able to operate at near full capacity for the entire month of June. We were able to make up the shipments missed in the fourth quarter and are now operating at normal capacity levels. Additionally, there can be no assurance that this facility will be allowed to remain open on a consistent basis. If additional shutdowns occur in the future or if we are unable to establish manufacturing alternatives, our business, financial condition and results of operations may be adversely impacted.

Risks Related to Regulations and Litigation

Our business may be adversely affected by changes in or failure to comply with foreign and domestic laws.

Our operations are subject to numerous foreign and domestic regulatory regimes, including taxation policies, governance and audit requirements, employment and labor laws, transportation regulations, import and export regulations and tariffs, possible foreign exchange restrictions and international monetary fluctuations. Our policies, procedures and internal controls are designed to help us comply with all applicable foreign and domestic laws, accounting and reporting requirements, regulations and tax requirements. We could be subject to legal or regulatory action in the event of our failure to comply with any of the foregoing requirements, which could be expensive to defend and resolve and be disruptive to our business. Any changes in regulations, the imposition of additional regulations or the enactment of any new legislation that affects us may increase the complexity of the legal and regulatory environment in which we operate and the related costs of compliance.

We are subject to U.S. and certain non-U.S. anti-corruption/anti-bribery, export and import controls, sanctions, embargoes, anti-money laundering, anti-terrorist financing, and other similar laws and regulations. Compliance with these legal standards could impair our ability to compete in domestic and international markets. We can face criminal liability and other serious consequences for violations of these laws and regulations which can harm our business.

We are a U.S.-based multinational company with extensive operations in Asia and elsewhere. We operate in several high-risk jurisdictions, including, but not limited to China. Various U.S. and certain non-U.S. anti-corruption/anti-bribery and other international trade laws and regulations apply to our company entities and businesses. These laws and regulations may include, among others, the Foreign Corrupt Practices Act of 1977, as amended, the U.S. Travel Act, domestic anticorruption laws such as 18 U.S.C. §201, the Money Laundering Control Act of 1986, the USA PATRIOT Act, the U.S. Export Control Reform Act of 2018, the U.S. Export Administration Regulations (15 C.F.R. §§730 et seq.), U.S. sanctions contained in 31 C.F.R. Parts 500-599, the U.S. International Emergency Economic Powers Act, the U.S. Trading with the Enemy Act, the International Boycott Provisions (Section 999) of the U.S. Internal Revenue Code, the UK Bribery Act 2010, the UK Proceeds of Crime Act 2002, and certain other anti-corruption, anti-bribery, anti-kickback, anti-fraud, anti-money laundering, anti-terrorist financing, anti-narcotics, anti-boycott, export control, sanctions, embargo, import control, customs, tax, insider trading, insurance, banking, false claims, anti-racketeering, and other laws, regulations, decrees, government or executive orders, or judicial or administrative decisions or determinations to the extent applicable.

These laws and regulations are interpreted very broadly and will impact and raise legal compliance risks for our business in the various jurisdictions where we operate. Violations of any of these laws and regulations may result in substantial civil and/or criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences.

Anti-corruption/anti-bribery and the other laws and regulations referenced above are actively enforced by U.S. and other government agencies. Among various matters, anti-corruption/anti-bribery laws prohibit our companies, subsidiaries, directors, officers, employees, and business partners, as well as third parties acting for or on our behalf, from authorizing, promising, offering, providing, soliciting, or accepting, whether directly or indirectly, improper payments or anything else of value to or from recipients in the public or private sector. We may engage vendors and

third-party business partners to sell our products or services and/or to obtain necessary permits, licenses, patent registrations, and other regulatory approvals. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated organizations. These activities raise our anti-corruption/anti-bribery risk exposure. We can be held liable for the corrupt or other illegal activities of our officers, directors, employees, and business partners, as well as the conduct of third parties acting for or on our behalf, even if we do not explicitly authorize or have actual knowledge of their misconduct. The application of these laws to us also may place us at a competitive disadvantage to foreign companies that are not subject to similar laws/regulations.

The United States could withdraw from or materially modify certain international trade agreements, or change tariff, trade, or tax provisions related to the global manufacturing and sales of our products in ways that we currently cannot predict.

A portion of our business activities are conducted in foreign countries, including China, Malaysia and Taiwan. Our business benefits from free trade agreements, and we also rely on various U.S. corporate tax provisions related to international commerce as we build, market and sell our products globally. Changes in U.S. or international social, political, regulatory and economic conditions could impact our business, reputation, financial condition and results of operations. In particular, political and economic instability, geopolitical conflicts, political unrest, civil strife, terrorist activity, acts of war, public corruption, expropriation, nationalism and other economic or political uncertainties in the United States or internationally could interrupt and negatively affect the sale of our products or other business operations. Any negative sentiment toward the United States as a result of any such changes could also adversely affect our business. In addition, changes in laws and policies governing foreign trade, manufacturing, development and investment in the territories or countries where we currently sell our products or conduct our business could adversely affect our business. U.S. presidential administrations have instituted or proposed changes in trade policies that include the negotiation or termination of trade agreements, the imposition of higher tariffs on imports into the U.S., economic sanctions on individuals, corporations or countries, and other government regulations affecting trade between the U.S. and other countries where we conduct our business. It may be time-consuming and expensive for us to alter our business operations in order to adapt to or comply with any such changes. Changes or proposed changes in U.S. or other countries' trade policies may result in restrictions and economic disincentives on international trade. Tariffs and other changes in U.S. trade policy have in the past and could in the future trigger retaliatory actions by affected countries, and certain foreign governments have instituted or are considering imposing retaliatory measures on certain U.S. goods. Further, any emerging protectionist or nationalist trends either in the United States or in other countries could affect the trade environment. Amtech, similar to many other multinational corporations, does a significant amount of business that would be impacted by changes to the trade policies of the United States and foreign countries (including governmental action related to tariffs, international trade agreements, or economic sanctions). Such changes have the potential to adversely impact the U.S. economy or certain sectors thereof or the economy of another country in which we conduct operations, our industry and the global demand for our products, and as a result, could have a material adverse effect on our business, financial condition and results of operations. We are continuing to evaluate the impact of the announced and other proposed tariffs on products that we import from China, and we may experience a material increase in the cost of our products, which may result in our products becoming less attractive relative to products offered by our competitors.

These developments, or the perception that any of them could occur, may have a material adverse effect on global economic conditions and the stability of global financial markets, and may significantly reduce global trade and, in particular, trade between the impacted nations and the United States. Any of these factors, or any changes to U.S. corporate tax policies related to international commerce, could depress economic activity and have a material adverse effect on our business, financial condition and results of operations.

We are subject to expanded export control restrictions recently adopted by the U.S. Department of Commerce's Bureau of Industry and Security that could negatively impact our business in China.

The United States and certain other countries in which we do business maintain government controls that may restrict our ability to import or export our products and services or increase the cost of our operations through the imposition of tariffs, new controls, outright bans, or otherwise, that could harm our business and negatively impact our financial position and results of operations. For example, the U.S. Department of Commerce has added numerous China-based entities to the U.S. Entity List, including many entities active in the semiconductor industry in China, restricting our ability to provide products and services to such entities without an export license. Even if we apply for licenses to sell our products or provide services to companies on the U.S. Entity List, there can be no assurance that licenses will be

granted. In addition, the U.S. Department of Commerce has imposed new export licensing requirements on exports to China-based customers engaged in development or production in China of advanced semiconductors and supercomputers, military end uses, support for military end users, or where Commerce has determined there is a risk of diversion to a military end use, as well as requiring our customers to obtain export licenses when they use certain semiconductor capital equipment based on U.S. technology to manufacture products connected to certain entities on the U.S. Entity List. The U.S. Department of Commerce has also imposed restrictions on the activities of U.S. persons supporting or facilitating transactions with projects in China for the development or production of advanced semiconductors and supercomputers. To date, these new rules have not significantly impacted our operations, but we are continually monitoring their impact. If additional companies are added to the U.S. Entity List, or other licensing requirements or restrictions are imposed, thereby limiting our ability to sell our products or services to other customers in China, our business could be significantly harmed. Similar actions by the U.S. government or another country could impact our ability to provide our products and services to existing and potential customers.

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.

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

Amtech and our subsidiaries are defendants from time to time in actions for matters arising out of our business operations. 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. As of September 30, 2022 and 2021, our accrued warranty costs amounted to $0.9 million and $0.5 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 or that we won't experience higher than expected warranty claims. 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 business, financial condition and results of operations.

We also may 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. For example, securities class action litigation is often brought against companies following periods of volatility in the market price of its securities or in connection with strategic transactions. We may in the future be the target of securities litigation due to volatility in the market price of our common stock or for other reasons. Any securities litigation could result in substantial costs and could divert the attention and resources of our management.

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, amounts required to be paid in settlement of any claims, and the legal fees and other costs associated with their defense or settlement, cannot be estimated and could, individually or in the aggregate, materially harm our financial condition.

Risks Related to Our Research and Development and Intellectual Property Activities

We may not be able to keep pace with the rapid change in the technology needed to meet customer requirements.

Success in the semiconductor equipment industry depends, in part, on continual improvement of existing technologies and rapid innovation of new solutions. For example, the semiconductor industry continues to shrink the size of semiconductor devices. This 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 also must manufacture these new products in a timely and cost-effective manner. To realize future growth through technical innovations in the semiconductor industry, we must 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.

Our research and development investments may 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 competitors' products and to satisfy customer demands for improved performance, features and functionality. We cannot provide 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 assure 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, or at all. If we do not successfully manage our investments in research and development, our business, financial condition and results of operations could be materially and adversely affected.

Third parties may violate our proprietary rights, in which we have made significant investments, resulting 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 U.S. 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 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. In addition, the patent for the technology that we license and use in our manufacture of insert carriers has expired, which, along with the other risks related to our patents described above, may have the effect of diminishing or eliminating any competitive advantage we may have with respect to our manufacturing process.

We also maintain trademarks on certain of our products and claim copyright protection for certain proprietary software and documentation. We can give no assurance, however, that our trademarks and copyrights will be upheld or will successfully deter infringement by third parties.

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. 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. 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. Intellectual property litigation, regardless of outcome, is expensive and time-consuming, and could divert management's attention from our business. Our failure to successfully defend against infringement claims, or to develop non-infringing technologies or license the proprietary rights on a timely basis, could have a material negative effect on our business, operating results or financial condition.

Risks Related to Our Common Stock

We have experienced, and may continue to experience, significant volatility in our stock price.

A variety of factors may cause the price of our stock to be volatile. For example, 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.

Furthermore, the stock market in general, and the market for shares of high-technology companies in particular, including ours, have experienced extreme price fluctuations, which have often been unrelated to the operating performance of affected companies. During the two-year period ended September 30, 2022, the price of our common stock has ranged from $15.78 to $4.90. The price of our stock may be more volatile than the stock of other companies due to, among other factors, the unpredictable, volatile and seasonal nature of the industries in which we operate, our significant customer concentration, intense competition, our fluctuating backlog and our relatively low daily stock trading volume. As a result, the market price of our common stock is likely to continue to fluctuate significantly in the future, including fluctuations related and unrelated to our performance.

Additional factors may affect our stock price, including sales of our common stock by us or our existing shareholders as well as changes to the coverage and/or rating of our stock by securities analysts.

Shareholder activists could cause a disruption to our business.

An activist investor may indicate disagreement with our strategic direction or capital allocation policies and may seek representation on our Board of Directors. Our business, operating results or financial condition could be adversely affected and may result in, among other things:

- increased operating costs, including increased legal expenses, insurance, administrative expenses and associated costs incurred in connection with director election contests;
- uncertainties as to our future direction, which could result in the loss of potential business opportunities and could make it more difficult to attract, retain, or motivate qualified personnel, and strain relationships with investors and customers; and
- reduction or delay in our ability to effectively execute our current business strategy and to implement new strategies.

There are provisions in our corporate governing documents that could make an acquisition of the Company more difficult and limit attempts by our shareholders to replace or remove our current management.

Our amended and restated articles of incorporation and our amended and restated bylaws, as well as Arizona law contain provisions that may have the effect of deterring takeovers or delaying or preventing a change in control of us or changes in our management that a shareholder might deem to be in his or her best interest. Our amended and restated articles of incorporation and amended and restated bylaws contain provisions that:

- authorize "blank check" preferred stock, which could be issued by our Board of Directors without shareholder approval and may contain voting, liquidation, dividend and other rights superior to our common stock;
- specify that special meetings of our shareholders can be called only by our Board of Directors, the Chairperson of our Board of Directors, our Chief Executive Officer, or a majority of the Board of Directors;
- provide that vacancies on our Board of Directors may be filled only by a majority of directors then in office, though not less than a quorum;
- specify that only our Board of Directors may change the size of our Board of Directors;
- establish an advance notice procedure for shareholder proposals to be brought before an annual meeting of our shareholders, including proposed nominations of persons for election to our Board of Directors; and
- expressly authorize our Board of Directors to modify, alter or repeal our bylaws.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our management or our Board of Directors.

In addition, because we are incorporated in the State of Arizona, we are governed by the provisions of the Arizona Revised Statutes Section 10-274, which prohibits certain business combinations between us and certain interested shareholders unless specified conditions are met. These provisions may also have the effect of delaying or preventing a change in control of Amtech.

Any provision of our amended and restated articles of incorporation or amended and restated bylaws or Arizona law that has the effect of delaying or deterring a change in control could limit the opportunity for our shareholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

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	Own or Lease	Size
Corporate			
Tempe, Arizona	Corporate Headquarters	Own	15,000 sf
Semiconductor Segment			
North Billerica, Massachusetts	Office, Mfg. & Warehouse	Lease	150,000 sf
Ashvale, Surrey, United Kingdom	Office	Lease	1,900 sf
Shanghai, China	Office, Mfg. & Warehouse	Lease	76,530 sf
Penang, Malaysia	Office	Lease	1,570 sf
Material and Substrate Segment			
Carlisle, Pennsylvania	Office & Mfg.	Lease	40,500 sf
Bethel, Connecticut	Office & Mfg.	Lease	18,830 sf

ITEM 3. LEGAL PROCEEDINGS

Amtech and its subsidiaries are defendants from time to time in actions for matters arising out of their business operations. We do not believe that any matters or proceedings presently pending will have a material adverse effect on our consolidated financial position, results of operations or liquidity.

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 Select Market, under the symbol "ASYS." The stock price details can be obtained from the Nasdaq website at *www.nasdaq.com*.

ISSUER PURCHASES OF EQUITY SECURITIES

Share Repurchase Programs

On February 10, 2022, the Board approved a stock repurchase program, pursuant to which we may repurchase up to $5 million of our outstanding Common Stock over a one-year period, commencing on February 16, 2022. Repurchases under the program will be made in open market transactions at prevailing market prices, in privately negotiated transactions, or by other means in compliance with the rules and regulations of the SEC; however, we have no obligation to repurchase shares and the timing, actual number, and value of shares to be repurchased is subject to management's discretion and will depend on our stock price and other market conditions. We may, in the sole discretion of the Board, terminate the repurchase program at any time while it is in effect. Repurchased shares may be retired or kept in treasury for further issuance. During the year ended September 30, 2022, we repurchased 143,430 shares of our Common Stock on the open market at a total cost of approximately $1.4 million (an average price of $9.78 per share). All repurchased shares have been retired.

On February 9, 2021, the Board approved a stock repurchase program, pursuant to which we may repurchase up to $4 million of our outstanding Common Stock over a one-year period, commencing on February 16, 2021. Repurchases under the program were to be made in open market transactions at prevailing market prices, in privately negotiated transactions, or by other means in compliance with the rules and regulations of the SEC; however, we had no obligation to repurchase shares and the timing, actual number, and value of shares to be repurchased was subject to management's discretion and depended on our stock price and other market conditions. We could have, in the sole discretion of the Board, terminated the repurchase program at any time while it was in effect. Repurchased shares were to be retired or kept in treasury for further issuance. During the quarter ended December 31, 2021, we repurchased 291,383 shares of our Common Stock on the open market at a total cost of approximately $2.7 million (an average price of $9.31 per share). All repurchased shares have been retired. The term of this repurchase program expired during the quarter ended March 31, 2022.

During the three months ended September 30, 2022, we did not repurchase any of our equity securities nor did we sell any equity securities that were not registered under the Securities Act of 1933, as amended. As of September 30, 2022, $3.6 million remains available for repurchases.

HOLDERS

As of November 9, 2022, there were 319 shareholders of record of our Common Stock. Based upon a recent survey of brokers, we estimate there were approximately an additional 6,889 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 investments in product development and upgrades, acquisitions or expansion; consequently, we do not expect to pay dividends on our Common Stock in the foreseeable future. However, once the above priorities have been met, we will evaluate the returning of capital to shareholders, as we have done in the past.

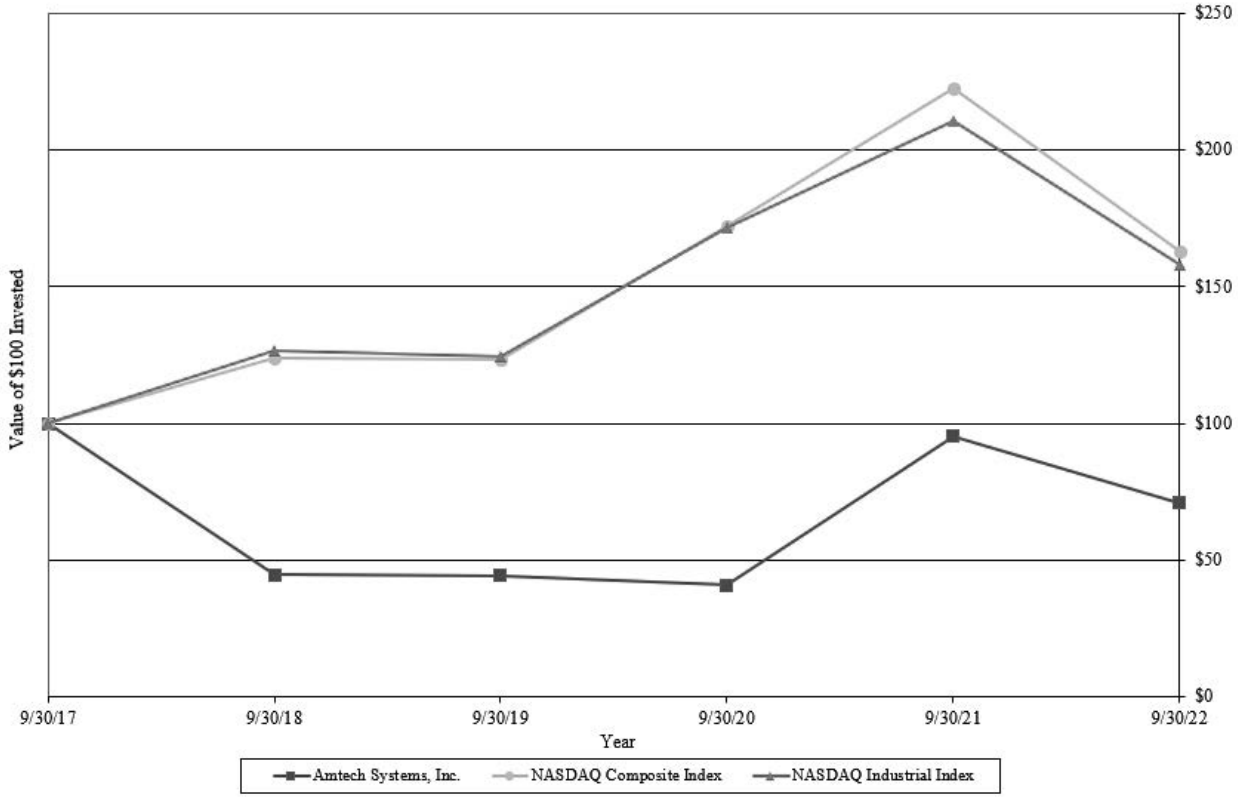
UNREGISTERED SALES OF EQUITY SECURITIES

There were no unregistered sales of equity securities in fiscal 2022.

COMPARISON OF STOCK PERFORMANCE

The following line graph and related information shall not be deemed "soliciting material" or "filed" with the SEC, nor shall such information be incorporated by reference into any future filings under the Securities Act of 1933 or the Exchange Act, each as amended, except to the extent that we specifically incorporated by reference it into such filing.

The following line graph compares cumulative total shareholder return, assuming reinvestment of dividends, for our Common Stock, the NASDAQ Composite Index and the NASDAQ Industrial Index. Because we did not pay dividends on our Common Stock during the measurement period, the calculation of the cumulative total shareholder return on our Common Stock did not include dividends. The following graph assumes that $100 was invested on October 1, 2017.



ITEM 6. RESERVED

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 together with our Consolidated Financial Statements and the accompanying 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 risks 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 described in "Risk Factors" and elsewhere in this Annual Report on Form 10-K. Please refer to page 5 for further information regarding forward-looking statements and "Item 1A. Risk Factors" for a description of our risk factors.

Overview

We are a leading, global manufacturer of capital equipment, including thermal processing and wafer polishing and related consumables used in fabricating semiconductor devices, such as silicon carbide ("SiC") and silicon power devices, analog and discrete devices, electronic assemblies, and light-emitting diodes ("LEDs"). We sell these products to semiconductor device and module manufacturers worldwide, particularly in Asia, North America and Europe.

We operate in two reportable segments, based primarily on the industries they serve: (i) Semiconductor and (ii) Material and Substrate. In our Semiconductor segment, we supply thermal processing equipment, including solder reflow ovens, horizontal diffusion furnaces, and custom high-temp belt furnaces for use by semiconductor, electronics and electro/mechanical assembly manufacturers. Our semiconductor customers are primarily manufacturers of integrated circuits and optoelectronic sensors and discrete ("O-S-D") components used in analog, power and radio frequency ("RF"). In our Material and Substrate segment, we produce substrate consumables, chemicals and machinery for lapping (fine abrading) and polishing of materials, such as silicon wafers for semiconductor products, sapphire wafers for LED applications, and compound substrates, like silicon carbide wafers, for power device applications.

The semiconductor industry is cyclical, but not seasonal, and historically has experienced fluctuations. Our revenue is impacted by these broad industry trends.

Strategy

We continue to focus on our plans to profitably grow our business and have developed a strategic growth plan and a capital allocation plan that we believe will support our growth objectives. Our Power Semiconductor strategic growth plan leverages our experience, products and capabilities in pursuit of growth, profitability and sustainability. Our core focus areas are:

- Emerging opportunities in the SiC industry – We believe we are well-positioned to take part in this significant growth area, specifically as it relates to silicon carbide wafer capacity expansion. We are working closely with our customers to understand their SiC growth plans, needs and opportunities. We are investing in our capacity, next generation product development, and in our people. During 2021, we completed the acquisition of Intersurface Dynamics, which added numerous coolants and chemical products to our existing consumable and machine product lines. We believe these investments will help fuel our growth in the emerging growth SiC industry.
- 300mm Horizontal Diffusion Furnace – We have a highly successful and proven 300mm horizontal diffusion furnace solution used for power semiconductor device manufacturing applications. We have a strong foundation with the leading 300mm power chip manufacturer, and, in the last three years, we have received 23 orders from top-tier customers. We believe we have a strong opportunity to continue expanding our customer base and grow revenue with our 300mm solution.
- As the largest revenue contributor to our organization, we expect our subsidiary, BTU, will continue to track semiconductor industry growth cycles for our advanced semi-packaging and SMT products, in addition to specialized custom belt furnaces used in automotive and other specialized industrial applications. We believe that our investments in product innovation will provide BTU with opportunities

to grow further, especially in high growth applications of consumer and industrial electronics, IoT, electric vehicles and 5G communications.

We anticipate future investments will be required to meet the expected demand from our growing served markets to achieve our revenue growth targets, including investments in research and development as well as capital expenditures, which also includes further investments in capacity expansion, talent, and management information systems. In June 2022, we completed the sale of the real property where our manufacturing facility in Massachusetts is located. In connection with this sale, we entered into a two-year leaseback of the facility. This sale-leaseback transaction resulted in a net cash inflow of approximately $14.9 million, after repayment of the existing mortgage and settlement of related sale expenses. During the two-year leaseback period, we will conduct a search for a new manufacturing facility more in line with the needs of our Semiconductor product lines. In the fourth quarter of 2021, we completed the move of our Shanghai facility to a new location. This new location increases our capacity and allows us to streamline our manufacturing processes, thus reducing our lead times. In addition, we are evaluating our management information systems and needs in order to allow for greater efficiencies and to ensure our infrastructure can support our future growth plans. As a capital equipment manufacturer, we will continue to invest in our business to drive future growth.

In addition to investments in our organic growth, another key aspect of our capital allocation policy is our plan to grow through acquisitions. We have the expertise and track record to identify complimentary and synergistic acquisition targets in the Semiconductor and SiC growth environments and to execute transactions and integrations to provide for value creating, profitable growth in both the short-term and long-term. On March 3, 2021, we acquired Intersurface Dynamics, a Connecticut-based manufacturer of substrate process chemicals used in various manufacturing processes, including semiconductors, silicon and compound semiconductor wafers, and optics. As of the date of the filing of this Annual Report on Form 10-K, we do not have an agreement to acquire any acquisition target.

Cybersecurity Incident

On April 12, 2021, we detected a data incident in which attackers acquired data and disabled some of the technology systems used by one of our subsidiaries. Upon learning of the incident, we immediately engaged external counsel and retained a team of third-party forensic, incident response, and security professionals to investigate and determine the full scope of this incident. We also notified law enforcement officials and confirmed that the incident is covered by our insurance. We have completed the investigation of the data incident with assistance from our outside professionals, and indications were that the unauthorized third-party gained access to certain personal information relating to employees and their beneficiaries for some of our operations. There was no indication of any misuse of this information.

Despite this disruption, production continued in our facilities. Our previously disabled subsidiary network is now back up and running securely. Working alongside our security professionals, we were able to bring our subsidiary's systems online with enhanced security controls. We have deployed an advanced next generation anti-virus and endpoint detection and response tool, as well as Managed Detection & Response services. We remain committed to protecting the security of the personal information entrusted to us and providing high-quality products and service to our customers.

We recorded approximately $1.1 million of expense in 2021 related to this incident, which is included in selling, general and administrative expenses. The expense is primarily related to third-party service providers, including security professionals as well as legal and response teams. We may make additional investments in the future to further strengthen our cybersecurity. We filed an insurance claim during the fourth quarter of fiscal 2021 related to the incident. During the second quarter of 2022, we signed a final settlement agreement with our insurer resulting in total reimbursement of approximately $0.6 million, which included $0.4 million received during the quarter ended December 31, 2021 and $0.2 million received during the quarter ended March 31, 2022. No portion of the reimbursement remains outstanding as of September 30, 2022.

COVID-19

In March 2020, the outbreak of COVID-19 was recognized as a pandemic by the World Health Organization, and the outbreak became increasingly widespread, including in all of the markets in which we operate. We continue to monitor

the impact of COVID-19 on all aspects of our business. We are a company operating in a critical infrastructure industry, as defined by the U.S. Department of Homeland Security. Consistent with federal guidelines and with foreign government, state and local orders to date, we have continued to operate across our footprint throughout the COVID-19 pandemic. Following the onset of COVID-19 and its negative effects on our business, most prominently reflected in our second, third and fourth quarter fiscal 2020 results, global economic conditions improved during fiscal 2021, resulting in increased demand for our products and services, which led to our earnings for fiscal 2021 substantially exceeding our fiscal 2020 results. There remain many unknowns and we continue to monitor the expected trends and related demand for our products and services and have and will continue to adjust our operations accordingly. Please see additional information in “Item 1A. Risk Factors.”

On March 28, 2022, the Chinese government issued a mandatory shutdown in Shanghai, the location of one of our manufacturing facilities. The factory was allowed to partially reopen in May 2022 and fully reopened on June 1, 2022. After the reopening on June 1, 2022, the factory was able to operate near full capacity for the entire month of June. We were able to make up the shipments missed in the fourth quarter and are now operating at normal capacity levels. Given the uncertainty surrounding the COVID-19 pandemic, there can be no assurance that our Shanghai facility will be allowed to remain open on a consistent basis.

Segment Reporting Changes

Upon the acquisition of Intersurface Dynamics in the second quarter of 2021, we evaluated our organizational structure and concluded that we have two reportable segments following the acquisition. Our Material and Substrate segment includes our former SiC/LED segment in addition to Intersurface Dynamics beginning at the date of acquisition.

Industry Fluctuations

Our quarterly and annual operating results have been and will continue to be impacted by the timing of large system orders. Further, the semiconductor equipment industry is highly cyclical, and the conditions of this industry remain volatile. Therefore, our order flow fluctuates quarter to quarter. For additional information regarding the risks related to our business and industry, please refer to "Item 1A. Risk Factors" within this Form 10-K.

Fiscal Year

Our fiscal year is from October 1 to September 30. Unless otherwise stated, references to the years 2022, 2021 and 2020 relate to the fiscal years ended September 30, 2022, 2021 and 2020, respectively.

Results of Operations

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

	Years Ended September 30,	
	2022	2021
Net revenue	100%	100%
Cost of sales	63%	59%
Gross margin	37%	41%
Selling, general and administrative	27%	29%
Research, development and engineering	6%	7%
Gain on sale of fixed assets	(12%)	—%
Operating income	16%	5%
Interest income (expense) and other, net	1%	(1%)
Income before income taxes	17%	4%
Income tax provision	1%	2%
Net income	16%	2%

Fiscal 2022 compared to Fiscal 2021

Net Revenue

Net revenue consists of revenue recognized upon shipment or delivery of equipment. Spare parts sales are recognized upon shipment and service revenue is recognized upon completion of the service activity, which is generally ratable over the term of the service contract. Since the majority of our revenue is generated from large system sales, revenue, gross profit and operating income can be significantly impacted by the timing of system shipments. See "Critical Accounting Policies – Revenue Recognition" included in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations."

Our net revenue by reportable segment for the years ended September 30, 2022 and 2021 were as follows, dollars in thousands:

Segment	Years Ended September 30, 2022	Years Ended September 30, 2021	Increase (Decrease)	% Change
Semiconductor	$ 87,982	$ 72,086	$ 15,896	22%
Material and Substrate	18,316	13,119	5,197	40%
Total net revenue	$ 106,298	$ 85,205	$ 21,093	25%

Net revenue for the years ended September 30, 2022 and 2021 were $106.3 million and $85.2 million, respectively, an increase of $21.1 million or 25%. Revenue from the Semiconductor segment increased $15.9 million, or 22%, over the prior year period. Our Semiconductor results for 2022 reflect the closure of our Shanghai manufacturing facility, which partially reopened in mid-May and fully reopened on June 1, 2022. The Shanghai facility was able to return to normal capacity during the fourth quarter of fiscal 2022, however, the order trends in the overall market have slowed since the April 2022 shutdown. Revenue from our Material and Substrate segment increased $5.2 million, or 40%, due to increased shipments of consumables resulting from capacity expansion and production increases by our customers.

Orders and Backlog

New orders booked in the years ended September 30, 2022 and 2021 were as follows, dollars in thousands:

Segment	Years Ended September 30, 2022	Years Ended September 30, 2021	Increase (Decrease)	% Change
Semiconductor	$ 94,268	$ 101,988	$ (7,720)	(8)%
Material and Substrate	19,685	13,456	6,229	46%
Total new orders	$ 113,953	$ 115,444	$ (1,491)	(1)%

Our backlog as of September 30, 2022 and 2021 was as follows, dollars in thousands:

Segment	September 30, 2022	September 30, 2021	Increase (Decrease)	% Change
Semiconductor	$ 48,011	$ 42,743	$ 5,268	12%
Material and Substrate	2,769	1,400	1,369	98%
Total backlog	$ 50,780	$ 44,143	$ 6,637	15%

At the end of 2022, three customers individually accounted for 21%, 17% and 14% of our total backlog. No other customer accounted for more than 10% of our backlog as of September 30, 2022. The orders included in our backlog are generally credit approved customer purchase orders believed to be firm and are generally expected to ship within the next twelve months. Because our orders are typically subject to cancellation or delay by the customer, our backlog at any particular point in time is not necessarily representative of actual sales for succeeding periods, nor is backlog any assurance that we will realize profit from completing these orders.

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 and spare parts and the cost of service and support to customers for installation, warranty and paid service calls. Gross margin is gross profit as a percent of net revenue. Our gross profit and gross margin by reportable segment for the years ended September 30, 2022 and 2021 were as follows, dollars in thousands:

	Years Ended September 30,					
Segment	**2022**	**Gross Margin**	**2021**	**Gross Margin**	**Increase (Decrease)**	**% Change**
Semiconductor	$ 30,880	35%	$ 30,336	42%	$ 544	2%
Material and Substrate	8,631	47%	4,194	32%	4,437	106%
Total gross profit	$ 39,511	37%	$ 34,530	41%	$ 4,981	14%

Gross profit for the years ended September 30, 2022 and 2021 was $39.5 million and $34.5 million, respectively, representing an increase of $5.0 million, or 14%. Gross margin for 2022 and 2021 was 37% and 41%, respectively. Gross margin for the Semiconductor segment decreased to 35% in 2022, compared to 42% in 2021, due primarily to the above-mentioned closure of our Shanghai manufacturing facility. This closure resulted in decreased utilization during the closure period as we continued to pay our employees while ceasing production entirely for the first eight weeks of the third quarter of fiscal 2022. Additionally, Semiconductor material costs increased approximately 39% over the 2021 period due to product mix changes and rising prices. We continue to take steps to manage our inventory price risk, including purchasing long lead-time items in advance and onboarding additional source suppliers. In the Material and Substrate segment, gross margin increased to 47% in 2022, compared to 32% in 2021 due primarily to improved capacity utilization resulting from higher consumable sales and the usage of previously reserved inventory slightly offset by increased material costs.

Selling, General and Administrative Expenses

Selling, general and administrative expenses ("SG&A") consists of the cost of employees, consultants and contractors, facility costs, sales commissions, shipping costs, promotional marketing expenses, legal and accounting expenses and bad debt expense.

Total SG&A expenses for the years ended September 30, 2022 and 2021 were $28.3 million and $24.7 million, respectively, representing an increase of $3.6 million or 14.4%. This increase was primarily due to increases of $2.1 million in employee-related expenses and $1.6 million in freight expenses, driven by higher revenues and increased shipping rates. SG&A expense includes $0.5 million and $0.4 million of non-cash stock-based compensation expense for 2022 and 2021, respectively.

Gain on Sale of Fixed Assets

Gain on sale of fixed assets consists primarily of the gain on the sale of BTU's building in Massachusetts. The sale price was $20.6 million, of which $0.7 million was deducted at closing for commission and other closing expenses. In connection with the sale, BTU recognized a pre-tax gain on sale of $12.5 million.

Research, Development and Engineering

Research, development and engineering ("RD&E") expenses consist of the cost of employees, consultants and contractors who design, engineer and develop new products and processes as well as materials and supplies used in producing prototypes. RD&E expenses may vary from period to period depending on the engineering projects in process. Expenses related to engineers working on strategic projects or sustaining engineering projects are recorded in RD&E. However, 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 goods sold. Occasionally, we receive reimbursements through governmental research and development grants which are netted against these expenses when certain conditions have been met.

RD&E expenses, net of grants earned, for the years ended September 30, 2022 and 2021 were $6.4 million and $6.0 million, respectively, an increase of $0.4 million. This increase is due to the timing of purchases related to specific strategic-development projects at our Semiconductor segment. We expect most of these strategic projects to be completed throughout fiscal 2023, resulting in new or updated product offerings in fiscal 2023 and 2024. Grants earned are immaterial in all periods presented.

Restructuring Charges

We recorded restructuring charges of $0.1 million in 2021. These one-time charges relate to staff reductions in our Semiconductor and Material and Substrate operations.

Income Taxes

Our effective tax rate was 7.5% and 56.1% in 2022 and 2021, respectively. The effective tax rate is the ratio of total income tax expense to pre-tax income. The effective tax rates for 2022 and 2021 were lower and higher than the U.S. statutory rate, respectively. The 2022 effective tax rate was lower than the statutory rate due to a substantial portion of the earnings in the US resulting from the gain on the sale of our Massachusetts property for which no tax expense was recognized due to the utilization of net operating losses and foreign tax credits, which are fully valued. The 2021 effective tax rate was higher than the statutory rate due primarily to higher taxes on income in foreign jurisdictions, state income taxes and domestic losses for which no tax benefit was recorded.

In 2022 and 2021, we recorded income tax expense of $1.4 million and $1.9 million, respectively. The income tax provisions are based upon estimates of annual income, annual permanent differences, statutory tax rates and credits in the various jurisdictions in which we operate. Significant judgments and estimates are required in the determination of the consolidated income tax expense.

Deferred income taxes arise from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, which will result in taxable or deductible amounts in the future. U.S. GAAP requires that a valuation allowance be established when it is “more likely than not” that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax-planning strategies and results of recent operations. According to those principles, it is difficult to conclude that a valuation allowance is not needed when the negative evidence includes cumulative losses in recent years. Based on the consideration of all available evidence, we have concluded that we will maintain a full valuation allowance for all U.S. net deferred tax assets and a portion of foreign deferred tax assets. We will continue to monitor our cumulative income and loss positions in the U.S. and foreign jurisdictions to determine whether valuation allowances on deferred tax assets are appropriate. We expect to pay minimal U.S federal cash taxes for the foreseeable future as a result of our U.S. net operating losses that are carried forward.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax laws and regulations in a multitude of jurisdictions across our global operations. ASC 740 states that a tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, on the basis of the technical merits. We currently have $1.0 million of unrecognized tax benefits recorded within our financial statements. We record unrecognized tax benefits as liabilities in accordance with ASC 740 and adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available.

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-deductible expenses incurred as a percent of pre-tax income and the effectiveness of our tax planning strategies.

Selected Quarterly Data (Unaudited)

The following table sets forth selected unaudited consolidated quarterly financial information for the years ended September 30, 2022 and 2021, in thousands, except percentages and per share amounts:

	Fiscal Year 2022			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue, net	$ 26,463	$ 27,556	$ 19,964	$ 32,315
Cost of sales	16,565	16,396	14,064	19,762
Gross profit	9,898	11,160	5,900	12,553
Selling, general and administrative	7,086	6,765	7,157	7,292
Research, development and engineering	1,572	1,800	1,646	1,372
Gain on sale of fixed assets	—	—	(12,465)	—
Operating income	1,240	2,595	9,562	3,889
Interest (expense) income and other, net	(83)	30	680	872
Income before income taxes	1,157	2,625	10,242	4,761
Income tax provision	160	660	20	578
Net income	$ 997	$ 1,965	$ 10,222	$ 4,183
Gross margin	37.4%	40.5%	29.6%	38.8%
Operating margin	4.7%	9.4%	47.9%	12.0%
Income Per Share:				
Net income per basic share	$ 0.07	$ 0.14	$ 0.74	$ 0.30
Weighted average shares outstanding - basic	14,254	13,979	13,889	13,933
Net income per diluted share	$ 0.07	$ 0.14	$ 0.73	$ 0.30
Weighted average shares outstanding - diluted	14,485	14,144	14,026	14,080

	Fiscal Year 2021			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue, net	$ 17,975	$ 19,790	$ 23,100	$ 24,340
Cost of sales	10,463	12,062	13,021	15,129
Gross profit	7,512	7,728	10,079	9,211
Selling, general and administrative	5,213	5,688	7,281	6,558
Research, development and engineering	1,245	1,869	1,523	1,342
Restructuring charges	—	—	71	15
Operating income	1,054	171	1,204	1,296
Interest (expense) income and other, net	(255)	73	(155)	46
Income before income taxes	799	244	1,049	1,342
Income tax provision	80	490	680	676
Net income (loss)	$ 719	$ (246)	$ 369	$ 666
Gross margin	41.8%	39.1%	43.6%	37.8%
Operating margin	5.9%	0.9%	5.2%	5.3%
Income (Loss) Per Share:				
Net income (loss) per basic share	$ 0.05	$ (0.02)	$ 0.03	$ 0.05
Weighted average shares outstanding - basic	14,072	14,151	14,176	14,190
Net income (loss) per diluted share	$ 0.05	$ (0.02)	$ 0.03	$ 0.05
Weighted average shares outstanding - diluted	14,117	14,151	14,373	14,387

Liquidity and Capital Resources

Liquidity

We maintain a strong focus on liquidity and define our liquidity risk tolerance based on sources and uses to maintain a sufficient liquidity position to meet our obligations through our industry cycles, under both normal and stressed

conditions. We manage our liquidity to provide access to sufficient funding to meet our business needs and financial obligations throughout business cycles. We operate in the semiconductor capital equipment industry, which is cyclical, and we must ensure we have sufficient liquidity during the down cycles and varying macroeconomic conditions. Our liquidity plans are established within the context of our financial and strategic planning processes and consider the liquidity necessary to fund our operating commitments, which include purchase obligations for inventory and equipment, payroll and general expenses. We also take into consideration our capital allocation and growth objectives, including investing in research and development and capital expenditures (including capacity assessments and IT systems).

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 includes common stock sold in private transactions and public offerings, and cash generated from operations. There can be no assurance that we can raise such additional capital resources when needed or on satisfactory terms. We believe that our principal sources of liquidity discussed above are sufficient to support operations for at least the next twelve months.

Capital Allocation

Our capital allocation strategy focuses on building shareholder value. We do this by first investing in ourselves and growing our capabilities. We then look to supplement and strengthen our capabilities through acquisitions and strategic investments. And finally, we provide the return realized by the investments to our stockholders. These three priorities are detailed as follows:

- Invest in R&D and capital expenditures to strengthen our competitive position. Historically, our R&D efforts have focused on upgrades to existing product platforms as well as new product designs. Capital expenditures consist primarily of capacity expansion as well as investments in IT systems.
- Invest in strategic acquisitions that will complement our strong platform of product offerings. In evaluating these opportunities, our objectives include enhancing our earnings and cash flows, adding complementary product offerings, expanding our geographic footprint, improving our production efficiency and expanding our customer base. As a result, we continue to manage our balance sheet to maintain adequate liquidity so that we may react quickly as opportunities arise.
- Once the above priorities have been met, we evaluate the return of capital to shareholders, as we have done in the past. We have never paid dividends on our common stock, and we do not expect to pay dividends on common stock in the foreseeable future. However, our Board has authorized annual stock repurchase plans since 2018.

Cash and Cash Flow

The following table sets forth for the periods presented certain consolidated cash flow information, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Net cash provided by (used in) operating activities	$ 5,204	$ (5,962)	$ (1,664)
Net cash provided by (used in) investing activities	$ 18,773	$ (8,094)	$ (12,616)
Net cash (used in) provided by financing activities	$ (8,267)	$ 1,166	$ (1,502)
Effect of exchange rate changes on cash	$ (1,672)	$ 656	$ 1,718
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 14,038	$ (12,234)	$ (14,064)
Cash, cash equivalents and restricted cash, beginning of year*	$ 32,836	$ 45,070	$ 59,134
Cash, cash equivalents and restricted cash, end of year	$ 46,874	$ 32,836	$ 45,070

* Includes Cash, Cash Equivalents and Restricted Cash that are included in Held-For-Sale Assets on the Consolidated Balance Sheets for periods prior to January 22, 2020.

As of September 30, 2022 and 2021, cash and cash equivalents were $46.9 million and $32.8 million, respectively. We had no restricted cash at September 30, 2022 and 2021. Our working capital was $80.3 million as of September 30, 2022 and $65.8 million as of September 30, 2021. Our ratio of current assets to current liabilities was 4.5:1 as of September 30, 2022, and 5.4:1 as of September 30, 2021.

During periods of weakening demand, we typically generate cash from operating activities. Conversely, we are more likely to use operating cash flows for working capital requirements during periods of higher growth. The $14.0 million increase in consolidated cash during 2022 was primarily due to increases in cash from the sale of our Massachusetts property as well as customer deposits received in 2022 for upcoming shipments in 2023, partially offset by cash used to repay long-term debt and cash used to repurchase stock. We maintain cash accounts denominated in currencies other than our reporting currency, which expose us to foreign exchange rate fluctuations.

Cash Flows from Operating Activities

Cash provided by operating activities was $5.2 million in 2022 compared to cash used in operating activities of $6.0 million in 2021 and cash used in operating activities of $1.7 million in 2020. During 2022, we received several large customer deposits, primarily related to orders of our horizontal diffusion and high temp furnaces, which are expected to ship over the next four quarters. During 2021, we increased our inventory balances in preparation for shipments scheduled for the first half of fiscal 2022. Additionally, our accounts receivable increased during this period as most of our shipments occurred late in the fourth quarter and our customers generally have payment terms of 60-90 days. During 2020, we increased our inventory balances to mitigate risks in our supply chain resulting from the COVID-19 pandemic, as well as in preparation for a large shipment that occurred in the first quarter of fiscal 2021.

Cash Flows from Investing Activities

Cash provided by investing activities was $18.8 million in 2022, primarily consisting of $19.9 million in proceeds from the sale of our real property in Massachusetts. Cash used in investing activities was $8.1 million in 2021, primarily consisting of $5.1 million net cash paid for the acquisition of Intersurface Dynamics and capital expenditures primarily related to the relocation of our Shanghai manufacturing facility. Cash used in investing activities was $12.6 million in 2020, primarily related to the divestiture of our solar businesses and capital expenditures for our new Material and Substrate building in Pennsylvania. Investing activities in 2022, 2021 and 2020 included capital expenditures of $1.1 million, $3.0 million and $2.7 million, respectively. We expect capital expenditures to increase in 2023 as we make targeted investments in our production capacity and IT systems.

Cash Flows from Financing Activities

In 2022, cash used in financing activities was $8.3 million, comprised of $4.1 million of cash used for the repurchase of common stock and payments on long-term debt of $4.9 million, partially offset by $0.7 million of proceeds received from the exercise of stock options. Payments in long-term debt include the full repayment of the $4.5 million mortgage balance on the real property in Massachusetts. In 2021, cash provided by financing activities was $1.2 million, consisting of approximately $1.5 million of proceeds received from the exercise of stock options, partially offset by payments on long-term debt of $0.4 million. In 2020, cash used in financing activities was $1.5 million, consisting of $0.9 million of proceeds received from the exercise of stock options, which was fully offset by $2.0 million used for stock repurchases and payments on long-term debt of $0.4 million.

Off-Balance Sheet Arrangements

As of September 30, 2022, we had no off-balance sheet arrangements as defined in Item 303(a)(4) of Regulation S-K promulgated by the SEC that have or are reasonably likely to have a current or future effect on financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

Contractual Obligations and Commercial Commitments

We had the following contractual obligations and commercial commitments as of September 30, 2022, in thousands:

Contractual obligations	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Debt obligations	$ 352	$ 119	$ 152	$ 81	$ —
Lease obligations:					
Buildings	15,110	2,513	3,100	1,634	7,863
Office equipment	8	5	3	—	—
Vehicles	28	17	11	—	—
Total operating lease obligations	15,146	2,535	3,114	1,634	7,863
Purchase obligations	19,975	19,929	46	—	—
Total	$ 35,473	$ 22,583	$ 3,312	$ 1,715	$ 7,863

Acquisitions

Our business strategy includes the possible acquisition of or investments in other businesses to expand or complement our operations. The magnitude, timing and nature of any future acquisitions or investments will depend on a number of factors, including the availability of suitable candidates, the negotiation of acceptable terms, our financial capabilities and general economic and business conditions. Financing for future transactions would result in the utilization of cash, incurrence of additional debt, issuance of stock or some combination of the foregoing.

Critical Accounting Policies

See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" for a discussion of our consolidated financial statements that have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amount of assets and liabilities at the date of the consolidated financial statements, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the reporting period.

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

A critical accounting policy is one that is both important to the presentation of our financial position and results of operations, and requires management's most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. These uncertainties are discussed in "Item 1A. Risk Factors." We believe the following critical accounting policies encompass the more significant judgments and estimates used in the preparation of our consolidated financial statements.

Revenue Recognition. We recognize revenue when a customer obtains control of promised goods or services in an amount that reflects the consideration we expect to receive in exchange for those goods or services. A performance obligation is a promise in a contract to transfer a product or service to the customer. The transaction price of a contract is allocated to each distinct performance obligation based upon the relative standalone selling price for each performance obligation and is recognized as revenue upon satisfaction of the performance obligation, either at a point in time or over time.

Equipment and related product revenues (e.g., furnace systems, system add-ons, machinery, consumables and spare parts) are recognized at a point in time, when they are shipped or delivered, depending on contractual terms.

Revenue is recorded net of customer discounts or rebates, if any. Assurance-type warranties are not considered a performance obligation.

Occasionally, our customers earn a commission on the purchase and/or resale of our products. These payments to customers are recorded as a reduction of revenue and are less than 5% of our total revenues in all periods presented.

In substantially all of our sales transactions, we incur incremental costs to obtain contracts with customers, in the form of sales commissions. We maintain a commission program which rewards our sales representatives for system sales and our employees for system sales and other individual goals. We have elected a practical expedient to allow for the recognition of commission expense when incurred if the amortization period of the asset that the entity otherwise would have recognized is one year or less. Based on the nature of our contracts with customers, we expense all commissions as incurred based upon the expectation that the amortization period would be one year or less.

Income Taxes. We file consolidated federal income tax returns in the United States for all subsidiaries except those in China and the UK, where separate returns are filed. The calculation of tax liabilities for all jurisdictions involves significant judgment in identifying uncertain tax positions, estimating the amount of deferred tax assets that will be realized in the future and the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with our expectations could have a material impact on our operations and financial condition.

Deferred income taxes arise from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, which will result in taxable or deductible amounts in the future. We record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not to be realized. In evaluating our ability to recover our deferred tax assets in the jurisdiction from which they arise, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax-planning strategies and results of recent operations. It is difficult to conclude that a valuation allowance is not needed when the negative evidence includes cumulative losses in recent years. If we were to determine that it is more likely than not that we would not be able to realize all or part of our net deferred tax assets in the future, an adjustment to the deferred tax assets would be charged to earnings in the period such determination is made. Likewise, if we later determine that it is more likely than not that all or part of the net deferred tax assets would be realized, a tax benefit would be realized when all or part of the previously provided valuation allowance would be reversed. As of September 30, 2022, we have significant U.S. deferred tax assets that have a full valuation allowance and foreign deferred tax assets that have a partial valuation allowance. Any changes to the judgments related to our valuation allowance could have a material impact on our results of operations.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax laws and regulations in a multitude of jurisdictions across our global operations. ASC 740 states that a tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, on the basis of the technical merits. We currently have $1.0 million of unrecognized tax benefits recorded within our financial statements. We record unrecognized tax benefits as liabilities in accordance with ASC 740 and adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available.

Inventory Valuation. We value our inventory at the lower of cost or net realizable value. Inventory cost includes the purchase price of parts or finished goods and freight and/or other overhead costs incurred to receive the inventory into our manufacturing facilities. We regularly review inventory quantities and record a write-down to net realizable value for excess and obsolete inventory. The write-down is primarily based on historical inventory usage adjusted for expected changes in product demand and production requirements. Our industry is characterized by customers in highly-cyclical industries, rapid technological changes, frequent new product developments and rapid product obsolescence. Changes in demand for our products could result in further write-downs.

Goodwill. We perform an annual impairment test as of September 30, or more frequently if indicators of potential impairment exist, to determine whether the fair value of a reporting unit in which goodwill resides is less than its carrying value. We perform the first step of the goodwill impairment test, which compares the fair value of the reporting unit to its carrying value. If the fair value of the reporting unit exceeds the carrying value of the net assets assigned to that unit, goodwill is not considered impaired and we are not required to perform additional analysis. If

the carrying value of the net assets assigned to the reporting unit exceeds the fair value of the reporting unit, we would recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value (although the loss would not exceed the total amount of goodwill allocated to the reporting unit).

Determining the fair value of a reporting unit involves the use of significant estimates and assumptions. Our goodwill impairment test uses a weighting of the income approach and the market approach to estimate a reporting unit's fair value. The income approach is based on a discounted future cash flow analysis that uses certain assumptions including: projections of revenues and expenses and related cash flows based on assumed long-term growth rates and demand trends; expected future investments and working capital requirements to sustain and grow the business; and estimated discount rates based on the reporting unit's weighted average cost of capital as derived by the Capital Asset Pricing Model and other methods, which includes observable market inputs and other data from identified comparable companies. The same estimates are also used internally for our capital budgeting process, and for long-term and short-term business planning and forecasting. We test the reasonableness of the inputs and outcomes of our discounted cash flow analysis against available comparable market data.

The market approach is based on the application of appropriate market-derived multiples selected from (i) comparable publicly-traded companies and/or (ii) the implied transaction multiples derived from identified merger and acquisition activity in the market. Multiples are then selected based on a comparison of the reviewed data to that of the reporting unit and applied to relevant historical and forecasted financial parameters such as levels of revenues, EBITDA, EBIT or other metrics.

If actual results differ significantly from our projections, we may be required to record a material impairment charge.

Impact of Recently Issued Accounting Pronouncements

For discussion of recently issued accounting pronouncements, see "Recently Issued Accounting Pronouncements" within "Note 1. Summary of Operations and Significant Accounting Policies" in "Item 8. Financial Statements and Supplementary Data."

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

As a smaller reporting company, as defined by Rule 12b-2 of the Exchange Act and in Item 10(f)(1) of Regulation S-K, we are electing scaled disclosure reporting obligations and, therefore, are not required to provide the information requested by this Item.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders

Amtech Systems, Inc.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheet of Amtech Systems, Inc. (an Arizona corporation) and subsidiaries (the "Company") as of September 30, 2022, the related consolidated statements of operations, comprehensive income (loss), shareholders' equity, and cash flows for the year ended September 30, 2022, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of September 30, 2022, and the results of its operations and its cash flows for the year ended September 30, 2022, in conformity with accounting principles generally accepted in the United States of America.

Basis for opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

Critical audit matters

Critical audit matters are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. We determined that there are no critical audit matters.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2021.

Phoenix, Arizona

November 30, 2022

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and
Shareholders of:

AMTECH SYSTEMS, INC. AND SUBSIDIARIES

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of Amtech Systems, Inc. and Subsidiaries (the Company) as of September 30, 2021, and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the two years in the period ended September 30, 2021 and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of September 30, 2021, and the results of its operations and its cash flows for each of the two years in the period ended September 30, 2021 in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (i) relates to accounts or disclosures that are material to the financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which they relate.

Accounting for Income Taxes in Foreign Jurisdictions

As described in Note 12 to the consolidated financial statements, the Company is subject to income taxes in the United States, as well as China and a number of other foreign jurisdictions. The application of tax laws to the Company's operations can be complex and subject to different interpretations by the Company and respective governmental taxing authorities. The Company exercises judgment for the interpretation of current tax regulations. We identified the auditing of the accounting for income taxes as a critical audit matter.

The principal consideration for our determination that the auditing of income taxes was a critical audit matter was the complex auditor judgment required when evaluating the foreign income tax provisions and use of specialized knowledge and experience necessary in evaluating the completeness of the foreign tax provisions and uncertain tax positions primarily due to the Company's multinational presence in numerous foreign jurisdictions with varying complexity in tax laws and regulations.

The primary procedures we performed to address this critical audit matter included:

- Testing the income tax provision in each significant foreign taxable jurisdiction, including performing procedures designed to test the completeness and accuracy of the permanent and temporary differences by obtaining an understanding of the tax laws applicable in the respective jurisdiction and evaluating communications with tax advisors, accounting records, and tax returns.
- Evaluating and testing the appropriateness of the methods and assumptions used in the Company's identification of deferred tax assets and liabilities and assessment of the valuation of uncertain tax positions in each of its foreign taxable jurisdictions, including the determination of whether the methods were consistent with the requirements of U.S. GAAP, whether the data was appropriately used, and whether the significant assumptions were reasonable and appropriately applied within the methods.
- Engaging tax professionals with specialized skill and knowledge who assisted in (1) obtaining an understanding of the tax laws in each respective jurisdiction; (2) assessing the Company's tax positions, 3) evaluating the Company's interpretation of tax law and its assessment and measurement of certain tax uncertainties and expected outcomes by interpreting tax laws and evaluating and reading advice obtained from the Company.

/s/ MAYER HOFFMAN MCCANN P.C.

We served as the Company's auditor from 2005 to 2021.

Phoenix, Arizona
November 17, 2021

PART I. FINANCIAL INFORMATION
ITEM 1. Consolidated Financial Statements
AMTECH SYSTEMS, INC. AND SUBSIDIARIES
Consolidated Balance Sheets
(in thousands, except share and per share data)

	September 30,	
Assets	**2022**	**2021**
Current Assets		
Cash and cash equivalents	$ 46,874	$ 32,836
Accounts receivable - Net	25,013	22,502
Inventories	25,488	22,075
Income taxes receivable	—	1,046
Other current assets	5,561	2,407
Total current assets	102,936	80,866
Property, Plant and Equipment - Net	6,552	14,083
Right-of-Use Assets - Net	11,258	8,646
Intangible Assets - Net	758	858
Goodwill	11,168	11,168
Deferred Income Taxes - Net	79	631
Other Assets	783	661
Total Assets	$ 133,534	$ 116,913
Liabilities and Shareholders' Equity		
Current Liabilities		
Accounts payable	$ 7,301	$ 8,229
Accrued compensation and related taxes	4,109	2,881
Accrued warranty expense	871	545
Other accrued liabilities	900	903
Current maturities of finance lease liabilities and long-term debt	107	396
Current portion of long-term operating lease liabilities	2,101	531
Contract liabilities	7,231	1,624
Income taxes payable	6	—
Total current liabilities	22,626	15,109
Finance Lease Liabilities and Long-Term Debt	220	4,402
Long-Term Operating Lease Liabilities	9,395	8,389
Income Taxes Payable	2,849	3,277
Other Long-Term Liabilities	76	102
Total Liabilities	35,166	31,279
Commitments and Contingencies (Note 16)		
Shareholders' Equity		
Preferred stock; 100,000,000 shares authorized; none issued	—	—
Common stock; $0.01 par value; 100,000,000 shares authorized; shares issued and outstanding: 13,994,154 and 14,304,492 in 2022 and 2021, respectively	140	143
Additional paid-in capital	124,458	126,380
Accumulated other comprehensive (loss) income	(1,767)	14
Retained deficit	(24,463)	(40,903)
Total Shareholders' Equity	98,368	85,634
Total Liabilities and Shareholders' Equity	$ 133,534	$ 116,913

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

AMTECH SYSTEMS, INC. AND SUBSIDIARIES
Consolidated Statements of Operations
(in thousands, except per share data)

	Years Ended September 30,		
	2022	2021	2020
Revenue, net	$ 106,298	$ 85,205	$ 65,463
Cost of sales	66,787	50,675	41,022
Gross profit	39,511	34,530	24,441
Selling, general and administrative	28,300	24,740	21,397
Research, development and engineering	6,390	5,979	3,312
Gain on sale of fixed assets	(12,465)	—	—
Severance expense	—	86	217
Operating income (loss)	17,286	3,725	(485)
Loss on sale of subsidiary	—	—	(2,793)
Interest income (expense) and other, net	1,499	(291)	162
Income (loss) from continuing operations before income taxes	18,785	3,434	(3,116)
Income tax provision	1,418	1,926	791
Income (loss) from continuing operations, net of tax	17,367	1,508	(3,907)
Loss from discontinued operations, net of tax	—	—	(11,816)
Net income (loss)	$ 17,367	$ 1,508	$ (15,723)
Income (Loss) Per Basic Share:			
Basic income (loss) per share from continuing operations	$ 1.24	$ 0.11	$ (0.28)
Basic loss per share from discontinued operations	$ —	$ —	$ (0.83)
Net income (loss) per basic share	$ 1.24	$ 0.11	$ (1.11)
Income (Loss) Per Diluted Share:			
Diluted income (loss) per share from continuing operations	$ 1.22	$ 0.11	$ (0.28)
Diluted loss per share from discontinued operations	$ —	$ —	$ (0.83)
Net income (loss) per diluted share	$ 1.22	$ 0.11	$ (1.11)
Weighted average shares outstanding - basic	14,014	14,189	14,159
Weighted average shares outstanding - diluted	14,184	14,340	14,159

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

AMTECH SYSTEMS, INC. AND SUBSIDIARIES
Consolidated Statements of Comprehensive Income (Loss)
(in thousands)

	Years Ended September 30,		
	2022	2021	2020
Net income (loss)	$ 17,367	$ 1,508	$ (15,723)
Foreign currency translation adjustment	(1,781)	660	1,790
Reclassification adjustment for net foreign currency translation losses included in net loss	—	—	8,797
Comprehensive income (loss)	$ 15,586	$ 2,168	$ (5,136)

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

AMTECH SYSTEMS, INC. AND SUBSIDIARIES
Consolidated Statements of Shareholders' Equity
(in thousands)

	Common Stock		Treasury Stock					
	Shares	Par Value	Shares	Cost	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Deficit	Total Shareholders' Equity
Balances at September 30, 2019	14,269	$ 143	—	$ —	$ 125,098	$ (11,233)	$ (26,556)	$ 87,452
Net loss	—	—	—	—	—	—	(15,723)	(15,723)
Translation adjustment	—	—	—	—	—	10,587	—	10,587
Stock compensation expense	—	—	—	—	326	—	—	326
Repurchase of treasury stock	—	—	(366)	(2,000)	—	—	—	(2,000)
Retirement of treasury stock	(366)	(4)	366	2,000	(1,864)	—	(132)	—
Stock options exercised	160	2	—	—	875	—	—	877
Balances at September 30, 2020	14,063	$ 141	—	$ —	$ 124,435	$ (646)	$ (42,411)	$ 81,519
Net income	—	—	—	—	—	—	1,508	1,508
Translation adjustment	—	—	—	—	—	660	—	660
Stock compensation expense	—	—	—	—	401	—	—	401
Stock options exercised	241	2	—	—	1,544	—	—	1,546
Balances at September 30, 2021	14,304	$ 143	—	$ —	$ 126,380	$ 14	$ (40,903)	$ 85,634
Net income	—	—	—	—	—	—	17,367	17,367
Translation adjustment	—	—	—	—	—	(1,781)	—	(1,781)
Stock compensation expense	—	—	—	—	543	—	—	543
Repurchase of treasury stock	—	—	(434)	(4,115)	—	—	—	(4,115)
Retirement of treasury stock	(434)	(4)	434	4,115	(3,184)	—	(927)	—
Stock options exercised	124	1	—	—	719	—	—	720
Balances at September 30, 2022	13,994	$ 140	—	$ —	$ 124,458	$ (1,767)	$ (24,463)	$ 98,368

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

AMTECH SYSTEMS, INC. AND SUBSIDIARIES
Consolidated Statements of Cash Flows
(in thousands)

	Years Ended September 30,		
	2022	**2021**	**2020**
Operating Activities			
Net income (loss)	$ 17,367	$ 1,508	$ (15,723)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization	1,729	1,398	1,258
Write-down of inventory	102	544	733
(Reversal of) provision for allowance for doubtful accounts	(32)	44	24
Deferred income taxes	592	(65)	218
Non-cash share-based compensation expense	543	401	326
Loss on sales of subsidiaries	—	—	13,709
Gain on sale of fixed assets	(12,465)	—	—
Other, net	—	43	55
Changes in operating assets and liabilities:			
Accounts receivable	(2,479)	(11,023)	1,359
Inventories	(3,684)	(5,180)	(913)
Contract and other assets	(2,203)	(686)	324
Accounts payable	(1,080)	5,472	(3,620)
Accrued income taxes	623	353	(2,701)
Accrued and other liabilities	584	829	4,658
Contract liabilities	5,607	400	(1,371)
Net cash provided by (used in) operating activities	5,204	(5,962)	(1,664)
Investing Activities			
Purchases of property, plant and equipment	(1,135)	(3,012)	(2,676)
Proceeds from sale of property, plant and equipment	19,908	—	—
Net cash disposed of in sales of subsidiaries	—	—	(9,940)
Acquisition, net of cash and cash equivalents acquired	—	(5,082)	—
Net cash provided by (used in) investing activities	18,773	(8,094)	(12,616)
Financing Activities			
Proceeds from the exercise of stock options	720	1,546	877
Repurchase of common stock	(4,115)	—	(2,000)
Payments on long-term debt	(4,872)	(380)	(379)
Net cash (used in) provided by financing activities	(8,267)	1,166	(1,502)
Effect of Exchange Rate Changes on Cash, Cash Equivalents and Restricted Cash	(1,672)	656	1,718
Net Increase (Decrease) in Cash, Cash Equivalents and Restricted Cash	14,038	(12,234)	(14,064)
Cash, Cash Equivalents and Restricted Cash, Beginning of Year*	32,836	45,070	59,134
Cash, Cash Equivalents and Restricted Cash, End of Year	$ 46,874	$ 32,836	$ 45,070
Supplemental Cash Flow Information:			
Income tax payments, net	$ 386	$ 1,868	$ 2,116
Interest paid, net of capitalized interest	$ 164	$ 241	$ 265
Supplemental Non-cash Financing and Investing Activities:			
Transfer of inventory to property, plant, and equipment	$ 169	$ 39	$ 37
Leased assets obtained in exchange for new operating lease liabilities	$ 3,686	$ 3,680	$ 5,262
Leased assets obtained in exchange for new finance lease liabilities	$ 42	$ 160	$ —
Accrued for asset retirement obligation	$ —	$ 36	$ —

* Includes Cash, Cash Equivalents and Restricted Cash that are included in Held-For-Sale Assets on the Consolidated Balance Sheets for periods prior to January 22, 2020.

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

Notes to Consolidated Financial Statements
For the Years Ended September 30, 2022, 2021 and 2020

1. Summary of Operations and Significant Accounting Policies

Description of Business – Amtech is a leading, global manufacturer of capital equipment, including thermal processing and wafer polishing, and related consumables used in fabricating semiconductor devices, such as silicon carbide (SiC) and silicon power devices, analog and discrete devices, electronic assemblies and light-emitting diodes (LEDs). We sell these products to semiconductor device and module manufacturers worldwide, particularly in Asia, North America and Europe.

We serve niche markets in industries that are experiencing technological advances, and which historically have been very cyclical. Therefore, future profitability and growth depend on our ability to develop or acquire and market profitable new products and on our ability to adapt to cyclical trends.

Our fiscal year is from October 1 to September 30. Unless otherwise stated, references to the years 2022, 2021 and 2020 relate to the fiscal years ended September 30, 2022, 2021 and 2020, respectively.

In March 2020, the outbreak of COVID-19 was recognized as a pandemic by the World Health Organization, and the outbreak became increasingly widespread, including in all of the markets in which we operate. We continue to monitor the impact of COVID-19 on all aspects of our business. We are a company operating in a critical infrastructure industry, as defined by the U.S. Department of Homeland Security. Consistent with federal guidelines and with foreign government, state and local orders to date, we have continued to operate across our footprint throughout the COVID-19 pandemic. Following the onset of COVID-19 and its negative effects on our business, most prominently reflected in our second, third and fourth quarter fiscal 2020 results, global economic conditions improved during fiscal 2021, resulting in increased demand for our products and services, which led to our earnings for fiscal 2021 substantially exceeding our fiscal 2020 results. There remain many unknowns and we continue to monitor the expected trends and related demand for our products and services and have and will continue to adjust our operations accordingly.

On March 28, 2022, the Chinese government issued a mandatory shutdown in Shanghai, the location of one of our manufacturing facilities. The factory was allowed to partially reopen in May 2022 and was fully reopened on June 1, 2022. Upon reopening on June 1, 2022, the factory was able to operate at near full capacity for the entire month of June. We were able to make up the shipments missed in the fourth quarter and are now operating at normal capacity levels. Additionally, given the uncertainty surrounding the COVID-19 pandemic and the emergence of variations thereof, there can be no assurance that this facility will be allowed to remain open on a consistent basis.

Principles of Consolidation – The consolidated financial statements include the accounts of the Company and our wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

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

Reclassifications – Certain reclassifications have been made to prior year financial statement footnotes to conform to the current year presentation. These reclassifications had no effect on the previously reported consolidated financial statements for any period.

Divestitures – Significant accounting policies associated with a decision to dispose of a business are discussed below:

Discontinued Operations – A business is classified as discontinued operations if the disposal represents a strategic shift that will have a major effect on operations or financial results and meets the criteria to be classified as held for sale or is disposed of by sale or otherwise. Significant judgments are involved in determining whether a business meets the criteria for discontinued operations reporting and the period in which these criteria are met. If a business is reported as a discontinued operation, the results of operations through the date of sale, including any gain or loss recognized on the disposition, are presented on a separate line of the Consolidated Statement of Operations. Interest on debt directly attributable to the discontinued operation is allocated to discontinued operations.

Assets Held for Sale – An asset or business is classified as held for sale when (i) management commits to a plan to sell and it is actively marketed; (ii) it is available for immediate sale and the sale is expected to be completed within one year; and (iii) it is unlikely significant changes to the plan will be made or that the plan will be withdrawn. In isolated instances, assets held for sale may exceed one year due to events or circumstances beyond our control. The assets and related liabilities are aggregated and reported on separate lines of the Consolidated Balance Sheets.

Cash and Cash Equivalents – We consider all highly liquid investments with a maturity of three months or less when purchased to be cash equivalents. Our cash and cash equivalents consist of amounts invested in U.S. money market funds and various U.S. and foreign bank operating and time deposit accounts.

We maintain our cash, cash equivalents and restricted cash in multiple financial institutions. Balances in the United States, which account for approximately 84% and 83% of total cash balances as of September 30, 2022 and 2021, respectively, are primarily invested in AAA-rated U.S Treasury and U.S. Government Agency repo money market mutual funds, which have a constant net asset value and consist of direct U.S. Treasuries and/or U.S. Government Agencies with repurchase agreements backed by U.S. Treasury or U.S. Government Agency collateral only, or are in financial institutions insured by the FDIC. The remainder of our cash is maintained with financial institutions with reputable credit in China, the United Kingdom and Malaysia. We maintain cash in bank accounts in amounts which at times may exceed federally insured limits. We have not experienced any losses on such accounts.

Accounts Receivable and Allowance for Doubtful Accounts – Accounts receivable are recorded at the sales price of products sold to customers on trade credit terms. Accounts receivable are considered past due when payment has not been received from the customer within the normal credit terms extended to that customer. A valuation allowance is established for accounts when collection is no longer probable. Accounts are written off against the allowance when the probability of collection is remote. Historically, these write-offs have been immaterial.

Inventories – We value our inventory at the lower of cost (first-in, first-out method) or net realizable value. Inventory cost includes the purchase price of parts or finished goods, labor, overhead and any freight cost incurred to receive the inventory into our manufacturing facilities. We regularly review inventory quantities and record a write-down to net realizable value for excess and obsolete inventory. The write-down is primarily based on historical inventory usage adjusted for expected changes in product demand and production requirements. Our industry is characterized by customers in highly-cyclical industries, rapid technological changes, frequent new product developments and rapid product obsolescence. Changes in demand for our products could result in further write-downs.

Property, Plant and Equipment – Property, plant and equipment are recorded at cost upon acquisition. We begin depreciation and amortization when an asset is both in the location and condition for its intended use. Maintenance and repairs are charged to expense as incurred. The cost of property retired or sold and the related accumulated depreciation and amortization are removed from the applicable accounts when disposition occurs and any gain or loss is recognized. Depreciation and amortization are computed using the straight-line method over the estimated useful life of the asset. Useful lives for equipment and machinery range from three to seven years; for leasehold improvements from three to fifteen years; for furniture and fixtures from five to ten years; and for buildings from 20 to 30 years.

Reviews are regularly performed to determine whether facts and circumstances exist which indicate that the useful life is shorter than originally estimated or the carrying amount of assets may not be recoverable. Impairment, if any, is based on the excess of the carrying amount over the estimated fair value of those assets.

Leases – We determine if a contract or arrangement is, or contains, a lease at inception. Balances related to operating leases are included in right-of-use ("ROU") assets in our Consolidated Balance Sheets. Balances related to financing leases are immaterial and are included in property, plant and equipment and finance lease liabilities and long-term debt in our Consolidated Balance Sheets. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease.

ROU assets and lease liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As none of our leases provide an implicit rate, we use our incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. The ROU asset includes any prepaid lease payments and additional direct costs and excludes lease incentives. Our lease terms may

include options to extend or terminate the lease, which we include in the recognition of the ROU asset and lease liability, when it is reasonably certain that we will exercise that option.

We lease office space, buildings, land, vehicles and equipment. We made an accounting policy election not to separate non-lease components from lease components for all existing classes of underlying assets with the exception of land and buildings. Lease agreements with an initial term of 12 months or less with no renewal options are not recorded on the balance sheet. Instead, we recognize the lease expense as incurred over the lease term. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants. We have one lease that requires the underlying asset to be returned to its original condition at the end of the lease term. The related asset retirement obligation, which is immaterial, is reflected within other long-term liabilities in our Consolidated Balance Sheets.

Certain lease agreements include one or more options to renew, with individual option terms that can extend the lease term from one to five years. The exercise of lease renewal options is at our sole discretion. Some equipment leases also include options to purchase the leased property. The estimated life of assets and leasehold improvements are limited by the expected lease term, unless there is a transfer of title or purchase option reasonably certain of exercise.

In June 2022, we entered into a sale-leaseback transaction to facilitate a future move of our Massachusetts operations, pursuant to which we sold the property to a third party and agreed to lease the property back for two years. To determine whether the transfer of the property should be accounted for as a sale, we evaluated whether we transferred control to the third party in accordance with the revenue recognition guidance set forth in ASC 606. The transfer was deemed to be a sale at market terms. Therefore, we recognized the transaction price for the sale based on the cash proceeds received, derecognized the carrying amount of the underlying assets and recognized a gain in the Consolidated Statements of Operations for the difference between the carrying value of the asset and the transaction price. We then accounted for the leaseback in accordance with our lease accounting policy.

Intangible Assets – Intangible assets acquired in business combinations are capitalized and subsequently amortized on a straight-line basis over their estimated useful life. We regularly perform reviews to determine if facts and circumstances exist which indicate that the useful lives of our intangible assets are shorter than originally estimated or the carrying amount of these assets may not be recoverable. Impairment, if any, is based on the excess of the carrying amount over the estimated fair value of those assets. Patent costs consist primarily of legal and filing fees incurred to file patents on proprietary methods and technology we developed. Patent costs are expensed when incurred, as they are insignificant.

Goodwill – Goodwill is recorded when the purchase price paid for an acquisition exceeds the estimated fair value of net identified tangible and intangible assets acquired. Goodwill is not subject to amortization but is tested for impairment annually or when it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If it is concluded that there is a potential impairment, we would recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value (although the loss would not exceed the total amount of goodwill allocated to the reporting unit).

Revenue Recognition – We recognize revenue when a customer obtains control of promised goods or services in an amount that reflects the consideration expected to be received in exchange for those goods or services. A performance obligation is a promise in a contract to transfer a product or service to the customer. The transaction price of a contract is allocated to each distinct performance obligation based upon the relative standalone selling price ("SSP") for each performance obligation and is recognized as revenue upon satisfaction of the performance obligation. To record revenue properly, we apply the following five steps:

1) *Identify the contract with the customer*

A contract with a customer exists when (i) we enter into an enforceable contract with a customer that defines each party's rights regarding the goods or services to be transferred and identifies the related payment terms, (ii) the contract has commercial substance, and (iii) we determine that collection of substantially all consideration for goods and services that are transferred is probable based on the customer's intent and ability to pay the promised consideration.

2) *Identify the performance obligations in the contract*

Performance obligations are identified based on the goods and services that will be transferred to the customer that are both (i) capable of being distinct, whereby the customer can benefit from the good or service either on its own or together with other available resources, and (ii) are distinct in the context of the contract, whereby the transfer of the good or service is separately identifiable from other promises to the customer in the contract. To the extent a contract includes multiple promised goods and services, we must apply judgment to determine whether promised goods and services are capable of being distinct and distinct in the context of the contract. If these criteria are not met, the promised goods and services are accounted for as a combined performance obligation.

Our equipment sales consist of multiple promises, including the delivery of the system itself and obligations that are not delivered simultaneously with the system, such as installation services and training. In most cases, these services require minimal effort and are immaterial in the context of the contract. Therefore, equipment and related services are treated as one performance obligation. Customers who purchase new systems are provided an assurance-type warranty, generally for periods of 12 to 36 months. Assurance-type warranties are not considered a performance obligation.

We account for shipping and handling activities that occur after control of the related good transfers as fulfillment activities instead of assessing such activities as performance obligations.

Our remaining performance obligations as of September 30, 2022, have an original duration of one year or less. Our obligations for returns and/or refunds are immaterial in all periods presented.

3) *Determine the transaction price*

The transaction price is determined based on the consideration to which we will be entitled in exchange for transferring goods and services to the customer.

The transaction price is based on the price reflected in the individual customer's purchase order.

Occasionally, our customers earn a commission on the purchase and/or resale of our products. These payments to customers are recorded as a reduction of revenue and are less than 5% of our total revenues.

4) *Allocate the transaction price to performance obligations in the contract*

If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each distinct performance obligation.

When required, the SSP for each performance obligation is based on observable data from standalone sales. To determine the SSP for labor-related performance obligations, we use directly observable inputs based on the standalone sale prices for these services.

5) *Recognize revenue when, or as, we satisfy a performance obligation*

We satisfy performance obligations either over time or at a point in time. Revenue is recognized over time if either (i) the customer simultaneously receives and consumes the benefits provided by our performance, (ii) our performance creates or enhances an asset that the customer controls as the asset is created or enhanced, or (iii) our performance does not create an asset with an alternative use to the entity and we have an enforceable right to payment for performance completed to date. If we do not satisfy a performance obligation over time, the related performance obligation is satisfied at a point in time by transferring the control of a promised good or service to a customer. For over time recognition, we are required to select a single revenue recognition method for the performance obligation that faithfully depicts our performance in transferring control of the goods and services.

Equipment and related product revenues (e.g., furnace systems, system add-ons, machinery, consumables and spare parts) are recognized at a point in time, when they are shipped or delivered, depending on contractual terms.

Revenue for maintenance services are recognized over time based on hours incurred, as the hours incurred align to the maintenance activities performed.

We exclude from the transaction price all sales taxes that are assessed by a governmental authority and that are imposed on and concurrent with a specific revenue-producing transaction and collected from a customer (for example, sales, use, value added, and certain excise taxes). Sales taxes are presented on a net basis (excluded from revenues) in our Consolidated Statements of Operations. Our remaining performance obligations as of September 30, 2022, have an original duration of one year or less. Our customers generally have payment terms of 60-90 days. We do not have any payment terms that exceed one year from the point we have satisfied the related performance obligations.

Management reviews disaggregated revenue at the reportable segment level. Revenue-generating transactions vary between our reportable segments due to several factors. For example, lead times vary among our reportable segments and among our products. Most of the revenue for our Material and Substrate segment results from the sale of consumables, rather than equipment sales. These consumables have a much shorter production period than equipment produced by our other reportable segment. Due to these variations between reportable segments, management determined that disaggregated revenue by reportable segment sufficiently depicts how economic factors affect the nature, amount, timing and uncertainty of our revenue and cash flows. See Note 18 for additional information on our reportable segments.

Contract Assets – Contract assets consist of amounts we are not legally able to invoice but have completed the related performance obligation. These amounts generally arise from variances between the contractual payment terms and the transaction price assigned to the open performance obligations (e.g., we have recognized revenue in an amount greater than the amount that is billable under the contract). There were no contract assets at September 30, 2022 and 2021.

Contract Liabilities – Contract liabilities are reflected in current liabilities on the Consolidated Balance Sheets as all performance obligations are expected to be satisfied within the next 12 months. Contract liabilities include customer deposits and deferred profit, if any. Contract liabilities relate to payments invoiced or received in advance of completion of performance obligations under a contract. Contract liabilities are recognized as revenue upon the fulfillment of performance obligations. Contract liabilities consist of customer deposits as of September 30, 2022 and 2021. Of the $1.6 million contract liabilities recorded at September 30, 2021, the entire $1.6 million was recorded as revenue for the year ended September 30, 2022. Of the $1.2 million contract liabilities recorded at September 30, 2020, the entire $1.2 million was recorded as revenue for the year ended September 30, 2021. Of the $1.4 million contract liabilities recorded at September 30, 2019, the entire $1.4 million was recorded as revenue for the year ended September 30, 2020.

Warranty – A limited warranty is provided free of charge, generally for periods of 12 to 36 months to all purchasers of our new products and systems. Accruals are recorded for estimated warranty costs at the time revenue is recognized, generally upon shipment or acceptance, as determined under the revenue recognition policy above. On occasion, we have been required and may be required in the future to provide additional warranty coverage to ensure that the systems are ultimately accepted or to maintain customer goodwill. While our warranty costs have historically been within our expectations and we believe that the amounts accrued for warranty expenditures are sufficient for all systems sold through September 30, 2022, we cannot guarantee that we will continue to experience a similar level of predictability with regard to warranty costs. In addition, technological changes or previously unknown defects in raw materials or components may result in more extensive and frequent warranty service than anticipated, which could result in an increase in our warranty expense.

The following is a summary of activity in accrued warranty expense at our continuing operations, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Beginning balance	$ 545	$ 380	$ 556
Additions for warranties issued during the period	821	250	393
Reductions in the liability for payments made under the warranty	(36)	(9)	(433)
Changes related to pre-existing warranties	(459)	(76)	(121)
Currency translation adjustment	—	—	(15)
Ending balance	$ 871	$ 545	$ 380

Shipping Expense – Shipping expenses at our continuing operations of $2.4 million, $0.8 million and $0.5 million for 2022, 2021 and 2020, respectively, are included in selling, general and administrative expenses.

Advertising Expense – Advertising costs are expensed as incurred. Advertising expenses at our continuing operations of $0.4 million, $0.2 million and $0.3 million for 2022, 2021 and 2020, respectively, are included in selling, general and administrative expenses.

Stock-Based Compensation – We measure compensation costs relating to share-based payment transactions based upon the grant-date fair value of the award. Those costs are recognized as expense over the requisite service period, which is generally the vesting period, with forfeitures recognized as they occur. We estimate the fair value of stock option awards on the date of grant using the Black-Scholes option-pricing model. The Black-Scholes model requires us to apply estimates, including expected stock price volatility, expected life of the option and the risk-free interest rate.

Research, Development and Engineering Expenses – RD&E expenses consist of the cost of employees, consultants and contractors who design, engineer and develop new products and processes as well as materials and supplies used in producing prototypes. RD&E expenses may vary from period to period depending on the engineering projects in process. Expenses related to engineers working on strategic projects or sustaining engineering projects are recorded in RD&E. However, 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 goods sold. When certain contract requirements are met, governmental research and development grants are netted against research, development and engineering expenses. The following is a summary of our research, development and engineering expense, thousands:

	Years Ended September 30,		
	2022	2021	2020
Research, development and engineering	$ 6,390	$ 5,979	$ 3,689
Grants earned	—	—	(377)
Net research, development and engineering	$ 6,390	$ 5,979	$ 3,312

Foreign Currency Transactions and Translation – We use the U.S. dollar as our reporting currency. Our operations in the UK, China and other countries are primarily conducted in their functional currencies, the Euro, Renminbi, or the local country currency, respectively. Accordingly, assets and liabilities of the subsidiaries are translated into U.S. dollars at the exchange rate in effect at the balance sheet dates. Income and expense items are translated at the average exchange rate for each month within the year. The resulting translation adjustments are recorded directly in accumulated other comprehensive income (loss), net of tax - foreign currency translation adjustments as a separate component of shareholders' equity. Net foreign currency transaction gains/losses, including transaction gains/losses on intercompany balances that are not of a long-term investment nature and non-functional currency cash balances, are reported as a separate component of non-operating (income) expense in our Consolidated Statements of Operations.

Income Taxes – We file consolidated federal income tax returns in the United States for all subsidiaries except those in China and the UK, where separate returns are filed. We account for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and deferred tax liabilities for the expected future tax

consequences of events that have been included in the financial statements. Under this method, we determine deferred tax assets and deferred tax liabilities on the basis of the differences between the financial statement and tax bases of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and deferred tax liabilities is recognized in income in the period that includes the enactment date.

We recognize deferred tax assets to the extent that we believe that these assets are more likely than not to be realized. In making such a determination, we consider all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, carryback potential if permitted under the tax law and results of recent operations. If we determine that we would not be able to realize our deferred tax assets in the future in excess of their net recorded amount, we would make an adjustment to the deferred tax asset through recognizing a valuation allowance, which would increase the provision for income taxes.

We record uncertain tax positions in accordance with ASC 740 on the basis of a two-step process in which (1) we determine whether it is more likely than not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, we recognize the largest amount of tax benefit that is more than 50 percent likely to be realized upon ultimate settlement with the related tax authority. We recognize interest and penalties related to uncertain tax benefits on the income tax expense line in the accompanying consolidated statement of operations. Accrued interest and penalties are included on the income taxes payable long-term line in the Consolidated Balance Sheets.

Concentrations of Credit Risk – Our customers are primarily manufacturers of semiconductor substrates and devices and electronic assemblies. Financial instruments that potentially subject us to significant concentrations of credit risk consist principally of cash and trade accounts receivable. Credit risk is managed by performing credit evaluations of the customers' financial condition, by requiring significant deposits where appropriate, and by actively monitoring collections. Letters of credit are required of certain customers depending on the size of the order, type of customer or its creditworthiness, and country of domicile.

As of September 30, 2022, one Semiconductor customer individually represented 12% of accounts receivable. As of September 30, 2021, one Semiconductor customer individually represented 14% of accounts receivable.

Refer to Note 20 for information regarding revenue and assets in other countries subject to fluctuation in foreign currency exchange rates.

Fair Value of Financial Instruments – We group our financial assets and liabilities measured at fair value on a recurring basis into three levels, based on the markets in which the assets and liabilities are traded and the reliability of the assumptions used to determine fair value. These levels are:

Level 1 – Valuation is based upon quoted market price for identical instruments traded in active markets.

Level 2 – Valuation is based on quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.

Level 3 – Valuation is generated from model-based techniques that use significant assumptions not observable in the market. Valuation techniques include use of discounted cash flow models and similar techniques.

It is our policy to use observable inputs whenever reasonably practicable in order to minimize the use of unobservable inputs when developing fair value measurements. When available, we use quoted market prices to measure fair value. If market prices are not available, the fair value measurement is based on models that use primarily market-based parameters including interest rate yield curves, option volatilities and currency rates. In certain cases, where market rate assumptions are not available, we are required to make judgments about assumptions market participants would use to estimate the fair value of a financial instrument. Changes in the underlying assumptions used, including discount rates and estimates of future cash flows, could significantly affect current or future valuations.

Cash, Cash Equivalents and Restricted Cash – Included in cash and cash equivalents and restricted cash in the Consolidated Balance Sheets are money market funds invested in treasury bills, notes and other direct obligations of the U.S. Treasury and foreign bank operating and time deposit accounts. Cash equivalents are classified as Level 1 in the fair value hierarchy.

Receivables and Payables – The recorded amounts of these financial instruments, including accounts receivable and accounts payable, approximate their fair value because of the short maturities of these instruments.

Debt – Due to the relatively short-term nature of the debt, we believe that the carrying value approximated fair value. We paid this debt in full on June 23, 2022 upon the closing of the sale of our Massachusetts manufacturing facility (see Note 8).

Recently Issued Accounting Pronouncements

There were no new accounting pronouncements issued or effective as of September 30, 2022 that had or are expected to have a material impact on our consolidated financial statements.

2. Acquisition

On March 3, 2021, we acquired 100% of the issued and outstanding capital stock of Intersurface Dynamics, a Connecticut-based manufacturer of substrate process chemicals used in various manufacturing processes, including semiconductors, silicon and compound semiconductor wafers, and optics, for a cash purchase price of $5.3 million. The total fair value of net assets acquired was approximately $0.7 million, including $0.4 million of identifiable intangible assets consisting of customer relationships and trade name, which are amortized using the straight-line method over their estimated useful lives of ten and three years, respectively. Goodwill acquired approximated $4.5 million, which was recorded in our Material and Substrate segment. Intersurface Dynamics's results of operations are included in our Material and Substrate segment from the date of acquisition. Our historical results would not have been materially affected by the acquisition of Intersurface Dynamics.

3. Cybersecurity Incident

On April 12, 2021, we detected a data incident in which attackers acquired data and disabled some of the technology systems used by one of our subsidiaries. Upon learning of the incident, we immediately engaged external counsel and retained a team of third-party forensic, incident response, and security professionals to investigate and determine the full scope of this incident. We also notified law enforcement officials and confirmed that the incident is covered by our insurance. We completed the investigation of the data incident with assistance from our outside professionals, and indications were that the unauthorized third-party gained access to certain personal information relating to employees and their beneficiaries for some of our operations. There was no indication of any misuse of this information.

Despite this disruption, production continued in our facilities. Our previously disabled subsidiary network is now back up and running securely. Working alongside our security professionals, we were able to bring our subsidiary's systems online with enhanced security controls. We have deployed an advanced next generation anti-virus and endpoint detection and response tool, as well as Managed Detection & Response services. We remain committed to protecting the security of the personal information entrusted to us and providing high-quality products and service to our customers.

We recorded approximately $1.1 million of expense related to this incident, which was included in selling, general and administrative expenses, during 2021. The expense was primarily related to third-party service providers, including security professionals as well as legal and response teams. We may make additional investments in the future to further strengthen our cybersecurity. We filed an insurance claim during 2021 related to the incident. During 2022, we signed a final settlement agreement with our insurer resulting in total reimbursement of approximately $0.6 million, which included $0.4 million received during the quarter ended December 31, 2021 and $0.2 million received during the quarter ended March 31, 2022. No portion of the reimbursement remains outstanding as of September 30, 2022.

4. Earnings Per Share & Diluted Earnings Per Share

Basic EPS is computed by dividing net income (loss) available to common shareholders by the weighted average number of common shares outstanding for the period. Diluted EPS is computed similarly to basic EPS except that the denominator is increased to include the number of additional common shares that would have been outstanding if potentially dilutive common shares had been issued. In the case of a net loss, diluted EPS is calculated in the same manner as basic EPS.

For the years 2022, 2021 and 2020, options for 189,000, 101,000 and 642,000 weighted average shares, respectively, were excluded from the diluted EPS calculations because they were anti-dilutive. These shares could become dilutive in the future.

A reconciliation of the denominators of the basic and diluted EPS calculations follows, in thousands, except per share amounts:

	Years Ended September 30,		
	2022	2021	2020
Numerator:			
Net income (loss) from continuing operations	$ 17,367	$ 1,508	$ (3,907)
Net loss from discontinued operations	$ —	$ —	$ (11,816)
Net income (loss)	$ 17,367	$ 1,508	$ (15,723)
Denominator:			
Weighted-average shares used to compute basic EPS	14,014	14,189	14,159
Common stock equivalents (1)	170	151	—
Weighted-average shares used to compute diluted EPS	14,184	14,340	14,159
Basic income (loss) per share from continuing operations	$ 1.24	$ 0.11	$ (0.28)
Basic loss per share from discontinued operations	$ —	$ —	$ (0.83)
Net income (loss) per basic share	$ 1.24	$ 0.11	$ (1.11)
Diluted income (loss) per share from continuing operations	$ 1.22	$ 0.11	$ (0.28)
Diluted loss per share from discontinued operations	$ —	$ —	$ (0.83)
Net income (loss) per diluted share	$ 1.22	$ 0.11	$ (1.11)

(1) The number of common stock equivalents is calculated using the treasury stock method and the average market price during the period.

5. Severance

The table below details the severance activity for the years ended September 30, 2022 and 2021. The activity during 2021 is the result of staff reductions in our Semiconductor and Material and Substrate operations. The outstanding obligations as of September 30, 2022 and 2021 are as follows, in thousands:

	Years Ended September 30,	
	2022	2021
Balance at beginning of the year	$ 17	$ 102
Severance expense, net of adjustments	—	86
Cash payments	(17)	(171)
Balance at the end of the year	$ —	$ 17

6. Inventories

The components of inventories are as follows, in thousands:

	September 30,	
	2022	2021
Purchased parts and raw materials	$ 15,377	$ 12,647
Work-in-process	6,146	4,865
Finished goods	3,965	4,563
	$ 25,488	$ 22,075

7. Property, Plant and Equipment

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

	September 30,	
	2022	2021
Land	$ 189	$ 3,240
Buildings	717	5,396
Building and leasehold improvements	2,694	4,622
Equipment and machinery	7,238	6,261
Furniture and fixtures	2,307	2,458
	13,145	21,977
Accumulated depreciation and amortization	(6,593)	(7,894)
	$ 6,552	$ 14,083

Depreciation was $1.6 million, $1.2 million and $0.8 million in 2022, 2021 and 2020, respectively.

8. Sale and Leaseback of Real Estate

On June 23, 2022, BTU completed the sale and leaseback of its building in Massachusetts (the "Property"). The sale price was $20.6 million, of which $0.7 million was deducted at closing for commission and other closing expenses. Simultaneously with the closing, BTU entered into a two-year leaseback of the Property. The lease terms include annual base rent of $1.5 million in an absolute triple net lease. In connection with the sale, BTU recognized a pre-tax gain on sale of $12.5 million, which is recorded within operating expenses on the Consolidated Statement of Operations. This sale-leaseback transaction resulted in a net cash inflow of approximately $14.9 million, after repayment of the existing mortgage and settlement of related sale expenses.

9. Leases

The following table provides information about the financial statement classification of our lease balances reported within the Consolidated Balance Sheets as of September 30, 2022 and 2021, in thousands:

	September 30, 2022	September 30, 2021
Assets		
Right-of-use assets - operating	$ 11,258	$ 8,646
Right-of-use assets - finance	149	174
Total right-of-use assets	$ 11,407	$ 8,820
Liabilities		
Current		
Operating lease liabilities	$ 2,101	$ 470
Finance lease liabilities	71	61
Total current portion of long-term lease liabilities	2,172	531
Long-term		
Operating lease liabilities	9,395	8,279
Finance lease liabilities	76	110
Total long-term lease liabilities	9,471	8,389
Total lease liabilities	$ 11,643	$ 8,920

The following table provides information about the financial statement classification of our lease expenses reported in the Consolidated Statements of Operations for the years ended September 30, 2022 and 2021, in thousands:

		Years Ended September 30,		
Lease cost	Classification	2022	2021	2020
Operating lease cost	Cost of sales	$ 822	$ 536	$ 208
Operating lease cost	Selling, general and administrative expenses	359	256	84
Operating lease cost	Research, development and engineering	14	—	—
Finance lease cost	Cost of sales	4	5	16
Finance lease cost	Selling, general and administrative expenses	71	17	8
Short-term lease cost	Cost of sales	—	191	164
Total lease cost		$ 1,270	$ 1,005	$ 480

Future minimum lease payments under non-cancelable leases as of September 30, 2022 are as follows, in thousands:

	Operating Leases	Finance Leases	Total
2023	$ 2,535	$ 76	$ 2,611
2024	2,136	57	2,193
2025	978	9	987
2026	861	9	870
2027	773	3	776
Thereafter	7,863	—	7,863
Total lease payments	15,146	154	15,300
Less: Interest	3,650	7	3,657
Present value of lease liabilities	$ 11,496	$ 147	$ 11,643

Operating lease payments include $6.2 million related to options to extend lease terms that are reasonably certain of being exercised.

The following table provides information about the remaining lease terms and discount rates applied as of September 30, 2022 and 2021:

	September 30,	
	2022	2021
Weighted average remaining lease term		
Operating leases	12.65 years	16.92 years
Finance leases	2.45 years	2.79 years
Weighted average discount rate		
Operating leases	4.17%	4.17%
Finance leases	4.17%	4.17%

10. Intangible Assets

Intangible assets consist of the following, in thousands:

		September 30,	
	Useful Life	2022	2021
Customer lists	6-10 years	$ 1,609	$ 1,609
Trade names	3-15 years	879	879
		2,488	2,488
Accumulated amortization		(1,730)	(1,630)
Intangible assets, net		$ 758	$ 858

During each fiscal year, we periodically assessed whether any indicators of impairment existed related to our intangible assets. As of each interim period end during each fiscal year, we concluded that a triggering event had not occurred that would more likely than not reduce the fair value of intangible assets below their carrying value.

Amortization expense related to intangible assets at our continuing operations was $0.1 million, $0.2 million and $0.3 million in 2022, 2021 and 2020, respectively. Future amortization expense for the remaining unamortized balance as of September 30, 2022 is estimated as follows, in thousands:

Years Ending September 30,	Amortization Expense
2023	$ 100
2024	98
2025	97
2026	97
2027	97
Thereafter	269
Total	$ 758

11. Goodwill

The changes in the carrying amount of goodwill, by reportable segment, for the year ended September 30, 2022 are as follows, in thousands:

	Semiconductor	Material and Substrate	Total Goodwill
Goodwill	$ 5,905	$ 5,263	$ 11,168
Accumulated impairment losses	—	—	—
Balance at September 30, 2021	5,905	5,263	11,168
Goodwill acquired during 2022	—	—	—
Impairment of goodwill during 2022	—	—	—
Balance at September 30, 2022	$ 5,905	$ 5,263	$ 11,168
Goodwill	$ 5,905	$ 5,263	$ 11,168
Accumulated impairment losses	—	—	—
Balance at September 30, 2022	$ 5,905	$ 5,263	$ 11,168

On March 3, 2021, we acquired Intersurface Dynamics, which has been integrated into our Material and Substrate segment. Under the purchase method of accounting, the purchase price for the acquisition was allocated to the tangible and identifiable intangible assets acquired and liabilities assumed based on their estimated fair values. The excess purchase price over fair value of net assets acquired of approximately $4.5 million was recorded as goodwill in the Material and Substrate segment. The primary driver for this acquisition was to bolster our offerings in the substrate consumables space and incorporate wafer processing coolants and chemicals to our existing consumable and machine product lines.

During each fiscal year, we periodically assessed whether any indicators of impairment existed which would require us to perform an interim impairment review. As of each interim period end during each fiscal year, we concluded that a triggering event had not occurred that would more likely than not reduce the fair value of our reporting units below their carrying values. We performed our annual test of goodwill for impairment as of September 30. The results of the goodwill impairment test indicated that the fair values of our Semiconductor and Material and Substrate reporting units were in excess of the carrying values, and, thus, we did not require an impairment charge. While the quantitative analysis indicated no impairment of Semiconductor and Material and Substrate segment goodwill existed as of September 30, 2022, if the future performance of these reporting units fall short of our expectations or if there are significant changes in operations due to changes in market conditions, we could be required to recognize material impairment charges in future periods.

12. Income Taxes

Income Tax Provision

The following note related to income taxes summarizes the results from both continuing and discontinued operations. The components of income (loss) before provision for income taxes are as follows, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Domestic	$ 15,275	$ (3,320)	$ (18,652)
Foreign	3,510	6,754	3,673
	$ 18,785	$ 3,434	$ (14,979)

The components of the provision for income taxes are as follows, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Current:			
Domestic federal	$ —	$ —	$ (239)
Foreign	711	1,999	1,407
Foreign withholding taxes	255	292	201
Domestic state	77	(300)	(59)
Total current	1,043	1,991	1,310
Deferred:			
Domestic Federal	(39)	—	—
Foreign	414	(65)	(566)
Total deferred	375	(65)	(566)
Total provision	$ 1,418	$ 1,926	$ 744

The CARES Act, which was signed into law on March 27, 2020, included a provision for a five-year carryback of net operating losses. We have assessed the benefit of the provision and utilized a portion of the 2019 net operating loss carryback to offset income from 2018. The income tax provision as of and for the year ended September 30, 2020 reflects such impact.

Due to the tax treatment relating to the sale of Tempress, we realized an income tax benefit of $11.1 million, which is reflected in our discontinued operations in 2020. We realized income tax expense of $0.2 million for the sale of R2D, which is reflected in our continuing operations in 2020. The income tax (benefit) expense is fully offset by a valuation allowance.

A reconciliation of actual income taxes to income taxes at the expected U.S. federal corporate income tax rate is as follows, in thousands, except percentages:

	Years Ended September 30,		
	2022	2021	2020
Federal statutory rate	21.0%	21.0%	21.0%
Tax expense (benefit) at the federal statutory rate	$ 3,945	$ 722	$ (3,146)
Effect of permanent book-tax differences	11	54	145
State tax provision	554	24	34
Valuation allowance for net deferred tax assets	(3,138)	842	3,775
Uncertain tax items	55	(276)	(47)
Tax rate differential	535	267	222
Other items	(544)	293	(239)
	$ 1,418	$ 1,926	$ 744

Deferred Income Taxes and Valuation Allowance

Deferred income taxes reflect the tax effects of temporary differences between the financial statement and tax bases of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to be realized. The components of deferred tax assets and deferred tax liabilities are as follows, in thousands:

	September 30,	
	2022	2021
Deferred tax assets:		
Net operating loss carryforwards	$ 17,180	$ 20,650
Accruals and reserves	1,441	1,250
Foreign tax credit	811	1,207
Operating lease liabilities	2,492	1,119
Foreign service fee	1,579	1,635
Other assets	467	1,092
Total deferred tax assets	23,970	26,953
Valuation allowance	(20,000)	(23,292)
Deferred tax assets, net of valuation allowance	3,970	3,661
Deferred tax liabilities:		
Goodwill and identifiable intangible assets	(321)	(499)
Property and equipment, net	(758)	(1,201)
Operating lease, right-of-use assets	(2,494)	(1,119)
Prepaid assets	(318)	(211)
Total deferred tax liabilities	(3,891)	(3,030)
Total deferred tax assets (liabilities)	$ 79	$ 631

Changes in the deferred tax valuation allowance are as follows, in thousands:

	Years Ended September 30,	
	2022	2021
Balance at the beginning of the year	$ 23,292	$ 21,733
(Reductions) additions to valuation allowance	(3,292)	1,559
Balance at the end of the year	$ 20,000	$ 23,292

The deferred tax valuation allowance decreased by $3.3 million and increased by $1.6 million for the years ended September 30, 2022 and 2021, respectively. In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. We consider the scheduled reversal of deferred tax liabilities, projected future income and tax planning strategies in making this assessment. We have established valuation allowances on all net U.S. deferred tax assets, after considering all of the available objective evidence, both positive and negative, historical and prospective, with greater weight given to historical evidence, and determined it is not more likely than not that these assets will be realized. We have established a partial valuation allowance on certain foreign deferred tax assets that we consider it is more likely than not will not be realized.

We intend to permanently reinvest undistributed earnings of our foreign subsidiaries. It is not practicable to estimate the amount of tax that might be payable on the undistributed amounts.

Net Operating Losses

As of September 30, 2022, we have federal net operating loss carryforwards of approximately $10.0 million that expire at various times between 2032 and 2035. The utilization of those federal net operating losses is limited to approximately $0.8 million per year. Additionally, we have federal net operating loss carryforwards of approximately $68.0 million that have an indefinite carryforward period. The utilization of those federal net operating losses is limited to 80% of taxable income after 2021. We have no foreign net operating loss carryforwards as of September 30, 2022. We have approximately $14.0 million of state net operating loss carryforwards, with various expiration dates and limitations on utilization, depending on the state. As of September 30, 2022, we have approximately $0.8 million of Foreign Tax Credit carryforwards that expire in 2030 and 2031.

Uncertain Tax Positions

We have included all of our liabilities for uncertain tax positions with income taxes payable long-term. A reconciliation of the beginning and ending amount of our unrecognized tax benefits is summarized as follows (in thousands):

	Years Ended September 30,		
	2022	2021	2020
Balance at beginning of the year	$ 949	$ 1,225	$ 1,272
Additions related to tax positions taken in prior years	55	—	—
Reductions due to resolution of uncertain tax position	—	(276)	(47)
Balance at the end of the year	$ 1,004	$ 949	$ 1,225

Approximately $1.0 million of our total unrecognized tax benefits, inclusive of penalties and interest, represents the amount that, if recognized, would favorably affect our effective income tax rate in future periods. We report accrued interest and penalties related to unrecognized tax benefits in income tax expense. We recognized a net (benefit) expense for interest and penalties of $0.1 million, $(0.1) million and $4,000 for 2022, 2021 and 2020, respectively. Income taxes payable long-term on the Consolidated Balance Sheets includes a cumulative accrual for potential interest and penalties of $0.7 million and $0.6 million as of September 30, 2022 and 2021, respectively. We do not expect that the amount of our tax reserves for uncertain tax positions will materially change in the next 12 months other than the continued accrual of interest and penalties.

Tax Return Matters

We file income tax returns in China and other foreign jurisdictions, as well as the U.S. and various states in the U.S. We have not signed any agreements with the Internal Revenue Service, any state or foreign jurisdiction to extend the statute of limitations for any fiscal year. As such, the number of open years is the number of years dictated by statute in each of the respective taxing jurisdictions. U.S. Federal tax returns generally have a 3-year statute of limitations. Therefore, U.S. federal returns for tax years ending on or after September 30, 2019 remain open for examination. In addition, the statute for a tax year for which a loss was carried back to remains open for the same period as the year the loss originated. Because the Company filed a net operating loss carryback claim for the tax year ended September 30, 2016 for a loss originating in the tax year ended September 30, 2019, the statute for the carryback claim in 2016 will remain open until 2023. Furthermore, the IRS may adjust attribute carryforwards utilized in an open year even though the year the attributes originated may be closed. State and foreign statutes are generally 3 to 5 years but vary by jurisdiction. These open years contain certain matters that could be subject to differing interpretations of applicable tax laws and regulations as they relate to the amount, timing, or inclusion of revenues and expenses, or the sustainability of income tax positions of Amtech and our subsidiaries.

13. Long-Term Debt

We had a mortgage note secured by BTU's real property in Massachusetts, which was paid in full upon the closing of the sale of this facility in June 2022 (see Note 8). Our remaining long-term debt consists of an equipment finance agreement. Annual maturities relating to our long-term debt as of September 30, 2022 are as follows (in thousands):

	Annual Maturities
2023	$ 36
2024	38
2025	40
2026	41
2027	25
Thereafter	—
Total long-term debt	$ 180

Interest expense on long-term debt was $0.1 million, $0.2 million and $0.2 million in 2022, 2021 and 2020, respectively.

14. Equity and Stock-Based Compensation

Stock Repurchase Plans

The following table summarizes information related to our stock repurchase plans, in thousands, except share and per share amounts:

Name of Stock Repurchase Plan	Date Approved by Board	Plan Term	Amount Authorized ($)	Amount Used for Repurchases ($)	Average Price Paid per Share ($)	Shares Repurchased (#)	Amount Available for Repurchases ($)	Plan Status	Fiscal Year of Repurchases
2022 Stock Repurchase Plan	2/10/2022	1 year	5,000	1,400	9.78	143,430	3,600	Open	2022
2021 Stock Repurchase Plan	2/9/2021	1 year	4,000	2,700	9.31	291,383	—	Expired	2022
2020 Stock Repurchase Plan	2/4/2020	1 year	4,000	2,000	5.46	366,000	—	Expired	2020
2019 Stock Repurchase Plan	11/29/2018	1 year	4,000	—	—	—	—	Expired	NA

All repurchased shares have been retired.

Stock-Based Compensation Expense

Stock-based compensation expenses of $0.5 million, $0.4 million and $0.3 million for 2022, 2021 and 2020, respectively, are included in selling, general and administrative expenses. As of September 30, 2022, total compensation cost related to non-vested stock options not yet recognized is $0.7 million, which is expected to be recognized over the next 1.19 years on a weighted-average basis.

Amtech Equity Compensation Plans

The 2022 Plan, under which 1,000,000 shares could be granted, was adopted by the Board of Directors in November 2021, and approved by the shareholders in March 2022.

The 2007 Plan, under which 500,000 shares could be granted, was adopted by the Board in April 2007, and approved by the shareholders in May 2007. The 2007 Plan was amended in 2009, 2014 and 2015 to add 2,500,000 shares. The plan was also amended in 2019 to extend the term of the plan and allow for the grant of restricted stock units. Upon

the adoption of the 2022 Plan, no further awards will be granted from the 2007 Plan. Previously issued awards will remain outstanding in accordance with their terms.

The Non-Employee Directors Stock Option Plan was approved by the shareholders in 1996 for issuance of up to 100,000 shares of common stock to directors. The Non-Employee Directors Stock Option Plan was amended in 2005, 2009 and 2014 to add 400,000 shares. The plan was also amended in 2020 to extend the term of the plan. Upon the adoption of the 2022 Plan as stated above, no further awards will be granted from the Non-Employee Directors Stock Option Plan. Previously issued awards will remain outstanding in accordance with their terms.

Equity compensation plans as of September 30, 2022 are summarized in the table below:

Name of Plan	Shares Authorized	Shares Available for Grant	Options Outstanding	Plan Expiration
2022 Plan	1,000,000	946,000	54,000	Mar. 2032
2007 Plan	3,000,000	—	397,341	Mar. 2024
Non-Employee Directors Stock Option Plan	500,000	—	138,000	Mar. 2024
		946,000	589,341	

Stock Options

Stock options issued under the terms of our equity compensation plans have, or will have, an exercise price equal to or greater than the fair market value of the common stock at the date of the option grant and expire no later than 10 years from the date of grant. Options issued under the plans vest over 1 to 3 years. We estimated the fair value of stock option awards on the date of grant using the Black-Scholes option pricing model using the following assumptions:

	Years Ended September 30,		
	2022	2021	2020
Risk free interest rate	2%	1%	1%
Expected life	5 years	6 years	6 years
Dividend rate	0%	0%	0%
Volatility	57%	58%	58%

The following table summarizes our stock option activity during 2022, 2021 and 2020:

	Years Ended September 30,					
	2022		2021		2020	
	Options	Weighted Average Exercise Price	Options	Weighted Average Exercise Price	Options	Weighted Average Exercise Price
Outstanding at beginning of period	608,269	$ 6.48	696,665	$ 7.00	1,068,665	$ 7.04
Granted	135,500	$ 12.80	204,000	$ 6.25	32,500	$ 5.34
Exercised	(124,475)	$ 5.78	(241,320)	$ 6.40	(160,375)	$ 5.47
Forfeited/expired	(29,953)	$ 6.92	(51,076)	$ 13.01	(244,125)	$ 7.94
Outstanding at end of period	589,341	$ 8.06	608,269	$ 6.48	696,665	$ 7.00
Exercisable at end of period	358,343	$ 6.92	403,853	$ 6.87	611,542	$ 7.19
Weighted average grant-date fair value of options granted during the period	$ 6.39		$ 3.33		$ 2.89	

The following table summarizes information for stock options outstanding and exercisable as of September 30, 2022:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number Outstanding	Remaining Contractual Life (in years)	Weighted Average Exercise Price Per Share	Number Exercisable	Weighted Average Exercise Price Per Share
$2.95-$4.90	62,000	5.72	$ 4.64	62,000	$ 4.64
$5.07-$5.52	86,883	5.80	$ 5.38	66,717	$ 5.39
$5.67-$5.67	113,958	8.13	$ 5.67	38,626	$ 5.67
$5.75-$7.01	77,000	2.20	$ 6.70	77,000	$ 6.70
$7.40-$9.98	114,000	4.98	$ 8.75	84,000	$ 9.12
$9.99-$9.99	6,000	8.87	$ 9.99	6,000	$ 9.99
$10.22-$10.22	24,000	9.42	$ 10.22	—	—
$10.71-$10.71	6,000	2.52	$ 10.71	6,000	$ 10.71
$11.51-$11.51	18,000	8.48	$ 11.51	18,000	$ 11.51
$15.43-$15.43	81,500	9.13	$ 15.43	—	—
$2.95-$15.43	589,341	6.30	$ 8.06	358,343	$ 6.92

The aggregate intrinsic values of options outstanding and options exercisable as of September 30, 2022 were approximately $1.0 million and $0.7 million, respectively, which represents the total pre-tax intrinsic value, based on our closing stock price of $8.50 per share as of September 30, 2022, the last business day of our fiscal year, which would have been received by the option holders had all option holders exercised their options as of that date. The total intrinsic value of stock options exercised during the fiscal years ended September 30, 2022, 2021 and 2020 was $0.8 million, $0.8 million and $0.1 million, respectively.

15. Benefit Plans

We have retirement plans covering substantially all our employees. The principal plans are our defined contribution plan that covers substantially all of our employees in the United States and the multi-employer pension plan for hourly union employees in Pennsylvania. Expense related to both plans is insignificant.

Defined Contribution Plan – Domestic employees of Amtech and its subsidiaries who meet certain eligibility requirements may participate, at the employee's option, in the 401(k) Plan. The 401(k) Plan is a defined contribution plan subject to the provisions of ERISA. We match employee contributions to the 401(k) Plan equal to 60% of the participants' elective deferrals, up to 3.6% of the participants' eligible compensation each payroll period. Employees are auto-enrolled upon eligibility at a 6% contribution rate, however, an employee may opt out at their election. The match expense was $0.4 million in 2022 and $0.3 million in 2021 and 2020.

Pension Plan – Our hourly union employees in Pennsylvania participate in a multi-employer pension plan, the NIGPP, in accordance with the union agreement between PR Hoffman and the United Automobile, Aerospace and Agriculture Implement Workers of America. The agreement was renewed in 2022 for a three-year term that expires September 30, 2025. Every company participating in the plan pays a contribution per hour worked for each employee of the company that is eligible to participate in the NIGPP. Our contributions to the NIGPP were $38,000, $39,000 and $44,000 in 2022, 2021 and 2020, respectively.

16. Commitments and Contingencies

Purchase Obligations – As of September 30, 2022, we had unrecorded purchase obligations in the amount of $20.0 million. These purchase obligations consist of outstanding purchase orders for goods and services. While the amount represents purchase agreements, the actual amounts to be paid may be less in the event that any agreements are renegotiated, canceled or terminated.

Legal Proceedings and Other Claims – From time to time, we are a party to claims and actions for matters arising out of our business operations. We regularly evaluate the status of the legal proceedings and other claims in which we are involved to assess whether a loss is probable or there is a reasonable possibility that a loss, or an additional loss, may have been incurred and determine if accruals are appropriate. If accruals are not appropriate, we further evaluate

each legal proceeding to assess whether an estimate of possible loss or range of possible loss can be made for disclosure. Although the outcome of claims and litigation is inherently unpredictable, we believe that we have adequate provisions for any probable and estimable losses. It is possible, nevertheless, that our consolidated financial position, results of operations or liquidity could be materially and adversely affected in any particular period by the resolution of a claim or legal proceeding. Legal expenses related to defense, negotiations, settlements, rulings and advice of outside legal counsel are expensed as incurred.

Employment Contracts – We have employment contracts and change in control agreements with, and severance plans covering, certain officers and management employees under which severance payments would become payable in the event of specified terminations without cause or terminations under certain circumstances after a change in control. If severance payments under the current employment contracts or severance plans were to become payable, the severance payments would generally range from six to twelve months of salary.

17. Cash Flows

Non-cash investing activities may include capital expenditures in accounts payable, representing additions purchased at period end but not yet paid in cash. Non-cash investing activities for the year ended September 30, 2022 included $0.2 million of capital expenditures in accounts payable. There were no non-cash capital expenditures in accounts payable for the year ended September 30, 2021. Non-cash investing activities for the year ended September 30, 2020 included $80,000 of capital expenditures in accounts payable.

18. Reportable Segments

Upon the acquisition of Intersurface Dynamics in 2021 (see Note 2), we evaluated our organizational structure and concluded that we have two reportable segments following the acquisition.

Amtech has two operating segments that are structured around the types of product offerings provided to our customers. In addition, the operating segments may be further distinguished by the Company's respective brands. These two operating segments comprise our two reportable segments discussed below. Our two reportable segments are as follows:

Semiconductor – We design, manufacture, sell and service thermal processing equipment and related controls for use by leading semiconductor manufacturers, and in electronics, automotive and other industries.

Material and Substrate – We produce consumables and machinery for lapping (fine abrading) and polishing of materials, such as sapphire substrates, optical components, silicon wafers, numerous types of crystal materials, ceramics and metal components. Our Material and Substrate segment includes our former SiC/LED segment in addition to Intersurface Dynamics, as they sell complementary products to a similar market.

Information concerning our reportable segments is as follows, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Net revenue:			
Semiconductor	$ 87,982	$ 72,086	$ 54,516
Material and Substrate	18,316	13,119	10,304
Non-segment related	—	—	643
	$ 106,298	$ 85,205	$ 65,463
Operating income (loss):			
Semiconductor	$ 20,672	$ 8,585	$ 4,168
Material and Substrate	3,728	278	684
Non-segment related	(7,114)	(5,138)	(5,337)
	$ 17,286	$ 3,725	$ (485)

	Years Ended September 30,		
	2022	2021	2020
Capital expenditures:			
Semiconductor	$ 452	$ 2,264	$ 912
Material and Substrate	411	695	1,724
Non-segment related	272	53	39
	$ 1,135	$ 3,012	$ 2,675
Depreciation and amortization expense:			
Semiconductor	$ 1,101	$ 905	$ 821
Material and Substrate	565	438	197
Non-segment related	63	55	60
	$ 1,729	$ 1,398	$ 1,078

	September 30,	
	2022	2021
Identifiable assets:		
Semiconductor	$ 75,622	$ 70,631
Material and Substrate	22,032	19,541
Non-segment related*	35,880	26,741
	$ 133,534	$ 116,913

* Non-segment related assets include cash, property and other assets.

19. Major Customers and Sales by Country

In 2022, two Semiconductor customers accounted for 14% and 12% of net revenues. In 2021, two Semiconductor customers accounted for 14% and 13% of net revenues. In 2020, one Semiconductor customer accounted for 11% of net revenues.

Our net revenues for 2022, 2021 and 2020 were to customers in the following geographic regions:

	Years Ended September 30,		
	2022	2021	2020
United States	27%	22%	28%
Other	9%	5%	7%
Total Americas	**36%**	**27%**	**35%**
China	17%	29%	25%
Malaysia	7%	3%	5%
Taiwan	14%	15%	15%
Other	6%	11%	7%
Total Asia	**44%**	**58%**	**52%**
Germany	4%	5%	3%
Austria	10%	3%	—%
Other	6%	7%	10%
Total Europe	**20%**	**15%**	**13%**
	100%	**100%**	**100%**

20. Geographic Regions

We have continuing operations in the United States and China, as well as satellite offices in Europe and Asia. Revenues, operating income (loss) and identifiable assets by geographic region are as follows, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Net revenue:			
United States*	$ 89,197	$ 58,937	$ 48,089
China	13,854	22,828	13,510
Other	3,247	3,440	3,864
	$ 106,298	$ 85,205	$ 65,463
Operating income (loss):			
United States*	$ 14,163	$ (4,174)	$ (5,814)
China	2,003	6,958	4,744
Other	1,120	941	585
	$ 17,286	$ 3,725	$ (485)

* United States revenue includes $22.7 million, $19.7 million and $14.9 million in 2022, 2021 and 2020, respectively, related to the products manufactured in our China facility but sold through our Massachusetts facility.

	September 30,	
	2022	2021
Net property, plant and equipment:		
United States	$ 4,981	$ 11,990
China	1,571	2,093
	$ 6,552	$ 14,083

21. Supplementary Financial Information

The following is a summary of the activity in our allowance for doubtful accounts, in thousands:

	Years Ended September 30,		
	2022	2021	2020
Balance at beginning of year	$ 188	$ 159	$ 172
Provision	(34)	44	86
Write offs	6	(2)	(26)
Adjustment (1)	(46)	(13)	(73)
Balance at end of year	$ 114	$ 188	$ 159

(1) Primarily foreign currency translation adjustments.

Our net accounts receivable as of September 30, 2022, 2021 and 2020 was $25.0 million, $22.5 million and $11.2 million, respectively.

22. Discontinued Operations and Disposals

Discontinued Operations

In April 2019, we announced that the Board determined that it was in the long-term best interest of Amtech to exit the solar business segment and focus our strategic efforts on our non-Solar segments in order to more fully realize the opportunities presented in those areas. The Board made its decision, effective March 28, 2019, after analyzing current market conditions and the strategic outlook for its Solar segment, which operates in a highly competitive market among lower cost manufacturers, particularly in China.

The divestiture of our solar business included our Tempress and SoLayTec subsidiaries, which comprised substantially all of our Solar segment. We adopted a plan to sell our Solar operations on or before March 31, 2020. As such, we

classified substantially all of the Solar segment as held for sale in our Consolidated Balance Sheets and reported its results as discontinued operations in our Consolidated Statements of Operations. SoLayTec was sold in fiscal 2019.

Effective January 22, 2020 ("Tempress Sale Date"), we completed the sale of Tempress for nominal consideration to a third party located in the Netherlands. In connection with this sale transaction, we provided an unsecured term loan to Tempress in the principal sum of $2.25 million, to be used to fund Tempress' working capital requirements and to facilitate the restructuring of Tempress' operations. We forgave $0.5 million of the loan in accordance with the terms of the loan agreement. The balance of the loan was paid in full during 2020. We recorded a pre-tax loss on sale of approximately $10.9 million, of which approximately $7.2 million was the recognition of previously recorded accumulated foreign currency translation losses. The total pre-tax loss did not have a material effect on our cash balances at our continuing operations. We also recognized a significant tax benefit relating to this loss, which can be carried over to future years. Effective on the Tempress Sale Date, Tempress is no longer included in our consolidated financial statements.

Operating results of our discontinued solar operations were as follows, in thousands:

	Year Ended September 30, 2020
Revenue, net	$ 7,442
Cost of sales	5,969
Gross profit	1,473
Selling, general and administrative	1,814
Research, development and engineering	540
Restructuring charges	37
Operating loss	(918)
Loss on sale of subsidiary	(10,916)
Interest expense and other, net	(29)
Loss from discontinued operations before income taxes	(11,863)
Income tax benefit	(47)
Net loss	$ (11,816)

Amtech's Consolidated Statement of Cash flows combines cash flows from discontinued operations with cash flows from continuing operations within each cash flow statement category. The following table summarizes selected cash flow information for discontinued operations, in thousands:

	Year Ended September 30, 2020
Loss from discontinued operations, net of tax	$ (11,816)
Depreciation and amortization	$ 180
Reversal of allowance for doubtful accounts, net	$ (62)
Loss on sale of subsidiary	$ (10,916)
Purchases of property, plant and equipment	$ 1

Other Disposal

R2D – On December 13, 2019 ("R2D Sale Date"), we finalized the sale of R2D to certain members of R2D's management team. Upon the sale, we recognized a loss of approximately $2.8 million, which we reported as loss on sale of subsidiary in our Consolidated Statements of Operations for the year ended September 30, 2020. Effective on the R2D Sale Date, R2D is no longer included in our consolidated financial statements. R2D did not meet the discontinued operations or held-for-sale criteria.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

Our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), has carried out an evaluation of the effectiveness of our disclosure controls and procedures as defined in Exchange Act Rules 13a-15(e) and 15(d)-15(e). Based upon that evaluation, our CEO and CFO have concluded that our disclosure controls and procedures in place were effective as of September 30, 2022.

Management's Report on Internal Control Over Financial Reporting

To the Shareholders of Amtech Systems, Inc.

The management of Amtech Systems, Inc. is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Because of its inherent limitations, our controls and procedures may not prevent or detect misstatements. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the controls system are met. Because of the inherent limitations in all controls systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected.

Our management evaluated the effectiveness of our internal control over financial reporting as of September 30, 2022. In making this evaluation, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control - Integrated Framework (2013)*. Based on our evaluation we believe that, as of September 30, 2022, our internal control over financial reporting was effective based on those criteria.

Changes in Internal Control Over Financial Reporting

There have not been any changes in the Company's internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the quarter ended September 30, 2022 that materially affected, or are reasonably likely to materially affect, the internal control over financial reporting of the Company.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

Pursuant to Paragraph G(3) of the General Instructions to Form 10-K, the information required by Part III of Form 10-K is incorporated by reference to the Proxy Statement to be filed within 120 days of September 30, 2022, our fiscal year end. In the event the Proxy Statement is not filed within 120 days, the information required by Part III of this Form 10-K will be filed pursuant to an amendment to this Annual Report on Form 10-K within the 120-day period.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND GOVERNANCE

The information required by this item (i) is incorporated herein by reference to the Proxy Statement or (ii) will be filed pursuant to an amendment to this Annual Report on Form 10-K, in each case, within 120 days of September 30, 2022, our fiscal year end.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item (i) is incorporated herein by reference to the Proxy Statement or (ii) will be filed pursuant to an amendment to this Annual Report on Form 10-K, in each case, within 120 days of September 30, 2022, our fiscal year end.

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

The information required by this item (i) is incorporated herein by reference to the Proxy Statement or (ii) will be filed pursuant to an amendment to this Annual Report on Form 10-K, in each case, within 120 days of September 30, 2022, our fiscal year end.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item (i) is incorporated herein by reference to the Proxy Statement or (ii) will be filed pursuant to an amendment to this Annual Report on Form 10-K, in each case, within 120 days of September 30, 2022, our fiscal year end.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item (i) is incorporated herein by reference to the Proxy Statement or (ii) will be filed pursuant to an amendment to this Annual Report on Form 10-K, in each case, within 120 days of September 30, 2022, our fiscal year end.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) Financial Statements and Schedules

The consolidated financial statements required by this item are set forth on the pages indicated in Item 8.

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

(b) Exhibits

The exhibits filed as part of this Annual Report on Form 10-K are listed on the Exhibit Index immediately preceding the signature page hereto, which is incorporated herein by reference.

ITEM 16. FORM 10-K SUMMARY

None.

EXHIBIT INDEX

		INCORPORATED BY REFERENCE				
EXHIBIT NO.	EXHIBIT DESCRIPTION	FORM	FILE NO.	EXHIBIT NO.	FILING DATE	FILED HEREWITH
3.1	Amended and Restated Articles of Incorporation, as amended through February 6, 2012	10-Q	000-11412	3.1	February 9, 2012	
3.2	Amended and Restated Bylaws of Amtech Systems, Inc., dated as of September 23, 2020	8-K	000-11412	3.1	September 25, 2020	
3.3	First Amendment to Amended and Restated and Restated Bylaws (effective as of November 16, 2021)	8-K	000-11412	3.1	November 19, 2021	
4.1	Description of Capital Stock					X
10.1	Non-Employee Directors Stock Option Plan, effective July 8, 2005 as amended through May 8, 2014*	8-K	000-11412	10.1	May 14, 2014	
10.1a	Amendment to the Non-Employee Directors Stock Option Plan, effective March 4, 2020*	DEF14A	000-11412	Appendix A	January 24, 2020	
10.2	2007 Employee Stock Incentive Plan of Amtech Systems, Inc., as amended, effective April 9, 2015*	8-K	000-11412	10.4	April 10, 2015	
10.2a	Amendment to 2007 Employee Stock Incentive Plan of Amtech Systems, Inc., effective March 6, 2019*	DEF14A	000-11412	Appendix A	January 25, 2019	
10.3	Second Amended and Restated Employment Agreement between Amtech Systems, Inc. and Jong S. Whang, dated February 9, 2012*	10-Q	000-11412	10.1	February 9, 2012	

10.4	Amendment, dated as of July 1, 2012, to the Second Amended and Restated Employment Agreement between Amtech Systems, Inc. and Jong S. Whang, dated as of February 9, 2012*	10-Q	000-11412	10.2	August 9, 2012	
10.5	Second Amendment, dated June 28, 2013, to the Second Amended and Restated Employment Agreement between Amtech Systems, Inc. and Jong S. Whang, dated as of February 9, 2012*	10-Q	000-11412	10.15	August 8, 2013	
10.6	Fourth Amendment to Employment Agreement between Amtech Systems, Inc. and Jong S. Whang, dated April 9, 2015*	8-K	000-11412	10.1	April 10, 2015	
10.7	Fifth Amendment to Employment Agreement, dated November 19, 2015, by and between the Company and Jong S. Whang*	8-K	000-11412	10.1	November 19, 2015	
10.8	Amtech Systems, Inc. 2022 Equity Incentive Plan*	S-8	333-263875	99.1	March 25, 2022	
10.9	Jong S. Whang Separation Agreement*					X
21.1	Subsidiaries of the Registrant					X
23.1	Consent of Independent Registered Public Accounting Firm - Grant Thornton LLP					X
23.2	Consent of Independent Registered Public Accounting Firm - Mayer Hoffman McCann P.C.					X
24	Powers of Attorney					X
31.1	Certification Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as Amended					X
31.2	Certification Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as Amended					X
32.1	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X
32.2	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X

101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document	X
	Inline XBRL Taxonomy Extension	X
101.SCH	Schema Document	
	Inline Taxonomy Presentation Linkbase	X
101.PRE	Document	
	Inline XBRL Taxonomy Calculation	X
101.CAL	Linkbase Document	
	Inline XBRL Taxonomy Label	X
101.LAB	Linkbase Document	
	Inline XBRL Taxonomy Extension	X
101.DEF	Definition Linkbase Document	
104	The cover page for the Company's Annual Report on Form 10-K for the year ended September 30, 2021, has been formatted in Inline XBRL	X

* Indicates management contract or compensatory plan.

SIGNATURES

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

AMTECH SYSTEMS, INC.

November 30, 2022

By: /s/ Lisa D. Gibbs
Lisa D. Gibbs, Vice President, Chief Financial Officer and Director
(Principal Financial Officer and Duly Authorized Officer)

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

SIGNATURE	TITLE	DATE
*	Chief Executive Officer and Director	November 30, 2022
Michael Whang	(Principal Executive Officer)	
/s/ Lisa D. Gibbs	Vice President, Chief Financial Officer and Director	November 30, 2022
Lisa D. Gibbs	(Principal Financial Officer and Principal Accounting Officer)	
*	Chairman of the Board	November 30, 2022
Robert C. Daigle		
*	Director	November 30, 2022
Robert M. Averick		
*	Director	November 30, 2022
Michael Garnreiter		
*	Director	November 30, 2022
Sukesh Mohan		
*	Director	November 30, 2022
Jong S. Whang		

*By: /s/ Lisa D. Gibbs
Lisa D. Gibbs, Attorney-In-Fact**

** By authority of the power of attorney filed as Exhibit 24 hereto.

Exhibit 31.1

AMTECH SYSTEMS, INC. AND ITS SUBSIDIARIES
CERTIFICATION PURSUANT TO RULE 13a-14(a)/15d-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

I, Michael Whang, certify that:

1. I have reviewed this Annual Report on Form 10-K of Amtech Systems, Inc. (the "registrant");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

By /s/ Michael Whang
Michael Whang
Chief Executive Officer
Amtech Systems, Inc.
Date: November 30, 2022

Exhibit 31.2

AMTECH SYSTEMS, INC. AND ITS SUBSIDIARIES
CERTIFICATION PURSUANT TO RULE 13a-14(a)/15d-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

I, Lisa D. Gibbs, certify that:

1. I have reviewed this Annual Report on Form 10-K of Amtech Systems, Inc. (the "registrant"),

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

By /s/ Lisa D. Gibbs
Lisa D. Gibbs
Vice President and Chief Financial Officer
Amtech Systems, Inc.
Date: November 30, 2022

Exhibit 31.2

AMTECH SYSTEMS, INC. AND ITS SUBSIDIARIES

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Amtech Systems, Inc. (the "Company") on Form 10-K for the period ended September 30, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Michael Whang, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

By /s/ Michael Whang
Michael Whang
Chief Executive Officer
Date: November 30, 2022

Exhibit 32.2

AMTECH SYSTEMS, INC. AND ITS SUBSIDIARIES

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Amtech Systems, Inc. (the "Company") on Form 10-K for the period ended September 30, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Lisa D. Gibbs, Vice President & Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

By /s/ Lisa D. Gibbs
Lisa D. Gibbs
Vice President and Chief Financial Officer
Amtech Systems, Inc.
Date: November 30, 2022

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EXECUTIVE OFFICERS AND DIRECTORS

Michael Whang
President, Chief Executive Officer, and Director

Lisa D. Gibbs
Vice President, Chief Financial Officer, and Director

Robert C. Daigle
Chairman of the Board

Robert M. Averick
Director

Michael Garnreiter
Director

Michael M. Ludwig
Director

Sukesh Mohan
Director

CORPORATE INFORMATION

Corporate Offices
131 South Clark Drive
Tempe, Arizona 85288
(480) 967-5146
E-mail: corporate@amtechsystems.com
Website: www.amtechgroup.com

TRANSFER AGENT & REGISTRAR

Computershare Investor Services
P.O. Box 505005
Louisville, Kentucky 40233-5005
(800) 962-4284
Website: www.computershare.com/investor

LEGAL COUNSEL

DLA Piper LLP (US)
2525 East Camelback Road, Suite 1000
Phoenix, Arizona 85016
(480) 606-5100

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Grant Thornton LLP
2555 East Camelback Road, Suite 500
Phoenix, Arizona 85016
(602) 474-3400

STOCK MARKET INFORMATION

Listed on NASDAQ Global Market
Common Stock Symbol: ASYS
Website: www.nasdaq.com

SUBSIDIARIES

Bruce Technologies, Inc.
North Billerica, Massachusetts

BTU International, Inc.
North Billerica, Massachusetts
Shanghai, China
Ashvale, Surrey, United Kingdom
Penang, Malaysia

Entrepix, Inc.
Phoenix, Arizona

Intersurface Dynamics, Inc.
Bethel, Connecticut

PR Hoffman Machine Products, Inc.
Carlisle, Pennsylvania

amtechgroup.com

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Tempe, Arizona 85288 USA
480.967.5146