

AMTECH SYSTEMS INC

Form 424B3

December 23, 2014

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Registration No. 333-200558

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Proxy Statement

Prospectus

MERGER PROPOSED YOUR VOTE IS VERY IMPORTANT

Dear Stockholder:

On October 21, 2014, BTU International, Inc., or BTU, and Amtech Systems, Inc., or Amtech, entered into an Agreement and Plan of Merger (which we refer to as the merger agreement). Under the merger agreement, BTU Merger Sub, Inc., or Merger Sub, will merge with and into BTU with BTU surviving as a wholly owned subsidiary of Amtech (which we refer to as the merger).

In the merger, each share of BTU common stock (except for specified shares of BTU common stock held by BTU or Amtech) will be converted into the right to receive 0.3291 shares of Amtech common stock (which we refer to as the exchange ratio). Although the number of shares of Amtech common stock that BTU stockholders will receive is fixed, the market value of the merger consideration will fluctuate with the market price of Amtech common stock and will not be known at the time BTU stockholders vote on the merger. Based on the closing price of Amtech's common stock on the NASDAQ STOCK MARKET, or NASDAQ, on October 21, 2014, the last trading day before public announcement of the merger, the 0.3291 exchange ratio represented approximately \$3.33 in value for each share of BTU common stock. **We urge you to obtain current market quotations for Amtech (trading symbol ASYS) and BTU (trading symbol BTUI).**

Based on the current number of shares of BTU common stock outstanding and certain stock awards reserved for issuance under employee benefit plans, Amtech expects to issue up to a maximum of 3,647,301 shares of Amtech common stock to BTU stockholders in the aggregate upon completion of the merger. However, any increase or decrease in the number of shares of BTU common stock outstanding prior to the completion of the merger could cause the actual number of shares issued upon completion of the merger to change.

Amtech will hold a special meeting of its stockholders and BTU will hold a special meeting of its stockholders in connection with the merger. Amtech stockholders will be asked to vote to adopt the merger agreement and approve related matters as described in the attached proxy statement/prospectus. BTU stockholders will be asked to vote to adopt the merger agreement and approve related matters as described in the attached proxy statement/prospectus. Adoption of the merger agreement requires the affirmative vote of the holders of a majority of the outstanding shares of Amtech common stock entitled to vote and the affirmative vote of the holders of two-thirds of the outstanding shares of BTU common stock entitled to vote.

The special meeting of Amtech stockholders will be held on January 29, 2015 at The Tempe Mission Palms Hotel, 60 East 5th Street, Tempe, Arizona, USA, at 9:00 a.m. local time. The special meeting of BTU stockholders will be held on January 29, 2015 at 23 Esquire Road, North Billerica, MA 01862, at 10:00 a.m. local time.

Amtech's board of directors unanimously recommends that Amtech stockholders vote FOR the adoption of the merger agreement and FOR the other matters to be considered at the Amtech special meeting.

BTU's board of directors unanimously recommends that BTU stockholders vote FOR the adoption of the merger agreement and FOR the other matters to be considered at the BTU special meeting.

This joint proxy statement/prospectus describes the special meeting of Amtech, the special meeting of BTU, the merger, the documents related to the merger and other related matters. **Please carefully read this entire joint proxy statement/prospectus, including Risk Factors, beginning on page 29, for a discussion of the risks relating to the proposed merger.** You also can obtain information about Amtech and BTU from documents that each has filed with the Securities and Exchange Commission.

Jong S. Whang

Executive Chairman

Amtech Systems, Inc.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the securities to be issued in the merger or passed upon the adequacy or accuracy of this joint proxy statement/prospectus. Any representation to the contrary is a criminal offense.

The date of the accompanying joint proxy statement/prospectus is December 23, 2014, and it is first being mailed or otherwise delivered to the stockholders of Amtech and BTU on or about December 30, 2014.

Paul J. van der Wansem

Chairman, President and Chief Executive Officer

BTU International, Inc.

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NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

To the Stockholders of Amtech Systems, Inc.:

Amtech Systems, Inc. will hold a special meeting of stockholders at 9:00 a.m. local time, on January 29, 2015, at The Tempe Mission Palms Hotel, 60 East 5th Street, Tempe, Arizona, USA to consider and vote upon the following matters:

a proposal to adopt the Agreement and Plan of Merger, dated as of October 21, 2014, by and among Amtech Systems, Inc., BTU Merger Sub, Inc., and BTU International, Inc., pursuant to which Merger Sub will merge with and into BTU with BTU surviving as a wholly owned subsidiary of Amtech (which we refer to as the Amtech merger proposal), as more fully described in the attached joint proxy statement/prospectus;

a proposal to adjourn the Amtech special meeting, if necessary or appropriate, to solicit additional proxies in favor of the Amtech merger proposal (which we refer to as the Amtech adjournment proposal); and

to transact such other business as may properly come before the meeting or any adjournment thereof.

We have fixed the close of business on December 16, 2014 as the record date for the special meeting. Only Amtech common stockholders of record at that time are entitled to notice of, and to vote at, the Amtech special meeting, or any adjournment or postponement of the Amtech special meeting. Approval of the Amtech merger proposal requires the affirmative vote of holders of a majority of the outstanding shares of Amtech common stock entitled to vote. The Amtech adjournment proposal will be approved if a majority of the votes cast at the Amtech special meeting are voted in favor of the adjournment proposal.

IMPORTANT

Amtech's board of directors has unanimously approved the merger agreement and has determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and in the best interests of Amtech and its stockholders, and unanimously recommends that Amtech stockholders vote FOR the Amtech merger proposal, FOR the Amtech adjournment proposal, and FOR the other matters to be considered at the special meeting.

Your vote is very important. We cannot complete the merger unless Amtech's stockholders adopt the merger agreement.

We urge you to sign, date, and send in the enclosed proxy at your earliest convenience, or to vote via the toll-free telephone number or via the Internet as instructed on the proxy card, whether or not you expect to be present at the meeting. Sending in your proxy or voting by telephone or on the Internet will not prevent you from voting your shares personally at the meeting, since you may revoke your proxy at any time before it is voted.

Regardless of whether you plan to attend the Amtech special meeting, please vote as soon as possible. If you hold stock in your name as a stockholder of record of Amtech, please complete, sign, date and return the accompanying proxy card in the enclosed postage-paid return envelope. If you hold your stock in street name through a bank or broker, please follow the instructions on the voting instruction card furnished by the record holder.

The enclosed joint proxy statement/prospectus provides a detailed description of the special meeting, the merger, the documents related to the merger and other matters to be considered at the Amtech special meeting. We urge you to read the joint proxy statement/prospectus, including any documents incorporated in the joint proxy statement/prospectus by reference, and its annexes carefully and in their entirety.

**BY ORDER OF THE BOARD OF
DIRECTORS,**

Jong S. Whang

Executive Chairman

December 23, 2014

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NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

To the Stockholders of BTU International, Inc.:

BTU International, Inc. will hold a special meeting of stockholders at 10:00 a.m local time, on January 29, 2015, at 23 Esquire Road, North Billerica, MA 01862 to consider and vote upon the following matters:

a proposal to adopt the Agreement and Plan of Merger, dated as of October 21, 2014, by and between Amtech Systems, Inc., BTU Merger Sub, Inc. and BTU International, Inc., pursuant to which Merger Sub will merge with and into BTU with BTU surviving as a wholly owned subsidiary of Amtech, as more fully described in the attached joint proxy statement/prospectus (which we refer to as the BTU merger proposal);

a proposal to adjourn the BTU special meeting, if necessary or appropriate, to solicit additional proxies in favor of the BTU merger proposal (which we refer to as the BTU adjournment proposal);

a proposal to approve, on an advisory (non-binding) basis, the compensation that certain executive officers of BTU may receive in connection with the merger pursuant to existing agreements or arrangements with BTU (which we refer to as the BTU merger-related compensation proposal); and

to transact such other business as may properly come before the meeting or any adjournment thereof.

We have fixed the close of business on December 16, 2014 as the record date for the special meeting. Only BTU common stockholders of record at that time are entitled to notice of, and to vote at, the BTU special meeting, or any adjournment or postponement of the BTU special meeting. Approval of the BTU merger proposal requires the affirmative vote of holders of at least two-thirds of the outstanding shares of BTU common stock entitled to vote. The BTU adjournment proposal will be approved if a majority of the votes cast at the BTU special meeting are voted in favor of the adjournment proposal. The BTU merger-related compensation proposal will be approved if a majority of the votes cast at the BTU special meeting are voted in favor of the BTU merger-related compensation proposal; however, such vote is advisory (non-binding) only.

BTU's board of directors has unanimously approved the merger agreement, has determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and in the best interests of BTU and its stockholders, and unanimously recommends that BTU stockholders vote FOR the BTU merger proposal, FOR the BTU adjournment proposal, and FOR the BTU merger-related compensation proposal.

Your vote is very important. We cannot complete the merger unless BTU's common stockholders adopt the merger agreement.

We urge you to sign, date, and send in the enclosed proxy at your earliest convenience, or to vote via the toll-free telephone number or via the Internet as instructed on the proxy card, whether or not you expect to be present at the meeting. Sending in your proxy or voting by telephone or on the Internet will not prevent you from voting your shares personally at the meeting, since you may revoke your proxy at any time before it is

voted.

Regardless of whether you plan to attend the BTU special meeting, please vote as soon as possible. If you hold stock in your name as a stockholder of record of BTU, please complete, sign, date and return the accompanying proxy card in the enclosed postage-paid return envelope. If you hold your stock in street name through a bank or broker, please follow the instructions on the voting instruction card furnished by the record holder.

The enclosed joint proxy statement/prospectus provides a detailed description of the special meeting, the merger, the documents related to the merger and other related matters. We urge you to read the joint proxy statement/prospectus, including any documents incorporated in the joint proxy statement/prospectus by reference, and its annexes carefully and in their entirety.

**BY ORDER OF THE BOARD OF
DIRECTORS,**

Paul J. van der Wansem
*Chairman, President and Chief Executive
Officer*

December 23, 2014

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REFERENCES TO ADDITIONAL INFORMATION

This joint proxy statement/prospectus incorporates important business and financial information about Amtech from documents filed with the Securities and Exchange Commission, or the SEC, that are not included in or delivered with this joint proxy statement/prospectus. You can obtain any of the documents filed with or furnished to the SEC by Amtech at no cost from the SEC's website at <http://www.sec.gov>. You may also request copies of these documents, including documents incorporated by reference in this joint proxy statement/prospectus, at no cost by contacting Amtech at the following address:

Amtech Systems, Inc.

131 South Clark Drive

Tempe, Arizona 85281

Attention: Investor Relations

Telephone: (480) 967-5146

You will not be charged for any of these documents that you request. To obtain timely delivery of these documents, you must request them no later than five business days before the date of your meeting. This means that Amtech stockholders requesting documents must do so by January 22, 2015, in order to receive them before the Amtech special meeting.

This joint proxy statement/prospectus references important business and financial information about BTU from documents filed with the Securities and Exchange Commission, or the SEC, that are not included in or delivered with this joint proxy statement/prospectus. You can obtain any of the documents filed with or furnished to the SEC by BTU at no cost from the SEC's website at <http://www.sec.gov>. You may also request copies of these documents at no cost by contacting BTU at the following address:

BTU International, Inc.

23 Esquire Road

North Billerica, MA 01862

Attention: Investor Relations

Telephone: (978) 667-4111

You will not be charged for any of these documents that you request. To obtain timely delivery of these documents, you must request them no later than five business days before the date of your meeting. This means that BTU stockholders requesting documents must do so by January 22, 2015, in order to receive them before the BTU special meeting.

You should rely only on the information contained in, or incorporated by reference by Amtech into, this document. No one has been authorized to provide you with information that is different from that contained in, or incorporated by reference by Amtech into, this document. This document is dated December 23, 2014, and you should assume that the

information in this document is accurate only as of such date. You should assume that the information incorporated by reference by Amtech into this document is accurate as of the date of such document. Neither the mailing of this document to BTU stockholders or Amtech stockholders nor the issuance by Amtech of shares of Amtech common stock in connection with the merger will create any implication to the contrary.

This document does not constitute an offer to sell, or a solicitation of an offer to buy, any securities, or the solicitation of a proxy, in any jurisdiction to or from any person to whom it is unlawful to make any such offer or solicitation in such jurisdiction. Except where the context otherwise indicates, information contained in this document regarding BTU has been provided by BTU and information contained in this document regarding Amtech has been provided by Amtech.

See [Where You Can Find More Information](#) beginning on page 163 for more details.

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QUESTIONS AND ANSWERS

The following are some questions that you may have about the merger and the BTU special meeting or the Amtech special meeting and brief answers to those questions. We urge you to read carefully the remainder of this joint proxy statement/prospectus because the information in this section does not provide all of the information that might be important to you with respect to the merger and the BTU special meeting or the Amtech special meeting. Additional important information is also contained in the documents incorporated by reference into this joint proxy statement/prospectus. See **Where You Can Find More Information** beginning on page 163.

Unless the context otherwise requires, references in this joint proxy statement/prospectus to **Amtech** refer to Amtech Systems, Inc., an Arizona corporation, and its affiliates, and references to **BTU** refer to BTU International, Inc., a Delaware corporation, and its affiliates.

Q: What is the merger?

A: Amtech and BTU have entered into an Agreement and Plan of Merger, dated as of October 21, 2014 (which we refer to as the **merger agreement**).

Under the merger agreement, Merger Sub will be merged with and into BTU, with BTU surviving as a wholly owned subsidiary of Amtech. A copy of the merger agreement is included in this joint proxy statement/prospectus as Annex A.

The merger cannot be completed unless, among other things, both Amtech stockholders and BTU stockholders approve their respective proposals to adopt the merger agreement.

Q: Why am I receiving this joint proxy statement/prospectus?

A: We are delivering this document to you because it is a joint proxy statement being used by both the Amtech and BTU boards of directors to solicit proxies of their respective stockholders in connection with approval of the merger and related matters.

In order to approve the merger and related matters, Amtech has called a special meeting of its stockholders (which we refer to as the **Amtech special meeting**). This document serves as proxy statement for the Amtech special meeting and describes the proposals to be presented at the Amtech special meeting.

In order to approve the merger and related matters, BTU has called a special meeting of its stockholders (which we refer to as the **BTU special meeting**). This document serves as proxy statement for the BTU special meeting and describes the proposals to be presented at the BTU special meeting.

Finally, this document is also a prospectus that is being delivered to BTU stockholders because Amtech is offering shares of its common stock to BTU stockholders in connection with the merger.

This joint proxy statement/prospectus contains important information about the merger and the other proposals being voted on at the meetings. You should read it carefully and in its entirety. The enclosed materials allow you to have your shares voted by proxy without attending your meeting. Your vote is important. We encourage you to submit your proxy as soon as possible.

Q: In addition to the merger proposal, what else are BTU stockholders being asked to vote on?

A: In addition to the merger proposal, BTU is soliciting proxies from its stockholders with respect to two additional proposals; completion of the merger is not conditioned upon approval of these proposals:

a proposal to adjourn the BTU special meeting, if necessary or appropriate, to solicit additional proxies in favor of the BTU merger proposal; and

a proposal to approve, on an advisory (non-binding) basis, the compensation that certain executive officers of BTU may receive in connection with the merger pursuant to existing agreements or arrangements with BTU.

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Q: In addition to the merger proposal, what else are Amtech stockholders being asked to vote on?

A: In addition to the merger proposal, Amtech is soliciting proxies from its stockholders with respect to one additional proposal; completion of the merger is not conditioned upon approval of this proposal:

a proposal to adjourn the Amtech special meeting, if necessary or appropriate, to solicit additional proxies in favor of the Amtech merger proposal (which we refer to as the Amtech adjournment proposal).

Q: What will BTU stockholders receive in the merger?

A: If the merger is completed, BTU stockholders will receive 0.3291 shares of Amtech common stock (which we refer to as the exchange ratio) for each share of BTU common stock held immediately prior to the merger. Amtech will not issue any fractional shares of Amtech common stock in the merger. BTU stockholders who would otherwise be entitled to a fractional share of Amtech common stock upon the completion of the merger will instead receive, in lieu thereof, one whole share of Amtech common stock.

Q: What will Amtech stockholders receive in the merger?

A: If the merger is completed, Amtech stockholders will not receive any merger consideration and will continue to hold the shares of Amtech common stock that they currently hold. Following the merger, shares of Amtech common stock will continue to be traded on NASDAQ.

Q: How will the merger affect BTU equity awards?

A: The BTU equity awards will be affected as follows:

Restricted Stock: Each restricted stock unit relating to BTU common stock granted to any employee or director of BTU, any of its subsidiaries or any of its predecessors under any BTU stock plan that is outstanding immediately prior to the effective time of the merger shall, by virtue of the merger and without any action on the part of the holder thereof, become a fully vested and unrestricted share of BTU common stock immediately prior to the effective time of the merger.

Stock Options: Each outstanding option to purchase shares of BTU common stock will be converted into an option to purchase Amtech common stock on the same terms and conditions as were applicable prior to the merger (taking into account any acceleration or vesting by reason of the consummation of the merger and its related transactions), except that (i) the number of shares of Amtech common stock subject to the new option will be equal to the product of (A) the number of shares of BTU common stock subject to the existing option and (B) the exchange ratio (rounding fractional shares down to the nearest whole share), and (ii) the exercise price per share of Amtech common stock under the new option will be equal to the exercise price per share of BTU common stock of the existing option divided by the exchange ratio (rounded up to the nearest whole cent).

Q: Will the value of the merger consideration change between the date of this joint proxy statement/prospectus and the time the merger is completed?

A: Although the number of shares of Amtech common stock that BTU stockholders will receive is fixed through the exchange ratio, the value of the merger consideration will fluctuate between the date of this joint proxy statement/prospectus and the completion of the merger based upon the market value for Amtech common stock. Any fluctuation in the market price of Amtech common stock after the date of this joint proxy statement/prospectus will change the value of the shares of Amtech common stock that BTU stockholders will receive.

Q: How does BTU's board of directors recommend that I vote at the special meeting?

A: BTU's board of directors unanimously recommends that you vote **FOR** the BTU merger proposal, **FOR** the BTU adjournment proposal, and **FOR** the BTU merger-related compensation proposal.

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Q: How does Amtech's board of directors recommend that I vote at the special meeting?

A: Amtech's board of directors unanimously recommends that you vote **FOR** the Amtech merger proposal and **FOR** the Amtech adjournment proposal.

Q: When and where are the meetings?

A: The BTU special meeting will be held at 23 Esquire Road, North Billerica, MA 01862 on January 29, 2015, at 10:00 a.m. local time.

The Amtech special meeting will be held at The Tempe Mission Palms Hotel, 60 East 5th Street, Tempe, Arizona, USA on January 29, 2015, at 9:00 a.m. local time.

Q: What do I need to do now?

A: After you have carefully read this joint proxy statement/prospectus and have decided how you wish to vote your shares, please vote your shares promptly so that your shares are represented and voted at the Amtech special meeting or BTU special meeting, as applicable. If you hold your shares in your name as a stockholder of record, you must complete, sign, date and mail your proxy card in the enclosed postage-paid return envelope as soon as possible. Alternatively, you may vote through the internet or by telephone. Information and applicable deadlines for voting through the internet or by telephone are set forth in the enclosed proxy card instructions. If you hold your shares in street name through a bank or broker, you must direct your bank or broker how to vote in accordance with the instructions you have received from your bank or broker. Street name stockholders who wish to vote in person at the special meeting or special meeting will need to obtain a legal proxy from the institution that holds their shares.

Q: What constitutes a quorum for the BTU special meeting?

A: The presence at the BTU special meeting, in person or by proxy, of holders of a majority of the issued and outstanding shares of BTU common stock entitled to vote at the special meeting will constitute a quorum for the transaction of business. Abstentions and broker non-votes, if any, will be included in determining the number of shares present at the meeting for the purpose of determining the presence of a quorum.

Q: What constitutes a quorum for the Amtech special meeting?

A: The presence at the Amtech special meeting, in person or by proxy, of holders of a majority of the outstanding shares of Amtech common stock entitled to vote at the special meeting will constitute a quorum for the transaction of business. Abstentions and broker non-votes, if any, will be included in determining the number of shares present at the meeting for the purpose of determining the presence of a quorum.

Q: What is the vote required to approve each proposal?

A: *BTU merger proposal:*

Standard: Approval of the BTU merger proposal requires the affirmative vote of the holders of at least two-thirds of the outstanding shares of BTU common stock entitled to vote on the proposal.

Effect of abstentions and broker non-votes: If you fail to vote, mark **ABSTAIN** on your proxy or fail to instruct your bank or broker with respect to the BTU merger proposal, it will have the same effect as a vote **AGAINST** the proposal.

BTU adjournment proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the BTU special meeting and entitled to vote on such proposal, whether or not a quorum is present.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU adjournment proposal or the BTU merger-related compensation proposal, it will have no effect on such proposals.

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BTU merger-related compensation proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the BTU special meeting and entitled to vote on such proposal.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU adjournment proposal or the BTU merger-related compensation proposal, it will have no effect on such proposals.

Although BTU is submitting the merger-related compensation proposal for consideration and approval, the approval of such proposal pursuant to the standard set forth above is not a condition to completion of the merger, and the vote with respect to such proposal is advisory only and will not be binding on Amtech or BTU. If the merger is completed, the merger-related compensation may be paid to BTU's named executive officers to the extent payable in accordance with the terms of the compensation agreements and arrangements even if BTU stockholders fail to approve the advisory vote regarding merger-related compensation.

Q: What is the vote required to approve each proposal at the Amtech special meeting?

A: Amtech merger proposal:

Standard: Approval of the Amtech merger proposal requires the affirmative vote of the holders of at least a majority of the outstanding shares of Amtech common stock entitled to vote on the proposal.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the Amtech special meeting or fail to instruct your bank or broker how to vote with respect to the Amtech merger proposal, it will have the same effect as a vote **AGAINST** the proposal.

Amtech adjournment proposal:

Standard: The Amtech adjournment proposal will be approved if a majority of the votes cast (in person or by proxy) at the Amtech special meeting, and entitled to vote on such proposal, are voted in favor of the Amtech adjournment proposal.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the Amtech special meeting or fail to instruct your bank or broker how to vote with respect to the Amtech adjournment proposal, it will have no effect on such proposal.

Q: What impact will my vote have on the amounts that certain executive officers of BTU may receive in connection with the merger?

A: Certain of BTU's executive officers are entitled, pursuant to the terms of their compensation arrangements, to receive certain payments in connection with the merger. If the merger is completed, BTU is contractually obligated to make these payments to these executives under certain circumstances. Accordingly, even if the BTU stockholders vote not to approve these payments, the compensation will be payable, subject to the terms and conditions of the arrangements. BTU is seeking your approval of these payments, on an advisory (non-binding) basis, in order to comply with the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and related SEC rules.

Q: Why is my vote important?

A: If you do not vote, it will be more difficult for Amtech or BTU to obtain the necessary quorum to hold their special meetings. In addition, your failure to submit a proxy or vote in person, or failure to instruct your bank or broker how to vote, or abstention will have the same effect as a vote AGAINST adoption of the merger agreement. The merger agreement must be adopted by the affirmative vote of at least a majority of the outstanding shares of Amtech common stock entitled to vote on the Amtech merger proposal and by the affirmative vote of at least two-thirds of the outstanding shares of BTU common stock entitled to vote on the BTU merger proposal. The Amtech board of directors and the BTU board of directors unanimously recommend that you vote FOR the Amtech merger proposal and the BTU merger proposal, respectively.

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Q: If my shares of common stock are held in street name by my bank or broker, will my bank or broker automatically vote my shares for me?

A: Amtech stockholders: No. Your bank or broker cannot vote your shares without instructions from you. You should instruct your bank or broker how to vote your shares in accordance with the instructions provided to you. Please check the voting form used by your bank or broker.

BTU stockholders: No. Your bank or broker cannot vote your shares without instructions from you. You should instruct your bank or broker how to vote your shares in accordance with the instructions provided to you. Please check the voting form used by your bank or broker.

Q: Can I attend the meeting and vote my shares in person?

A: Yes. All stockholders of Amtech and BTU, including stockholders of record and stockholders who hold their shares through banks, brokers, nominees or any other holder of record, are invited to attend their respective meetings. Holders of record of Amtech and BTU common stock can vote in person at the Amtech special meeting and BTU special meeting, respectively. If you are not a stockholder of record, you must obtain a proxy card, executed in your favor, from the record holder of your shares, such as a broker, bank or other nominee, to be able to vote in person at the meetings. If you plan to attend your meeting, you must hold your shares in your own name or have a letter from the record holder of your shares confirming your ownership. In addition, BTU stockholders who plan to attend the BTU special meeting must bring a government issued proof of identification that includes a photo in order to be admitted. Amtech and BTU reserve the right to refuse admittance to anyone without proper proof of share ownership or, in the case of BTU, without proper photo identification. The use of cameras, sound recording equipment, communications devices or any similar equipment during the Amtech special meeting or BTU special meeting is prohibited without Amtech's or BTU's express written consent, respectively.

Q: Can I change my vote?

A: Amtech stockholders: Yes. If you are a holder of record of Amtech common stock, you may revoke any proxy at any time before it is voted by (1) signing and returning a proxy card with a later date, (2) delivering a written revocation letter to Amtech's corporate secretary, (3) attending the special meeting in person, notifying the corporate secretary and voting by ballot at the special meeting, or (4) voting by telephone or the internet at a later time. Attendance at the special meeting will not automatically revoke your proxy. A revocation or later-dated proxy received by Amtech after the vote will not affect the vote. Amtech's corporate secretary's mailing address is: Corporate Secretary, Amtech Systems, Inc., 131 South Clark Drive, Tempe, Arizona 85281. If you hold your shares in street name through a bank or broker, you should contact your bank or broker to revoke your proxy.

BTU stockholders: Yes. If you are a holder of record of BTU common stock, you may revoke any proxy at any time before it is voted by (1) signing and returning a proxy card with a later date, (2) delivering a written revocation letter to BTU's corporate secretary, (3) attending the special meeting in person, notifying the corporate secretary and voting by ballot at the special meeting, or (4) voting by telephone or the internet at a later time. Attendance at the special meeting by itself will not automatically revoke your proxy. A revocation or later-dated proxy received by BTU after the vote will not affect the vote. BTU's corporate secretary's mailing address is: Secretary, BTU International, Inc., 23

Esquire Road, North Billerica, Massachusetts 01862. If you hold your shares in street name through a bank or broker, you should contact your bank or broker to revoke your proxy.

Q: Will Amtech be required to submit the proposal to adopt the merger agreement to its stockholders even if Amtech's board of directors has withdrawn, modified or qualified its recommendation?

A: Yes. Unless the merger agreement is terminated before the Amtech special meeting, Amtech is required to submit the proposal to adopt the merger agreement to its stockholders even if Amtech's board of directors has withdrawn or modified its recommendation.

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Q: Will BTU be required to submit the proposal to adopt the merger agreement to its stockholders even if BTU's board of directors has withdrawn, modified or qualified its recommendation?

A: Yes. Unless the merger agreement is terminated before the BTU special meeting, BTU is required to submit the proposal to adopt the merger agreement to its stockholders even if BTU's board of directors has withdrawn or modified its recommendation.

Q: What are the U.S. federal income tax consequences of the merger to BTU stockholders?

A: The merger is intended to qualify as a reorganization within the meaning of Section 368(a) of the Code, and holders of BTU common stock are not expected to recognize any gain or loss for U.S. federal income tax purposes on the exchange of shares of BTU common stock for shares of Amtech common stock in the merger.

For further information, see Material U.S. Federal Income Tax Consequences of the Merger beginning on page 147.

The U.S. federal income tax consequences described above may not apply to all holders of BTU common stock. Your tax consequences will depend on your individual situation. Accordingly, we strongly urge you to consult your independent tax advisor for a full understanding of the particular tax consequences of the merger to you.

Q: Are BTU stockholders entitled to dissenters' rights?

A: No, BTU stockholders are not expected to be entitled to dissenters' rights. For further information, see The Merger Dissenters' Rights in the Merger beginning on page 133.

Q: If I am a BTU stockholder, should I send in my BTU stock certificates now?

A: No. Please do not send in your BTU stock certificates with your proxy. After the merger, an exchange agent will send you instructions for exchanging BTU stock certificates for the merger consideration. See The Merger Agreement Conversion of Shares; Exchange of Certificates beginning on page 135.

Q: What should I do if I hold my shares of BTU common stock in book-entry form?

A: You are not required to take any special additional actions if your shares of BTU common stock are held in book-entry form. After the completion of the merger, shares of BTU common stock held in book-entry form automatically will be exchanged for the merger consideration.

Q: Whom may I contact if I cannot locate my BTU stock certificate(s)?

A: If you are unable to locate your original BTU stock certificate(s), you should contact Computershare, BTU's transfer agent, at (800) 962-4284.

Q: What should I do if I receive more than one set of voting materials?

A: Amtech stockholders and BTU stockholders may receive more than one set of voting materials, including multiple copies of this joint proxy statement/prospectus and multiple proxy cards or voting instruction cards. For example, if you hold shares of Amtech and/or BTU common stock in more than one brokerage account, you will receive a separate voting instruction card for each brokerage account in which you hold such shares. If you are a holder of record of Amtech common stock or BTU common stock and your shares are registered in more than one name, you will receive more than one proxy card. In addition, if you are a holder of both Amtech common stock and BTU common stock, you will receive one or more separate proxy cards or voting instruction cards for each company. Please complete, sign, date and return each proxy card and voting instruction card that you receive or otherwise follow the voting instructions set forth in this joint proxy statement/prospectus to ensure that you vote every share of Amtech common stock and/or BTU common stock that you own.

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Q: When do you expect to complete the merger?

A: Amtech and BTU expect to complete the merger in the first calendar quarter of 2015. However, neither Amtech nor BTU can assure you of when or if the merger will be completed. Amtech and BTU must first obtain the approval of Amtech stockholders and BTU stockholders for the merger, as well as satisfy certain other closing conditions.

Q: What happens if the merger is not completed?

A: If the merger is not completed, holders of BTU common stock will not receive any consideration for their shares in connection with the merger. Instead, BTU will remain an independent public company and its common stock will continue to be listed and traded on NASDAQ. In addition, if the merger agreement is terminated in certain circumstances, a termination fee or expense reimbursement fee may be required to be paid by either Amtech or BTU. See The Merger Agreement Termination Fee beginning on page 142 for a complete discussion of the circumstances under which termination fees will be required to be paid.

Q: Whom should I call with questions?

A: *Amtech stockholders:* If you have any questions concerning the merger or this joint proxy statement/prospectus, would like additional copies of this joint proxy statement/prospectus or need help voting your shares of Amtech common stock, please contact Amtech's proxy solicitor, Georgeson, Inc., at (866) 647-8872.

BTU stockholders: If you have any questions concerning the merger or this joint proxy statement/prospectus, would like additional copies of this joint proxy statement/prospectus or need help voting your shares of BTU common stock, please contact BTU's proxy solicitor, Georgeson, Inc., at (866) 821-2570.

Table of Contents**SUMMARY**

This summary highlights selected information from this joint proxy statement/prospectus. It may not contain all of the information that is important to you. We urge you to read carefully the entire joint proxy statement/prospectus, including the annexes, and the other documents to which we refer in order to fully understand the merger. See **Where You Can Find More Information beginning on page 163. Each item in this summary refers to the page of this joint proxy statement/prospectus on which that subject is discussed in more detail.**

In the Merger, BTU Common Stockholders Will Receive Shares of Amtech Common Stock (page 100)

Amtech and BTU are proposing a strategic merger. If the merger is completed, BTU common stockholders will receive 0.3291 shares of Amtech common stock for each share of BTU common stock they hold immediately prior to the merger. Amtech will not issue any fractional shares of Amtech common stock in the merger. BTU stockholders who would otherwise be entitled to a fraction of a share of Amtech common stock upon the completion of the merger will instead receive, in lieu thereof, one whole share of Amtech common stock. *For example, if you hold 100 shares of BTU common stock, you will receive 32 shares of Amtech common stock plus an additional whole share of Amtech common stock instead of the 0.91 shares of Amtech common stock that you otherwise would have received (100 shares \times 0.3291 = 32.91 shares).*

Amtech common stock is listed on NASDAQ under the symbol **ASYS**, and BTU common stock is listed on NASDAQ under the symbol **BTUI**. The following table shows the closing sale prices of Amtech common stock and BTU common stock as reported on NASDAQ on October 21, 2014, the last full trading day before the public announcement of the merger agreement, and on December 15, 2014, the last practicable trading day before the date of this joint proxy statement/prospectus. This table also shows the implied value of the merger consideration payable for each share of BTU common stock, which we calculated by multiplying the closing price of Amtech common stock on those dates by the exchange ratio of 0.3291.

	Amtech Common Stock	BTU Common Stock	Implied Value of One Share of BTU Common Stock
October 21, 2014	\$ 10.13	\$ 3.20	\$ 3.33
December 15, 2014	\$ 7.71	\$ 2.48	\$ 2.54

The merger agreement governs the merger. The merger agreement is included in this joint proxy statement/prospectus as Annex A. All descriptions in this summary and elsewhere in this joint proxy statement/prospectus of the terms and conditions of the merger are qualified by reference to the merger agreement. Please read the merger agreement carefully for a more complete understanding of the merger.

Amtech's Board of Directors Unanimously Recommends that Amtech Stockholders Vote FOR the Adoption of the Merger Agreement and the Other Proposals Presented at the Amtech Special Meeting (page 117)

Amtech's board of directors has determined that the merger, the merger agreement and the transactions contemplated by the merger agreement are advisable and in the best interests of Amtech and its stockholders and has unanimously approved the merger agreement. Amtech's board of directors unanimously recommends that Amtech stockholders vote **FOR** the adoption of the merger agreement and **FOR** the other proposals presented at the Amtech special meeting. For

the factors considered by Amtech's board of directors in reaching its decision to approve the merger agreement, see The Merger Amtech's Reasons for the Merger; Recommendation of Amtech's Board of Directors beginning on page 117.

BTU's Board of Directors Unanimously Recommends that BTU Stockholders Vote FOR the Adoption of the Merger Agreement and the Other Proposals Presented at the BTU Special Meeting (page 106)

BTU's board of directors has determined that the merger, the merger agreement and the transactions contemplated by the merger agreement are advisable and in the best interests of BTU and its stockholders and has unanimously approved the merger agreement. BTU's board of directors unanimously recommends that BTU stockholders vote FOR the adoption of the merger

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agreement and FOR the other proposals presented at the BTU special meeting. For the factors considered by BTU's board of directors in reaching its decision to approve the merger agreement, see The Merger BTU's Reasons for the Merger; Recommendation of BTU's Board of Directors beginning on page 106.

Opinion of Amtech's Financial Advisor (page 118 and Annex B)

Opinion of Stifel, Nicolaus & Company, Incorporated

In connection with its consideration of the merger, on October 20, 2014, the Amtech board of directors received from Stifel, Nicolaus & Company, Incorporated, Amtech's financial advisor (which we refer to as Stifel), its written opinion to the effect that, as of such date and subject to and based on the assumptions made, procedures followed, matters considered, limitations of the review undertaken and qualifications set forth in its opinion, the exchange ratio in the merger was fair, from a financial point of view, to the stockholders of Amtech. The full text of Stifel's written opinion is attached as Annex B to this joint proxy statement/prospectus. You should read the entire opinion for a discussion of, among other things, the assumptions made, procedures followed, matters considered and limitations on the review undertaken by Stifel in rendering its opinion. **Stifel provided its opinion to Amtech's board of directors (in its capacity as such) for the benefit and use of Amtech's board of directors in connection with and for purposes of its evaluation of the exchange ratio provided for in the merger from a financial point of view. Stifel's opinion does not address any other aspect of the merger and no opinion or view was expressed as to the relative merits of the merger in comparison to other strategies or transactions that might be available to Amtech or in which Amtech might engage or as to the underlying business decision of Amtech to proceed with or effect the merger. Stifel's opinion does not address any other aspect of the merger and does not constitute a recommendation to any stockholder as to how to vote or act in connection with the proposed merger or any related matter. Stifel's written opinion is addressed to the Amtech board of directors, is directed only to the exchange ratio in the merger and does not constitute a recommendation to any Amtech stockholder as to how such stockholder should vote with respect to the merger or any other matter.**

For further information, see The Merger Opinion of Stifel beginning on page 118.

Opinion of BTU's Financial Advisor (page 110 and Annex C)

Opinion of Needham & Company, LLC

In connection with the merger, the BTU board of directors received from Needham & Company, LLC (which we refer to as Needham & Company), BTU's financial advisor, its oral opinion, which opinion was confirmed by delivery of a written opinion, dated October 21, 2014, that, as of such date and based upon and subject to the assumptions and other matters described in the written opinion, the exchange ratio of 0.3291 pursuant to the merger agreement was fair, from a financial point of view, to the holders of BTU common stock (other than Amtech or BTU or any of their respective subsidiaries). **The complete text of Needham & Company's opinion, which sets forth the assumptions made, procedures followed, matters considered, and qualifications and limitations on and scope of the review undertaken by Needham & Company in connection with the opinion, is attached to this joint proxy statement/prospectus as Annex C and is incorporated by reference in this joint proxy statement/prospectus. Needham & Company provided its opinion to the BTU board of directors for the information and assistance of the BTU board of directors in connection with and for purposes of its evaluation of the transactions contemplated by the merger agreement. Needham & Company's opinion does not address any other aspect of the merger, or any related transaction, and does not constitute a recommendation to any stockholder of BTU as to how that stockholder should vote with respect to the merger or act upon any matter relating to the merger.**

For further information, see The Merger Opinion of Needham & Company beginning on page 110.

What Holders of BTU Stock Options and Other Equity-Based Awards Will Receive (page 135)

Stock Options. At the effective time of the merger, each outstanding option to purchase shares of BTU common stock will be converted into an option to purchase Amtech common stock on the same terms and conditions as were applicable prior to the merger (taking into account any acceleration or vesting by reason of the consummation of the merger and its related transactions),

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except that (i) the number of shares of Amtech common stock subject to the new option will be equal to the product of (A) the number of shares of BTU common stock subject to the existing option and (B) the exchange ratio (rounding fractional shares down to the nearest whole share), and (ii) the exercise price per share of Amtech common stock under the new option will be equal to the exercise price per share of BTU common stock of the existing option divided by the exchange ratio (rounded up to the nearest whole cent).

Restricted Stock. Each restricted stock unit relating to BTU common stock granted to any employee or director of BTU, any of its subsidiaries or any of its predecessors under any BTU stock plan that is outstanding immediately prior to the effective time of the merger shall, by virtue of the merger and without any action on the part of the holder thereof, become a fully vested and unrestricted share of BTU common stock immediately prior to the effective time of the merger.

Amtech Will Hold its Special Meeting on January 29, 2015 (page 44)

The special meeting of Amtech stockholders will be held on January 29, 2015, at 9:00 a.m. local time, at The Tempe Mission Palms Hotel, 60 East 5th Street, Tempe, Arizona, USA. At the special meeting, Amtech stockholders will be asked to:

approve the Amtech merger proposal; and

approve the Amtech adjournment proposal

Only holders of record at the close of business on December 16, 2014 will be entitled to vote at the special meeting. Each share of Amtech common stock is entitled to one vote on each proposal to be considered at the Amtech special meeting. As of the record date, there were 9,869,916 shares of Amtech common stock entitled to vote at the special meeting. As of the record date, the directors and executive officers of Amtech and their affiliates beneficially owned and were entitled to vote approximately 180,137 shares of Amtech common stock representing approximately 1.8% of the shares of Amtech common stock outstanding on that date.

BTU Will Hold its Special Meeting on January 29, 2015 (page 38)

The special meeting of BTU stockholders will be held on January 29, 2015, at 10:00 a.m. local time, at 23 Esquire Road, North Billerica, MA 01862. At the special meeting, BTU stockholders will be asked to:

approve the BTU merger proposal;

approve the BTU adjournment proposal; and

approve the BTU merger-related compensation proposal.

Only holders of record at the close of business on December 16, 2014 will be entitled to vote at the special meeting. Each share of BTU common stock is entitled to one vote on each proposal to be considered at the BTU special meeting. As of the record date, there were 9,591,671 shares of BTU common stock entitled to vote at the special

meeting. As of the record date, the directors and executive officers of BTU and their affiliates beneficially owned and were entitled to vote approximately 1,721,184 outstanding shares of BTU common stock representing approximately 17.9% of the shares of BTU common stock outstanding on that date.

Required Vote; Treatment of Abstentions and Failure to Vote (pages 39 and 45)

Amtech merger proposal:

Standard: The affirmative vote of a majority of the outstanding shares of Amtech common stock entitled to vote on the proposal.

Effect of abstentions and broker non-votes: If you mark ABSTAIN on your proxy card, fail to submit a proxy card or vote in person at the Amtech special meeting or fail to instruct your bank or broker how to vote with respect to the Amtech merger proposal, it will have the same effect as a vote AGAINST the proposal.

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Amtech adjournment proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the Amtech special meeting and entitled to vote on such proposals.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the Amtech special meeting or fail to instruct your bank or broker how to vote with respect to the Amtech adjournment proposal, it will have no effect on such proposal.

BTU merger proposal:

Standard: Approval of the BTU merger proposal requires the affirmative vote of the holders of at least two-thirds of the outstanding shares of BTU common stock entitled to vote on the proposal.

Effect of abstentions and broker non-votes: If you fail to vote, mark **ABSTAIN** on your proxy or fail to instruct your bank or broker with respect to the Amtech merger proposal, it will have the same effect as a vote **AGAINST** the proposal.

BTU adjournment proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the BTU special meeting and entitled to vote on such proposal, whether or not a quorum is present.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU adjournment proposal or the BTU merger-related compensation proposal, it will have no effect on such proposals.

BTU merger-related compensation proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the BTU special meeting and entitled to vote on such proposal.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU adjournment proposal or the BTU merger-related compensation proposal, it will have no effect on such proposals.

Although BTU is submitting the merger-related compensation proposal for consideration and approval, the approval of such proposal pursuant to the standard set forth above is not a condition to completion of the merger, and the vote

with respect to such proposal is advisory only and will not be binding on Amtech or BTU. If the merger is completed, the merger-related compensation may be paid to BTU's named executive officers to the extent payable in accordance with the terms of the compensation agreements and arrangements even if BTU stockholders fail to approve the advisory vote regarding merger-related compensation.

The Merger Will Be Tax-Free to Holders of BTU Common Stock as to the Shares of Amtech Common Stock They Receive (page 147)

The merger will be treated as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code, and it is a condition to the respective obligations of each of Amtech and BTU to complete the merger that it receives a legal opinion to that effect. Subject to the limitations and qualifications described in Material U.S. Federal Income Tax Consequences of the Merger, the merger generally will be tax-free to a holder of BTU common stock for U.S. federal income tax purposes as to the shares of Amtech common stock he or she receives in the merger.

For further information, see Material U.S. Federal Income Tax Consequences of the Merger beginning on page 147.

The U.S. federal income tax consequences described above may not apply to all holders of BTU common stock. Your tax consequences will depend on your individual situation. Accordingly, we strongly urge you to consult your independent tax advisor for a full understanding of the particular tax consequences of the merger to you.

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BTU's Officers and Directors Have Financial Interests in the Merger that Differ from Your Interests (page 126)

BTU stockholders should be aware that some of BTU's directors and executive officers have interests in the merger and have arrangements that are different from, or in addition to, those of BTU stockholders generally. BTU's board of directors were aware of these interests and considered these interests, among other matters, when making its decision to approve the merger agreement, and in recommending that BTU stockholders vote in favor of adopting the merger agreement.

These interests include the following:

Mr. van der Wansem has entered into a one-year employment agreement with Amtech, which will become effective if the merger is consummated. He has also entered into a two-year consulting agreement with Amtech, which will become effective following the completion of the employment agreement. Amtech has also agreed to nominate Mr. van der Wansem to its board of directors for a period of three years following the consummation of the merger.

Mr. Tallian, who is expected to continue employment with Amtech following the merger, has amended his employment agreement with BTU, which will become effective if the merger is consummated.

Messrs. van der Wansem, Tallian, and McCaffrey will receive, pursuant to their employment agreements with BTU, certain merger-related compensation if the merger is consummated.

For further information, see *The Merger Interests of BTU's Directors and Executive Officers in the Merger* beginning on page 126.

BTU Stockholders Are Not Expected To Be Entitled To Assert Dissenters' Rights (page 133)

Under the Delaware General Corporation Law (which we refer to as the *DGCL*), which is the law under which BTU is incorporated, the holders of BTU common stock will not be entitled to any appraisal rights or dissenters' rights in connection with the merger if, on the record date for the BTU special meeting, their shares are listed on a national securities exchange. BTU common stock is currently listed on NASDAQ, a national securities exchange, and is expected to continue to be so listed on the record date for the BTU special meeting. For more information, see *The Merger Dissenters' Rights in the Merger* beginning on page 133.

Conditions that Must Be Satisfied or Waived for the Merger To Occur (page 137)

Currently, Amtech and BTU expect to complete the merger in the first calendar quarter of 2015. As more fully described in this joint proxy statement/prospectus and in the merger agreement, the completion of the merger depends on a number of conditions being satisfied or, where legally permissible, waived. These conditions include (1) adoption of the merger agreement by Amtech's stockholders and by BTU's stockholders, (2) authorization for listing on NASDAQ of the shares of Amtech common stock to be issued in the merger, (3) effectiveness of the registration statement of which this joint proxy statement/prospectus is a part, (4) the absence of any order, injunction or other legal restraint preventing the completion of the merger or making the completion of the merger illegal, (5) subject to the materiality standards provided in the merger agreement, the accuracy of the representations and warranties of Amtech and BTU and no material adverse change with respect to the respective businesses having occurred,

(6) performance in all material respects by each of Amtech and BTU of its obligations under the merger agreement and (7) receipt by each of Amtech and BTU of an opinion from its counsel as to certain tax matters.

Neither Amtech nor BTU can be certain when, or if, the conditions to the merger will be satisfied or waived, or that the merger will be completed.

Termination of the Merger Agreement (page 142)

The merger agreement can be terminated at any time prior to completion of the merger in the following circumstances:

by mutual written consent of Amtech and BTU;

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by either the board of directors of Amtech or the board of directors of BTU if the merger has not been consummated on or before 120 days following the date this joint proxy statement/prospectus is filed with the SEC (the outside date), provided, that the party seeking to terminate the merger agreement has not materially breached any of its obligations in any manner that proximately causes or results in the failure of the merger to have been consummated by the outside date;

by either the board of directors of Amtech or the board of directors of BTU if any governmental entity shall have issued a final and nonappealable order permanently enjoining, restraining, or otherwise prohibiting the consummation of the transactions contemplated by the merger agreement, provided, however, that the right to terminate the merger agreement shall not be available to any party whose breach of any representation, warranty, covenant, or agreement set forth in the merger agreement is the cause of, or results in, the issuance, promulgation, enforcement or entry of any such order;

by either the board of directors of Amtech or the board of directors of BTU if the Amtech merger proposal shall not have been approved by the Amtech stockholders or the BTU merger proposal shall not have been approved by the BTU stockholders;

by Amtech, if BTU or the board of directors of BTU (A) (1) fails to recommend in this joint proxy statement/prospectus that the stockholders of BTU adopt the merger agreement, or withdraws, amends, modifies or materially qualifies such recommendation in a manner adverse to Amtech or Merger Sub, (2) recommends or endorses an alternative takeover proposal, (3) fails to recommend against acceptance of any tender offer or exchange offer for the shares of BTU common stock constituting a takeover proposal within ten business days after the commencement of such offer, (4) makes any public statement inconsistent with the BTU board recommendation in favor of the merger; or (5) resolves or agrees to take any of the foregoing actions; (B) permits BTU to enter into, or publicly announces its intention to enter into, any agreement or any contract relating to any takeover proposal; (C) fails to reaffirm (publicly, if requested by Amtech) its recommendation in favor of the merger within ten business days after the date any takeover proposal (or material modification thereto) is first publicly disclosed; (D) receives a tender offer or exchange offer for outstanding BTU common stock by a person unaffiliated with Amtech and does not send to its stockholders, within ten business days after such tender or exchange offer is first disclosed, a statement reaffirming the BTU board recommendation in favor of the merger with Amtech and recommending that BTU stockholders reject such tender or exchange offer; (E) publicly announces its intentions to do any of the foregoing; or (F) if BTU breaches any representation, warranty, covenant, or agreement such that the conditions to closing the merger would not be satisfied, and such breach is incapable of being cured by the outside date; provided, that Amtech gives BTU at least 30 days written notice prior to terminating the merger agreement, and provided, further, that Amtech cannot terminate the merger agreement if Amtech is then in material breach of any of its representations, warranties, covenants, or agreements; or

by BTU, if (A) prior to the receipt of the BTU stockholder approval, the BTU board of directors authorizes BTU to enter into any agreement or contract relating to a superior proposal; (B) Amtech or Merger Sub breaches any representation, warranty, covenant, or agreement such that the conditions to closing the merger would not be satisfied, and such breach is incapable of being cured by the outside date; provided, that BTU gives Amtech at least 30 days written notice prior to terminating the merger agreement, and provided, further, that BTU cannot terminate the merger agreement if BTU is then in material breach of any of its representations, warranties,

covenants, or agreements; or (C) Amtech fails to recommend in this joint proxy statement/prospectus that the stockholders of Amtech adopt the merger agreement, or withdraws, amends, modifies or materially qualifies such recommendation in a manner adverse to BTU, or makes any public statement inconsistent with the Amtech board recommendation in favor of the merger, or resolves or agrees to take any of the foregoing actions.

Termination Fee (page 142)

If the merger agreement is terminated under certain circumstances, including circumstances involving alternative acquisition proposals and changes in the recommendation of Amtech's or BTU's respective boards of directors, Amtech or BTU may be required to pay to the other party a termination fee equal to \$1,320,000. These termination fees could discourage other companies from seeking to acquire or merge with Amtech or BTU.

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Employment and Services Agreements (pages 145)

In connection with the execution of the merger agreement, Amtech entered into a one-year employment agreement with Mr. van der Wansem, to be effective as of and subject to the consummation of the merger, and a two-year consulting agreement with Mr. van der Wansem, which will become effective following the termination of the employment agreement. In addition, in connection with the execution of the merger agreement, Mr. Tallian entered into an amendment to his employment agreement, to be effective as of and subject to the consummation of the merger. Each agreement sets forth the terms and conditions of each individual's employment or consulting relationship following the consummation of the merger.

For more detail on the terms of these employment agreements or agreements for services, see "The Merger Interests of BTU's Directors and Officers in the Merger" beginning on page 126.

The Rights of BTU Stockholders Will Change as a Result of the Merger (page 151)

The rights of BTU stockholders will change as a result of the merger due to differences in Amtech's and BTU's governing documents and states of incorporation. The rights of BTU stockholders are governed by Delaware law and by BTU's certificate of incorporation and bylaws, each as amended to date. Upon the completion of the merger, BTU stockholders will become stockholders of Amtech and the rights of BTU stockholders will therefore be governed by Arizona law and Amtech's amended and restated articles of incorporation and amended and restated bylaws.

See "Comparison of Stockholders' Rights" beginning on page 151 for a description of the material differences in stockholders' rights under each of the Amtech and BTU governing documents.

Information About the Companies (page 48)

Amtech Systems, Inc.

Amtech Systems Inc. is an Arizona corporation that provides thermal processing systems, including related automation, parts and services for the solar / photovoltaic, semiconductor, silicon wafer and microelectromechanical systems industries and also offer PECVD (plasma-enhanced chemical vapor deposition) equipment to the solar industry. Amtech also produces 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. Current growth markets include LED lighting and mobile devices. Each of these market segments utilizes sapphire substrates manufactured using lapping and polishing technologies offered under Amtech's PR Hoffman brand name.

Amtech's stock is traded on NASDAQ under the symbol ASYS.

Amtech's principal office is located at 131 South Clark Drive Tempe, Arizona 85281. Additional information about Amtech and its subsidiaries is included in documents incorporated by reference in this joint proxy statement/prospectus. See "Where You Can Find More Information," beginning on page 163.

BTU International, Inc.

BTU International, Inc., which was founded in 1950, was incorporated as a Delaware corporation in 1981 and is headquartered in North Billerica, Massachusetts. BTU operates as a single business segment called Thermal Processing Capital Equipment. Its business consists of the designing, manufacturing, selling and servicing of thermal

processing equipment and related process controls for use in the electronics, alternative energy, automotive and other industries. This includes the supply of solder reflow systems used for surface mount applications in printed circuit board assembly. Thermal processing equipment is used in: low temperature curing/encapsulation; hybrid integrated circuit manufacturing; integrated circuit packaging and sealing; and processing multi-chip modules. In addition, the equipment is used for solar cell processing, sintering nuclear fuel for commercial power generation, as well as brazing and the sintering of ceramics and powdered metals, and the deposition of precise thin film coatings. BTU's customers are multinational original equipment manufacturers and contract manufacturing companies.

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BTU's stock is traded on NASDAQ under the symbol BTUI .

BTU's principal office is located at 23 Esquire Road, North Billerica, Massachusetts 01862 where BTU owns a 150,000 square foot facility. BTU also operates an approximately 45,000 square foot leased manufacturing, engineering, sales and service facility in Shanghai, China. In England, BTU leases a facility for their European and Near East sales and service operations. In the Asia Pacific region, they lease sales and service offices in Singapore and Malaysia. See *Where You Can Find More Information*, beginning on page 163.

Litigation Relating to the Merger (page 133)

On November 4, 2014, a putative stockholder class action complaint was filed, purportedly on behalf of BTU's public stockholders, in the Court of Chancery of the State of Delaware against BTU, members of the BTU Board, Amtech, and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by causing BTU to enter into the merger agreement and by approving the merger, and that Amtech and Merger Sub aided and abetted such alleged breaches of fiduciary duties. In addition, the complaint alleges that the merger agreement improperly favors Amtech and unduly restricts BTU's ability to negotiate with other potential bidders. The complaint generally seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting Amtech, Merger Sub, and BTU from consummating the Merger, other forms of equitable relief, and compensatory damages. Both Amtech and BTU believe that the claims are without merit and each intends to vigorously defend itself (and its directors) against the litigation.

On November 17, 2014, a separate putative stockholder class action complaint was filed, also purportedly on behalf of BTU's public stockholders, in the Court of Chancery of the State of Delaware against BTU, members of the BTU board, Amtech and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by failing to engage in a competitive sale and bidding process, and that Amtech and Merger Sub aided and abetted such alleged breaches of fiduciary duties. The complaint further alleges that these fiduciary breaches gave Amtech an unfair advantage on account of the BTU board's failing to solicit other potential acquirers. The complaint generally seeks, among other things, injunctive relief prohibiting the defendants from consummating the merger, compensatory damages for alleged breaches of fiduciary duties, and other forms of equitable relief. Both Amtech and BTU believe that the claims are without merit and each intends to vigorously defend itself (and its directors) against the litigation.

Risk Factors (page 29)

You should consider all the information contained in or incorporated by reference into this joint proxy statement/prospectus in deciding how to vote for the proposals presented in the joint proxy statement/prospectus. In particular, you should consider the factors described under *Risk Factors* beginning on page 29.

Table of Contents**SELECTED CONSOLIDATED HISTORICAL FINANCIAL DATA OF AMTECH**

The following selected consolidated financial information for the fiscal years ended September 30, 2010 through September 30, 2014 is derived from audited financial statements of Amtech. You should not assume the results of operations for any past periods indicate results for any future period. You should read this information in conjunction with Amtech's consolidated financial statements and related notes thereto included in Amtech's Annual Report on Form 10-K for the fiscal year ended September 30, 2014 which is incorporated by reference into this joint proxy statement/prospectus. See "Where You Can Find More Information" beginning on page 163.

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

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

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

Table of Contents**SELECTED CONSOLIDATED HISTORICAL FINANCIAL DATA OF BTU**

The following selected consolidated financial information for the calendar years ended December 31, 2009 through December 31, 2013 is derived from audited financial statements of BTU. The financial information as of September 28, 2014 and September 29, 2013 and for the nine months ended September 28, 2014 and September 29, 2013 are derived from unaudited financial statements and, in the opinion of BTU's management, reflects all adjustments, consisting only of normal recurring adjustments, necessary for a fair presentation of this data for those dates. The results of operations for the nine months ended September 28, 2014 are not necessarily indicative of the results that may be expected for the entire year ending December 31, 2014. You should not assume the results of operations for any past periods indicate results for any future period. You should read this information in conjunction with BTU's consolidated financial statements and related notes thereto for the years ended December 31, 2013, 2012 and 2011 and the nine months ended September 28, 2014 and September 29, 2013, included elsewhere in this joint proxy statement/prospectus.

	Years Ended December 31,						
	Nine Months Ended September 28, 2014	Nine Months Ended September 29, 2013	2013	2012	2011	2010	2009
(In thousands, except per share data)							
Consolidated Statement of Operations Data:							
Net sales	\$ 44,037	\$ 36,761	\$ 47,754	\$ 58,089	\$ 76,128	\$ 81,607	\$ 45,086
Cost of goods sold	26,925	25,103	33,048	41,617	47,542	47,851	32,706
Gross profit	17,112	11,658	14,706	16,472	28,586	33,756	12,380
Selling, general and administrative	14,622	15,237	19,786	20,965	22,721	23,063	18,957
Research, development and engineering	3,179	3,427	4,604	5,450	7,056	6,575	6,882
Restructuring				424	401		
Operating income (loss)	(689)	(7,006)	(9,684)	(10,367)	(1,592)	4,118	(13,459)
Interest income	26	36	53	63	77	81	236
Interest expense	(253)	(323)	(418)	(462)	(481)	(601)	(673)
Foreign exchange income (loss)	22	(147)	(193)	(224)	(139)	(33)	(278)
Other income (expense), net	10	63	65	58	365	(6)	44
Income (loss) before provision for income taxes	(884)	(7,377)	(10,177)	(10,932)	(1,770)	3,559	(14,130)
Provision for income taxes	308	1,083	1,291	65	952	1,378	435
Net income (loss)	\$ (1,192)	\$ (8,460)	\$ (11,468)	\$ (10,997)	\$ (2,722)	\$ 2,181	\$ (14,565)

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Income (loss) per share:

Basic	\$	(0.12)	\$	(0.89)	\$	(1.20)	\$	(1.16)	\$	(0.29)	\$	0.24	\$	(1.58)
Diluted	\$	(0.12)	\$	(0.89)	\$	(1.20)	\$	(1.16)	\$	(0.29)	\$	0.23	\$	(1.58)

Weighted average shares
outstanding:

Basic	9,564	9,536	9,539	9,509	9,434	9,277	9,222
Diluted	9,564	9,536	9,539	9,509	9,434	9,428	9,222

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	September		December 31,				
	28, 2014	September 29, 2013	2013	2012	2011	2010	2009
	(In thousands)						
Consolidated Balance Sheet Data:							
Cash and cash equivalents	\$ 10,428	\$ 16,672	\$ 13,991	\$ 20,218	\$ 18,948	\$ 22,753	\$ 25,397
Working capital	20,278	25,434	22,130	31,894	41,634	41,537	37,132
Total assets	39,255	42,262	40,330	48,669	56,718	67,645	58,794
Total liabilities	21,123	20,660	21,421	19,189	17,266	27,805	23,101
Stockholders' equity	18,132	21,602	18,909	29,480	39,452	39,840	35,693

Table of Contents**SELECTED UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL DATA**

The following table shows selected unaudited pro forma condensed combined financial data of Amtech after giving effect to the merger with BTU. The selected unaudited pro forma condensed combined financial data assumes that the merger is accounted for under the acquisition method of accounting with Amtech treated as the acquirer. Under the acquisition method of accounting, the assets and liabilities of BTU, as of the effective date of the merger, will be recorded by Amtech at their respective estimated fair values and the excess of the merger consideration over the fair value of BTU's net assets will be allocated to goodwill.

The table sets forth the information as if the merger had become effective on October 1, 2013, with respect to operating data, and on September 30, 2014, with respect to balance sheet data. The selected unaudited pro forma condensed combined financial data has been derived from, and should be read in conjunction with, the unaudited pro forma condensed combined financial information, including the notes thereto, which is included in this joint proxy statement/prospectus under Unaudited Pro Forma Condensed Combined Financial Information.

The selected unaudited pro forma condensed combined financial data is presented for informational purposes only and does not necessarily indicate the financial results that would have been achieved had the merger been completed as of the dates indicated or that may be achieved in the future and should not be taken as representative of future consolidated results of operations or financial condition of Amtech. Furthermore, no effect has been given in the selected unaudited pro forma condensed combined financial data for synergies and potential cost savings, if any, that may be realized through the combination of the two companies or the costs that may be incurred in integrating their operations. Further, as explained in more detail in the notes accompanying the unaudited pro forma condensed combined financial data included under Unaudited Pro Forma Condensed Combined Financial Information, the pro forma allocation of purchase price reflected in the selected unaudited pro forma condensed combined financial information is subject to adjustment and may vary from the actual purchase price allocation that will be recorded at the time the merger is completed. Additionally, the adjustments made in the unaudited pro forma condensed financial information, which are described in those notes, are preliminary and may be revised.

	As of and for the year ended September 30, 2014	
Operating Data:		
Net revenue	\$	111,531
Gross profit		31,786
Operating loss		(15,223)
Net loss attributable to Amtech Systems, Inc.		(16,082)
Earnings (loss) per share attributable to Amtech Systems, Inc.:		
Basic loss per share	\$	(1.25)
Diluted loss per share	\$	(1.25)
Balance Sheet Data:		
Cash and cash equivalents	\$	37,795
Working capital		49,241
Total assets		146,128
Total liabilities		64,735
Total equity		81,393

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UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION

The following unaudited pro forma condensed combined financial information is based on and derived from the separate historical financial statements of Amtech and BTU, after giving effect to the proposed merger and gives effect to the assumptions and preliminary pro forma adjustments described in the accompanying notes to the unaudited pro forma condensed combined financial statements. The unaudited pro forma condensed combined balance sheet gives effect to the merger as if it had occurred on September 30, 2014. The unaudited pro forma condensed combined statement of operations gives effect to the merger as if it had occurred on October 1, 2013. The historical consolidated financial information has been adjusted to give effect to pro forma events that are directly attributable to the merger and factually supportable and, with respect to the unaudited pro forma condensed combined statement of operations, expected to have a continuing impact on the combined results.

Prior to entering into the definitive agreement, Amtech and BTU developed a reorganization plan to discontinue a product line and, as appropriate, align costs of production and operating expenses with expected revenue for product lines that are to be continued. Amtech and BTU expect to initially realize approximately \$4 to \$5 million in continuing, annual pre-tax cost savings from this plan, which management expects to be phased-in over a six to twelve month period following the merger. The estimated future savings are not reflected in the unaudited pro forma condensed combined statement of operations.

Amtech has a fiscal year that ends on September 30 while BTU has a fiscal year that ends on December 31. The unaudited pro forma condensed combined statement of operations for the year ended September 30, 2014 includes 1) Amtech's fiscal year ended September 30, 2014, and 2) BTU's twelve-month period ended September 28, 2014.

The unaudited pro forma condensed combined financial information was prepared using the acquisition method of accounting with Amtech considered the acquirer of BTU. Accordingly, consideration given by Amtech to complete the acquisition of BTU will be allocated to the assets and liabilities of BTU based upon their estimated fair values as of the date of completion of the merger. Any excess of the consideration over the fair value of assets acquired and liabilities assumed is allocated to goodwill. As of the date of this joint proxy statement/ prospectus, Amtech has not completed the detailed valuation studies necessary to arrive at the required estimates of the fair value of the BTU assets to be acquired and the liabilities to be assumed and the related allocations of purchase price, nor has it identified all adjustments necessary to conform BTU's accounting policies to Amtech's accounting policies. A final determination of the fair value of BTU's assets and liabilities will be based on the actual net tangible and intangible assets and liabilities of BTU that exist as of the date of completion of the merger and, therefore, cannot be made prior to the completion of the merger. Accordingly, the unaudited pro forma purchase price adjustments are preliminary and are subject to further adjustments as additional information becomes available and as additional analyses are performed, and such further adjustments may be material. The preliminary unaudited pro forma purchase price adjustments have been made solely for the purpose of providing the unaudited pro forma condensed combined financial information presented below. Amtech estimated the fair value of BTU's assets and liabilities based on discussions with BTU's management, preliminary valuation studies, due diligence and information presented in public filings.

The unaudited pro forma condensed combined financial information is provided for informational purposes only. The unaudited pro forma condensed combined financial information is not necessarily, and should not be assumed to be, an indication of the results that would have been achieved had the merger been completed as of the dates indicated or that may be achieved in the future and should not be taken as representative of future consolidated results of operations or financial condition of Amtech. Furthermore, no effect has been given in the unaudited pro forma condensed combined statement of operations for synergies and potential cost savings, if any, that may be realized through the combination of the two companies or the costs that may be incurred in integrating their operations.

The unaudited pro forma condensed combined financial information should be read in conjunction with:

The accompanying notes to the unaudited pro forma condensed combined financial statements;

Amtech's audited historical consolidated financial statements and accompanying notes as of and for the year ended September 30, 2014, included in Amtech's Annual Report on Form 10-K for the year ended September 30, 2014, and incorporated by reference in this joint proxy statement/prospectus;

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BTU s audited historical consolidated financial statements and accompanying notes as of and for the year ended December 31, 2013 included elsewhere in this joint proxy statement/prospectus;

BTU s unaudited historical consolidated financial statements and accompanying notes as of September 28, 2014 and for the nine months ended September 28, 2014 and September 29, 2013 included elsewhere in this joint proxy statement/prospectus;

Other information pertaining to Amtech and BTU incorporated by reference or included in this joint proxy statement/prospectus. See Selected Consolidated Historical Financial Data of Amtech and Selected Consolidated Historical Financial Data of BTU included elsewhere in this joint proxy statement/prospectus.

Table of Contents**UNAUDITED PRO FORMA CONDENSED COMBINED BALANCE SHEET****AS OF SEPTEMBER 30, 2014****(in thousands)**

	Historical Amtech	Historical BTU(2)	Pro Forma Adjustments	Pro Forma Combined
Assets				
Current assets:				
Cash and cash equivalents	\$ 27,367	\$ 10,428	\$	\$ 37,795
Restricted cash	2,380	249		2,629
Accounts receivable	15,776	12,578		28,354
Inventories	16,760	10,696	450 (a)	27,906
Deferred income taxes	1,060			1,060
Other	2,082	515		2,597
Total current assets	65,425	34,466	450	100,341
Property, plant, and equipment, net	9,752	2,624	9,676 (b)	22,052
Deferred income taxes long term	1,300			1,300
Intangible assets net	2,678		940 (c)	3,618
Goodwill	8,323		5,903 (c)	14,226
Other assets long term	2,426	2,165		4,591
Total Assets	\$ 89,904	\$ 39,255	\$ 16,969	\$ 146,128

Liabilities and Stockholders Equity

Current liabilities:				
Current portion of long-term debt	\$	\$ 380	\$	\$ 380
Accounts payable	6,003	7,418		13,421
Accrued compensation and related taxes	4,269	625	800 (g)	5,694
Accrued warranty expense	628	488		1,116
Deferred profit	6,908			6,908
Customer deposits	4,992	438		5,430
Other accrued liabilities	5,346	2,980	3,065 (g)	11,504
			113 (d)	
Income taxes payable	4,990	1,859	(202)(g)	6,647
Total current liabilities	33,136	14,188	3,776	51,100
Long-term debt, less current portion		6,935		6,935
Deferred income taxes long term			3,520 (d)	3,520
Income taxes payable long-term	3,180			3,180
Total Liabilities	36,316	21,123	7,296	64,735

Stockholders Equity:

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Preferred stock				
Common stock	98	109	(109)(e)	130
			32 (f)	
Additional paid-in capital, net of treasury stock	81,884	47,676	(47,676)(e)	113,320
			31,436 (f)	
Accumulated other comprehensive income	(5,790)	2,392	(2,392)(e)	(5,790)
Retained earnings (deficit)	(21,051)	(32,045)	32,045 (e)	(24,714)
			(3,663)(g)	
Total stockholders equity	55,141	18,132	9,673	82,946
Noncontrolling interest	(1,553)			(1,553)
Total equity	53,588	18,132	9,673	81,393
Total Liabilities and Stockholders Equity	\$ 89,904	\$ 39,255	\$ 16,969	\$ 146,128

See accompanying notes to unaudited pro forma condensed combined financial statements.

Table of Contents**UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENT OF OPERATIONS****FOR THE YEAR ENDED SEPTEMBER 30, 2014****(in thousands, except per share data)**

	Historical Amtech	Historical BTU	Pro Forma Adjustments	Pro Forma Combined
Revenues, net of returns and allowances	\$ 56,501	\$ 55,030	\$	\$ 111,531
Cost of sales	44,875	34,870		79,745
Gross profit	11,626	20,160		31,786
Selling, general, and administrative	18,424	19,171	(1,338)(h)	36,362
			105(i)	
Research, development and engineering	6,291	4,356		10,647
Operating income (loss)	(13,089)	(3,367)	1,233	(15,223)
Interest and other income (expense), net	40	(317)		(277)
Income (loss) before income taxes	(13,049)	(3,684)	1,233	(15,500)
Income tax provision (benefit)	1,240	516	68(j)	1,824
Net income (loss)	(14,289)	(4,200)	1,165	(17,324)
Add: net loss attributable to noncontrolling interest	1,242			1,242
Net income (loss) attributable to Amtech Systems, Inc.	\$ (13,047)	\$ (4,200)	\$ 1,165	\$ (16,082)
Loss per share				
Basic loss per share attributable to Amtech shareholders	\$ (1.34)			\$ (1.25)
Diluted loss per share attributable to Amtech shareholders	\$ (1.34)			\$ (1.25)
Weighted shares outstanding				
Basic	9,732		3,182(k)	12,914
Diluted	9,732		3,182(k)	12,914

See accompanying notes to unaudited pro forma condensed combined financial statements.

Table of Contents**NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED****FINANCIAL STATEMENTS****1. Description of the merger**

On October 21, 2014, Amtech, BTU and Merger Sub entered into the merger agreement, pursuant to which Amtech will acquire BTU, on the terms and subject to the conditions set forth in the merger agreement. The merger agreement has been approved by the Boards of Directors of both Amtech and BTU and is subject to approval of Amtech's and BTU's stockholders.

Subject to the terms and conditions set forth in the merger agreement, holders of outstanding shares of BTU common stock and holders of BTU restricted stock units will receive 0.3291 shares of Amtech common stock. All outstanding BTU stock options will be converted into options to purchase shares of Amtech common stock on substantially the same terms and conditions, with appropriate adjustments based upon the exchange ratio to the exercise price and the number of shares of Amtech common stock subject to such stock options.

2. Basis of Pro Forma Presentation

The unaudited pro forma condensed combined financial statements have been derived from the historical consolidated financial statements of Amtech and BTU. Certain financial information presented in the "Historical BTU" column in the unaudited pro forma condensed combined balance sheet has been reclassified to conform to the historical presentation in Amtech's consolidated balance sheet.

BTU's historical consolidated financial statements have a fiscal year ending on December 31. In order to derive the unaudited condensed consolidated statement of operations for the year ended September 30, 2014, Amtech utilized BTU's statements of operations for the year ended December 31, 2013 and the nine-month periods ended September 28, 2014 and September 29, 2013. The following is a reconciliation of how the historical consolidated financial statements were utilized to derive BTU's statement of operations for the twelve months ended September 28, 2014 used in the unaudited pro forma condensed combined statement of operations.

BTU**Historical statement of operations (in thousands, except per share data)**

	(1) Year Ended December 31, 2013	(2) Nine Months Ended September 29, 2013	(3) Nine months ended September 28, 2014	(1) - (2) + (3) Twelve Months Ended September 28, 2014
Net sales	\$ 47,754	\$ 36,761	\$ 44,037	\$ 55,030
Cost of sales	33,048	25,103	26,925	34,870

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Gross profit	14,706	11,658	17,112	20,160
Selling, general and administrative	19,786	15,237	14,622	19,171
Research, development and engineering	4,604	3,427	3,179	4,356
Operating loss	(9,684)	(7,006)	(689)	(3,367)
Interest income	53	36	26	43
Interest expense	(418)	(323)	(253)	(348)
Foreign exchange gain (loss)	(193)	(147)	22	(24)
Other income, net	65	63	10	12
Loss before provision for income taxes	(10,177)	(7,377)	(884)	(3,684)
Provision (benefit) for income taxes	1,291	1,083	308	516
Net loss	\$ (11,468)	\$ (8,460)	\$ (1,192)	\$ (4,200)
Loss per share, basic and diluted	\$ (1.20)	\$ (0.89)	\$ (0.12)	\$ (0.44)
Weighted average shares outstanding, basic and diluted	9,539	9,536	9,564	9,560

Table of Contents**3. Estimate of Merger Consideration and Merger Consideration Allocation**

Each share of BTU's common stock outstanding immediately prior to closing will be exchanged for 0.3291 of a share of Amtech common stock. Additionally, all outstanding restricted stock units will vest upon closing and be exchanged for 0.3291 of a share of Amtech common stock. The value of the merger consideration is subject to change based on changes in the market price of Amtech common stock prior to closing. An estimate of the merger consideration paid to BTU stockholders at closing is presented below (in thousands, except per share amounts):

BTU common shares outstanding at 9/28/14	9,574
BTU restricted stock units outstanding at 9/28/14	95
Total BTU common shares and restricted stock units eligible for exchange	9,669
Exchange ratio	0.3291
Amtech common shares to be issued	3,182
Amtech price per common share at 11/21/14	\$ 9.67
Consideration for BTU common shares and restricted stock units	\$ 30,770
Vested BTU stock options exchanged for Amtech stock options	698
Fair value of total consideration transferred	\$ 31,468

The merger is reflected in the unaudited pro forma condensed combined financial information as an acquisition of BTU by Amtech in accordance with Accounting Standards Codification Topic 805, Business Combinations, using the acquisition method of accounting. Under these accounting standards, the total estimated purchase price is calculated as described below; the assets acquired and the liabilities assumed have been measured at their estimated fair values. The fair value measurements utilize estimates based on key assumptions of the merger, including historical and current market data. The unaudited pro forma adjustments included herein are preliminary and will be revised at the time of the merger as additional information becomes available and as additional analyses are performed. The final purchase price allocation will be determined at the time that the merger is completed, and the final amounts recorded for the merger may differ materially from the information presented herein.

Under the acquisition method of accounting, the total estimated acquisition consideration is allocated to the acquired tangible and intangible assets and assumed liabilities of BTU based on their estimated fair values as of the acquisition date. Any excess of the acquisition consideration over the fair value of assets acquired and liabilities assumed is allocated to goodwill. The Company expects that such goodwill will not be deductible for tax purposes. For the purposes of the unaudited pro forma condensed combined financial statements, Amtech has made a preliminary allocation of the acquisition consideration as follows (in thousands):

Cash	\$ 10,428
Inventories	11,146
Other current assets	13,342
Property, plant, and equipment	12,300
Intangible assets	940

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Other long-term assets	2,165
Long-term debt	(7,315)
Accounts payable and accrued liabilities	(13,808)
Deferred tax liabilities	(3,633)
Fair value of assets acquired and liabilities assumed	25,565
Goodwill	5,903
Total preliminary acquisition consideration	\$ 31,468

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4. Reorganization Plan

Prior to entering into the merger agreement, Amtech and BTU developed a reorganization plan to discontinue a product line and, as appropriate, align costs of production and operating expenses with the expected revenue. Amtech and BTU expect to initially realize approximately \$4 to \$5 million in continuing, annual pre-tax cost savings from this plan, which management expects to be phased-in over six to twelve months. These estimated savings are not reflected in the unaudited pro forma condensed combined financial statements.

BTU is implementing a restructuring plan and expects to incur non-recurring reorganization costs, including employee severance and certain write-downs. BTU estimates these reorganization costs to be approximately \$2.6 million and expects that most of these expenses will be incurred during the first half of fiscal year 2015. Aside from the contractual payments noted in footnote 5.(g) below, these non-recurring costs are not reflected in the unaudited pro forma condensed combined financial statements.

5. Pro Forma Adjustments

Unaudited Pro Forma Condensed Combined Balance Sheet

- (a) Reflects an adjustment for the step-up of historical BTU inventories to estimated fair value. This inventory adjustment is expected to be fully recognized in cost of sales in the first six months following consummation of the merger. We expect this step up in basis and amortization of this amount to have a negative effect on margins.
- (b) Reflects an adjustment for the step-up of historical BTU property, plant, and equipment to estimated fair value. The estimated fair value is comprised of \$8.4 million of real property and \$3.9 million of equipment and other assets.
- (c) Reflects the estimated fair value of goodwill of \$5.9 million and intangible assets acquired, including \$0.7 million of trade name and technology and \$0.2 million of customer relationships.
- (d) Reflects the recognition of deferred tax liabilities resulting from fair value adjustments to inventories, property, plant and equipment and identifiable intangible assets acquired based primarily on a combined federal and state statutory rate of 34%.
- (e) Reflects an adjustment to remove the historical equity balances of BTU.
- (f) Reflects the issuance of 3.2 million shares of \$0.01 par value Amtech common stock as merger consideration, as described in the Basis of Pro Forma Presentation note above.
- (g)

Reflects the recognition of \$3.1 million of merger-related transaction costs and \$0.8 million of contractual change in control payments, net of related tax effects of \$0.2 million, based on the deductible portion and a combined federal and state statutory rate of 34%.

Unaudited Pro Forma Condensed Combined Statement of Operations

- (h) Reflects the elimination of non-recurring merger-related transaction costs that have been recorded in Amtech's and BTU's historical results.
- (i) Reflects the incremental depreciation and amortization expense based on the preliminary fair values of the tangible and intangible assets acquired as follows (in thousands):

	Intangible Assets	Estimated Useful Lives (years)	Pro Forma Amortization
Trade name and technology	\$ 700	7.5	\$ 93
Customer relationships	240	12.5	19
	\$ 940		\$ 112

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	Tangible Assets	Estimated Useful Lives (years)	Pro Forma Depreciation
Real property	\$ 8,400	20.0	\$ 420
Personal Property	3,900	5.0	780
	\$ 12,300		1,200
Less historical depreciation expense			1,207
Incremental pro forma depreciation expense			\$ (7)

- (j) Reflects the elimination of historical tax benefits related to the deductible portion of Amtech transaction costs at a combined federal and state statutory rate of 34%.
- (k) Reflects the issuance of 3.2 million shares of Amtech common stock as merger consideration, as described in the Basis of Pro Forma Presentation note above.

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Presented below for Amtech and BTU is historical, unaudited pro forma combined and pro forma equivalent per share financial data as of and for the fiscal year ended September 30, 2014. The information presented below should be read together with the historical consolidated financial statements of Amtech, including the related notes, filed by Amtech with the SEC and incorporated by reference into this joint proxy statement/prospectus, and of BTU included elsewhere in this joint proxy statement/prospectus, and the unaudited pro forma condensed combined financial information in **Unaudited Pro Forma Condensed Combined Financial Information** included elsewhere in this joint proxy statement/prospectus.

The historical, unaudited pro forma combined and pro forma equivalent per share data as of and for the fiscal year ended September 30, 2014 were prepared based on the audited consolidated financial statements of Amtech as of and for the fiscal year ended September 30, 2014 and of BTU for the year ended December 31, 2013 and the unaudited condensed consolidated financial statements of BTU as of September 28, 2014 and for the nine months ended September 28, 2014 and September 29, 2013. The unaudited pro forma and pro forma per equivalent share information gives effect to the merger as if the merger had been effective on September 30, 2014 in the case of the book value data, and as if the merger had been effective as of October 1, 2013 in the case of the earnings per share and the cash dividends data. The unaudited pro forma data combines the historical results of BTU into Amtech's consolidated statement of operations. While certain adjustments were made for the estimated impact of fair value adjustments and other acquisition-related activity, they are not indicative of what could have occurred had the acquisition taken place on October 1, 2013.

The unaudited pro forma equivalent data of BTU was calculated by multiplying the corresponding unaudited pro forma consolidated data of Amtech by the exchange ratio set forth in the merger agreement (0.3291). This data shows how each share of BTU common stock would have participated in net loss and book value of Amtech if the companies had always been consolidated for accounting and financial reporting purposes for all periods presented. These amounts, however, are not intended to reflect future per share levels of net income and book value of Amtech.

	Amtech Historical	BTU Historical	Pro Forma Combined	Per Equivalent BTU Share(1)
For the year ended September 30, 2014:				
Basic earnings per share(2)	\$ (1.34)	\$ (0.44)	\$ (1.25)	\$ (0.41)
Diluted earnings per share(2)	\$ (1.34)	\$ (0.44)	\$ (1.25)	\$ (0.41)
Cash dividends declared	\$	\$	\$	\$
Book value per share as of September 30, 2014	\$ 5.44	\$ 1.89	\$ 6.25	\$ 2.06

(1) Reflects BTU shares at the exchange ratio of 0.3291.

(2) Pro forma combined earnings per share data excludes the impact of anticipated cost savings and potential revenue enhancements that may be realized through the merger.

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RISK FACTORS

*In addition to general investment risks and the other information contained in or incorporated by reference into this joint proxy statement/prospectus, including the matters addressed under the section **Cautionary Statement Regarding Forward-Looking Statements**, you should carefully consider the following risk factors in deciding how to vote for the proposals presented in this joint proxy statement/prospectus. You should also consider the other information in this joint proxy statement/prospectus and the other documents incorporated by reference into this joint proxy statement/prospectus. See **Where You Can Find More Information**.*

Risk Factors Related to the Merger

Because the market price of Amtech common stock will fluctuate, BTU stockholders cannot be certain of the market value of the merger consideration they will receive.

Upon completion of the merger, each share of BTU common stock (except for specified shares of BTU common stock held by BTU or Amtech) will be converted into 0.3291 shares of Amtech common stock. The market value of the merger consideration will vary from the closing price of Amtech common stock on the date Amtech and BTU announced the merger, on the date that this joint proxy statement/prospectus is mailed to BTU stockholders, on the date of the special meeting of the BTU stockholders and on the date the merger is completed and thereafter. Any change in the market price of Amtech common stock prior to the completion of the merger will affect the market value of the merger consideration that BTU stockholders will receive upon completion of the merger, and there will be no adjustment to the merger consideration for changes in the market price of either shares of Amtech common stock or shares of BTU common stock. Stock price changes may result from a variety of factors that are beyond the control of Amtech and BTU, including, but not limited to, general market and economic conditions, changes in our respective businesses, operations and prospects and regulatory considerations. Therefore, at the time of the BTU special meeting you will not know the precise market value of the consideration you will receive at the effective time of the merger. You should obtain current market quotations for shares of Amtech common stock and for shares of BTU common stock.

The market price of Amtech common stock after the merger may be affected by factors different from those affecting the shares of BTU or Amtech currently.

Upon completion of the merger, holders of BTU common stock will become holders of Amtech common stock. Amtech's business differs in important respects from that of BTU, and, accordingly, the results of operations of the combined company and the market price of Amtech common stock after the completion of the merger may be affected by factors different from those currently affecting the independent results of operations of each of Amtech and BTU. For a discussion of the businesses of Amtech and BTU and of some important factors to consider in connection with those businesses, see the documents included elsewhere in this joint proxy statement/prospectus or incorporated by reference in this joint proxy statement/prospectus and referred to under **Where You Can Find More Information** beginning on page 163.

Combining the two companies may be more difficult, costly or time consuming than expected and the anticipated benefits and cost savings of the merger may not be realized.

Amtech and BTU have operated and, until the completion of the merger, will continue to operate, independently. The success of the merger, including anticipated benefits and cost savings, will depend, in part, on Amtech's ability to successfully combine and integrate the businesses of Amtech and BTU in a manner that permits growth opportunities and does not materially disrupt the existing customer relations nor result in decreased revenues due to loss of

customers. It is possible that the integration process could result in the loss of key employees, the disruption of either company's ongoing businesses or inconsistencies in standards, controls, procedures and policies that adversely affect the combined company's ability to maintain relationships with clients, customers and employees or to achieve the anticipated benefits and cost savings of the merger. The loss of key employees could adversely affect Amtech's ability to successfully conduct its business, which could have an adverse effect on Amtech's financial results and the value of its common stock. If Amtech experiences difficulties with the integration process, the anticipated benefits of the merger may not be realized fully or at all, or may take longer to realize than expected. Integration efforts between the two companies will also divert management attention and resources. These integration matters could have an adverse effect on each of BTU and Amtech during this transition period and for an undetermined period after completion of the merger on the combined company. In addition, the actual cost savings of the merger could be less than anticipated.

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The unaudited pro forma condensed combined financial statements included in this document are preliminary and the actual financial condition and results of operations after the merger may differ materially.

The unaudited pro forma condensed combined financial statements in this document are presented for illustrative purposes only and are not necessarily indicative of what Amtech's actual financial condition or results of operations would have been had the merger been completed on the dates indicated. The unaudited pro forma condensed combined financial statements reflect adjustments, which are based upon preliminary estimates, to record the BTU identifiable assets acquired and liabilities assumed at fair value and the resulting goodwill recognized. The purchase price allocation reflected in this document is preliminary, and final allocation of the purchase price will be based upon the actual purchase price and the fair value of the assets and liabilities of BTU as of the date of the completion of the merger. Accordingly, the final acquisition accounting adjustments may differ materially from the pro forma adjustments reflected in this document. For more information, see Unaudited Pro Forma Condensed Combined Financial Statements beginning on page 20.

Certain of BTU's directors and executive officers have interests in the merger that may differ from the interests of BTU's stockholders.

BTU's stockholders should be aware that some of BTU's directors and executive officers have interests in the merger and have arrangements that are different from, or in addition to, those of BTU's stockholders generally. These interests and arrangements may create potential conflicts of interest. BTU's board of directors was aware of these interests and considered these interests, among other matters, when making its decision to approve the merger agreement, and in recommending that BTU's stockholders vote in favor of adopting the merger agreement.

For more information, see The Merger Interests of BTU's Directors and Executive Officers in the Merger beginning on page 126.

Termination of the merger agreement could negatively impact BTU or Amtech.

If the merger agreement is terminated, there may be various consequences. For example, BTU's or Amtech's businesses may have been impacted adversely by the failure to pursue other beneficial opportunities due to the focus of management on the merger, without realizing any of the anticipated benefits of completing the merger. Additionally, if the merger agreement is terminated, the market price of BTU's or Amtech's common stock could decline to the extent that the current market prices reflect a market assumption that the merger will be completed. If the merger agreement is terminated under certain circumstances, BTU or Amtech may be required to pay to the other party a termination fee of \$1,320,000 or an expense reimbursement amount of up to \$1,000,000.

BTU and Amtech will be subject to business uncertainties and contractual restrictions while the merger is pending.

Uncertainty about the effect of the merger on employees and customers may have an adverse effect on BTU or Amtech. These uncertainties may impair BTU's or Amtech's ability to attract, retain and motivate key personnel until the merger is completed, and could cause customers and others that deal with BTU or Amtech to seek to change existing business relationships with BTU or Amtech. Retention of certain employees by BTU or Amtech may be challenging while the merger is pending, as certain employees may experience uncertainty about their future roles with BTU or Amtech. If key employees depart because of issues relating to the uncertainty and difficulty of integration or a desire not to remain with BTU or Amtech, BTU's business or Amtech's business could be harmed. In addition, subject to certain exceptions, each of BTU and Amtech has agreed to operate its business in the ordinary course prior to closing. See The Merger Agreement Covenants and Agreements for a description of the restrictive covenants applicable to BTU and Amtech.

If the merger is not completed, Amtech and BTU will have incurred substantial expenses without realizing the expected benefits of the merger.

Each of Amtech and BTU has incurred and will incur substantial expenses in connection with the negotiation and completion of the transactions contemplated by the merger agreement, as well as the costs and expenses of filing, printing and mailing this joint proxy statement/prospectus and all filing and other fees paid to the SEC in connection with the merger. If the merger is not completed, Amtech and BTU would have to recognize these expenses without realizing the expected benefits of the merger.

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The merger agreement limits Amtech's and BTU's ability to pursue acquisition proposals and requires each company to pay a termination fee of \$1,320,000, plus an expense reimbursement amount of up to \$1,000,000 under limited circumstances, including circumstances relating to acquisition proposals.

The merger agreement prohibits Amtech and BTU from initiating, soliciting, knowingly encouraging or knowingly facilitating certain third-party acquisition proposals. See [The Merger Agreement Agreement Not to Solicit Other Offers](#). The merger agreement also provides that Amtech or BTU must pay a termination fee in the amount of \$1,320,000, plus an expense reimbursement amount of up to \$1,000,000 in the event that the merger agreement is terminated under certain circumstances, including involving such party's failure to abide by certain obligations to not solicit acquisition proposals. See [The Merger Agreement Termination Fee](#). These provisions might discourage a potential competing acquirer that might have an interest in acquiring all or a significant part of BTU or Amtech from considering or proposing such an acquisition.

The shares of Amtech common stock to be received by BTU stockholders as a result of the merger will have different rights from the shares of BTU common stock.

Upon completion of the merger, BTU stockholders will become Amtech stockholders and their rights as stockholders will be governed by the Arizona business corporation act and the Amtech amended and restated articles of incorporation and bylaws. The rights associated with BTU common stock are different from the rights associated with Amtech common stock. Please see [Comparison of Stockholders Rights](#) beginning on page 151 for a discussion of the different rights associated with Amtech common stock.

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

Holders of BTU and Amtech common stock currently have the right to vote in the election of the board of directors and on other matters affecting BTU and Amtech, respectively. Upon the completion of the merger, each BTU stockholder who receives shares of Amtech common stock will become a stockholder of Amtech with a percentage ownership of Amtech that is smaller than the stockholder's percentage ownership of BTU. It is currently expected that the former stockholders of BTU as a group will receive shares in the merger constituting approximately 24.5% of the outstanding shares of Amtech common stock immediately after the merger. As a result, current stockholders of Amtech as a group will own approximately 75.5% of the outstanding shares of Amtech common stock immediately after the merger. These percentages assume 3,200,000 shares of Amtech common stock are issued in the merger and is based on 9,869,916 shares of Amtech common stock outstanding as of December 16, 2014. Because of this, BTU stockholders may have less influence on the management and policies of Amtech than they now have on the management and policies of BTU and current Amtech stockholders may have less influence than they now have on the management and policies of Amtech.

BTU stockholders are not expected to have dissenters' or appraisal rights in the merger.

Dissenters' rights are statutory rights that, if applicable under law, enable stockholders to dissent from an extraordinary transaction, such as a merger, and to demand that the corporation pay the fair value for their shares as determined by a court in a judicial proceeding instead of receiving the consideration offered to stockholders in connection with the extraordinary transaction. Under the DGCL, a stockholder may not dissent from a merger as to shares that are listed on a national securities exchange at the record date fixed to determine the stockholders entitled to receive notice of the meeting of stockholders to vote upon the agreement of merger or consolidation.

Because BTU common stock is listed on NASDAQ, a national securities exchange, and is expected to continue to be so listed on the record date, and because the merger otherwise satisfies the foregoing requirements, holders of BTU common stock will not be entitled to dissenters' or appraisal rights in the merger with respect to their shares of BTU common stock.

Pending litigation against BTU and Amtech could result in an injunction preventing the completion of the merger or a judgment resulting in the payment of damages.

On November 4, 2014, a putative stockholder class action complaint was filed, purportedly on behalf of BTU's public stockholders, in the Court of Chancery of the State of Delaware against BTU, members of the BTU Board, Amtech, and Merger

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Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by causing BTU to enter into the merger agreement and by approving the merger, and that Amtech and Merger Sub aided and abetted such alleged breaches of fiduciary duties. In addition, the complaint alleges that the merger agreement improperly favors Amtech and unduly restricts BTU's ability to negotiate with other potential bidders. The complaint generally seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting Amtech, Merger Sub, and BTU from consummating the Merger, other forms of equitable relief, and compensatory damages. Both Amtech and BTU believe that the claims are without merit and each intends to vigorously defend itself (and its directors) against the litigation.

On November 17, 2014, a separate putative stockholder class action complaint was filed, also purportedly on behalf of BTU's public stockholders, in the Court of Chancery of the State of Delaware against BTU, members of the BTU board, Amtech and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by failing to engage in a competitive sale and bidding process, and that Amtech and Merger Sub aided and abetted such alleged breaches of fiduciary duties. The complaint further alleges that these fiduciary breaches gave Amtech an unfair advantage on account of the BTU board's failing to solicit other potential acquirers. The complaint generally seeks, among other things, injunctive relief prohibiting the defendants from consummating the merger, compensatory damages for alleged breaches of fiduciary duties, and other forms of equitable relief. Both Amtech and BTU believe that the claims are without merit and each intends to vigorously defend itself (and its directors) against the litigation.

Risks Related to BTU

BTU's industry has historically been cyclical and experienced periodic downturns.

BTU's business depends on capital spending by electronics, semiconductor, solar cell and nuclear fuel manufacturers, which in turn depends on current and anticipated market demand for printed circuit boards, integrated circuits and solar panels and the products that use them as well as the need for nuclear fuel for power generation. BTU continues to experience a significant downturn in the solar industry. The electronics and semiconductor industries have historically been cyclical and have experienced periodic downturns that have had a material adverse effect on the demand for equipment that BTU manufactures and markets.

BTU has made substantial investments in its organization to develop new products for the electronics and alternative energy markets. Sales of BTU's products to these markets are subject to substantial risks.

Electronics. BTU has recently introduced new lower priced products in the electronics segment. To date, sales of such products have trailed expectations. If BTU is unable to successfully market and sell lower priced, lower cost products to the electronics sector, its market penetration in the China market may slow or decrease.

Solar Energy. The solar energy sector is primarily dependent upon continuation of governmental subsidies which have been scaled back. A further decline in these subsidies would reduce BTU's ability to grow its business in this market due to reduced capital spending by the manufacturers of solar panels. The solar industry is currently facing overcapacity in its production capacity. This overcapacity has a meaningful negative impact on demand for capital equipment supplied to this industry.

Nuclear Energy. The market for nuclear fuel pellets used in power generation is dependent upon further growth in nuclear power production. Consequently, without growth in the production of nuclear power, BTU's opportunities to grow in this area will be limited. In addition, BTU may need export licenses to supply this type of equipment to

certain countries. Failure to maintain such licenses or obtain new required licenses may impact BTU's ability to expand its revenue from this market.

BTU's strategy of developing products for the solar market has yet to achieve consistent positive cash flows, and it is relying on a combination of cash on hand and cash flow from sales of its products to the non-solar market to fund its operations and investment in the solar market strategy.

Since 2005, BTU has been pursuing a strategy of developing and selling thermal products for the solar market. Although this strategy produced meaningful sales in the solar market in 2010 and 2011, the significant decline in the solar market in 2012 and 2013 has meant that BTU has not achieved the results it had hoped for. Although BTU continues to believe that the solar market presents an attractive opportunity for its products, in the near term BTU is funding its investments and operations in the solar

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market from cash flows from sales of its products to the non-solar market and its cash on hand. If the solar market does not improve, or if BTU's products do not gain the acceptance it has planned, BTU's cash resources will not allow it to continue making investments in the solar market and it may need to take action to restructure itself. Such actions, which could include exiting the solar business, selling assets or workforce reductions, could have a material adverse effect on its financial condition and result of operations and on the price of its stock.

If BTU is unable to increase sales and reduce costs, its profitability and liquidity may be affected negatively.

BTU had an operating loss of \$9.7 million in 2013 compared to operating loss of \$10.4 million in 2012. BTU attributes a large portion of the operating loss in 2013 to decreases in sales and the under-absorption of costs in its facilities, and the result of the legal settlement that was recognized in BTU's consolidated statement of operations for the three months ended September 29, 2013. BTU may not experience growth in its business in 2014 and 2015, which will negatively impact its profitability and liquidity.

BTU's future success will depend on its ability to effectively develop and market its products against those of its competitors.

The industry in which BTU does business is highly competitive. Some of BTU's competitors have substantially greater financial, engineering, manufacturing and customer support capabilities and offer more extensive product offerings. If customers prefer products offered by BTU's competitors, BTU will have difficulty maintaining or increasing its revenue. BTU's principal competitors for solder reflow systems are Vitronics-Soltec, Heller, Folungwin, ERSA, and Rehm. BTU's principal competitors for advanced semiconductor packaging are Vitronics-Soltec and Heller. BTU's systems for the alternative energy markets and other applications compete primarily against products offered by Centrotherm, Amtech, Factory 48, Despatch, Schmidt, Smit and Harper. BTU expects its competitors to continue to improve the design and performance of their current products and to introduce new products with improved performance capabilities. BTU's failure to introduce new products in a timely manner, or the introduction by its competitors of products with perceived or actual advantages, could result in reduced sales of, or lower margins on, its products. In future years, BTU expects to face increased competition based on price, particularly from companies in Asia. If BTU is unable to reduce the costs of its products or introduce new lower cost products, it may lose sales to these competitors.

A significant amount of BTU's cash is in China and may not be brought back to the United States without tax consequences, which reduces BTU's flexibility in deploying its liquidity.

BTU does not accrue incremental U.S. taxes on its revenues from China as these earnings are considered to be indefinitely reinvested outside of the U.S. While BTU has no plans to do so, events may occur in the future that could effectively force BTU to change its intent not to repatriate its foreign earnings. If BTU changes its intent and repatriates such earnings, it will have to accrue the applicable amount of taxes associated with such earnings and pay taxes at a substantially higher rate than its effective income tax rate in 2013. These increased taxes could materially adversely affect BTU's financial condition and results of operations and therefore reduce the flexibility it has to deploy its cash.

Sales made by BTU's international operations are subject to the economic, political, legal and business environments of the countries in which it does business, and its failure to operate successfully or adapt to changes in these environments could cause its international sales and operations to be limited or disrupted.

BTU's international sales accounted for 82.1% of its consolidated revenue for 2013. BTU expects to continue to generate a significant percentage of its revenue outside the U.S. for the foreseeable future. In addition, BTU has direct

investments in a number of subsidiaries outside of the U.S., primarily in Asia and Europe. BTU's international operations could be limited or disrupted, and the value of its direct investments may be diminished, by any of the following:

fluctuations in currency exchange rates;

the imposition of governmental controls;

import and export license requirements;

political instability;

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difficulties enforcing contractual and intellectual property rights;

terrorist activities and armed conflict;

restrictions on direct investments by foreign entities and trade restrictions;

changes in tax laws and tariffs;

costs and difficulties in staffing and managing international operations; and

longer customer payment cycles.

Additionally, BTU is subject to the Foreign Corrupt Practices Act, which may place it at a competitive disadvantage to foreign companies that are not subject to similar regulations.

BTU conducts only a small portion of its sales in currencies other than the U.S. dollar. BTU recognizes foreign currency gains or losses arising from its operations in the period in which it incurs those gains or losses. As a result, currency fluctuations among the U.S. dollar and the other currencies in which BTU does business have caused foreign currency transaction gains and losses in the past and will likely do so in the future. Because of the number of currencies involved, the variability of currency exposures and the potential volatility of currency exchange rates, BTU may suffer foreign currency transaction losses in the future due to the effect of exchange rate fluctuations.

Over the past few years, a majority of BTU's revenue has been generated from sales in the Asia Pacific region. BTU's operations are particularly vulnerable to instability in this region and competition from organizations based in this region.

During 2013, 61.0% of BTU's revenue was generated from sales in the Asia Pacific region. Political or economic instability in any of the major Asia Pacific economies may adversely impact the demand for capital equipment, including equipment of the type BTU manufactures and markets. In addition, BTU faces competition from a number of suppliers based in the Asia Pacific region that have certain advantages over U.S. suppliers, including BTU. These advantages include, among other things, lower operating and regulatory costs, proximity to customers, favorable tariffs and affiliation with significantly larger organizations. In addition, changes in the amount or price of electronics or solar cells produced in the Asia Pacific region could negatively impact spending by BTU's customers.

If BTU fails to maintain positive relationships with key personnel, it may be unable to successfully grow its business.

BTU's future operating results depend substantially upon the continued service of its key personnel, who are not bound by employment agreements. BTU's future operating results also depend in significant part upon BTU's ability to attract and retain qualified management, manufacturing, technical, engineering, marketing, sales and support personnel. Competition for qualified personnel, particularly those with technical skills, is intense, and BTU may fail to attract and retain qualified personnel. BTU's business, financial condition and results of operations could be materially adversely affected by the loss of any of its key employees, by the failure of any key employee to perform in his or her current position, or by its inability to attract and retain skilled employees.

The income tax rate on BTU's consolidated income before taxes is subject to variables beyond its control.

BTU's net income and cash flow can be adversely affected by innumerable conditions affecting income taxes which are outside of its control. To name but a few of the potential uncontrollable circumstances that could affect the consolidated tax rate:

BTU sells and operates globally, with manufacturing in both the United States and China. Disagreements could occur on the jurisdiction of income and taxation among different country governmental tax authorities. Potential areas of disputes could include transfer pricing values, inter-company cross charges and inter-company balances.

BTU is subject to a China withholding tax on certain non-tangible charges made under its 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.

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In the United States, new tax disclosure regulations, unfavorable interpretations and unforeseen enforcements by the government tax authorities of various provisions of the federal and state tax codes, could have an unfavorable impact on the amount and timing of BTU's tax provision and cash flow.

Failure of critical suppliers to deliver sufficient quantities of parts in a timely and cost-effective manner would adversely impact BTU's operations.

Although BTU uses numerous vendors to supply components for the manufacture of its products, not all are qualified suppliers for all of BTU's parts. Some key parts may only be available from a single supplier. Accordingly, BTU may experience problems in obtaining adequate and reliable quantities of various components. In addition, suppliers may cease manufacturing certain components that are difficult to replace without significant reengineering of BTU's products. BTU's results of operations will be materially adversely impacted if it is unable to obtain adequate supplies of components in a timely and cost effective manner.

The occurrence of natural disasters in the Asia Pacific region may adversely impact BTU's operations and sales.

BTU has an expanding engineering and manufacturing facility in China, and the majority of its sales are made to destinations in the Asia Pacific region. This region is known for being vulnerable to natural disasters and other risks, such as earthquakes and floods, which at times have disrupted the local economies. A significant earthquake or other crisis could materially affect BTU's operating results. BTU is not insured for most losses and business interruptions of this kind, and it does not have redundant, multiple site capacity in the event of a natural disaster. In the event of such a disaster, BTU's business would suffer.

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

The manufacture and sale of BTU's products involves the risk of product liability claims. In addition, a failure of one of BTU's products at a customer site could interrupt the business operations of such customer. BTU's existing insurance coverage limits may not be adequate to protect it from all liabilities that it might incur in connection with the manufacture and sale of its products if a successful product liability claim or series of product liability claims were brought against it. BTU may also be involved in other legal proceedings or claims and experience threats of legal action from time to time in the ordinary course of its business.

Regulations related to conflict minerals could adversely impact BTU's business.

The Dodd-Frank Wall Street Reform and Consumer Protection Act contains provisions to improve transparency and accountability concerning the supply of certain minerals, known as conflict minerals, originating from the Democratic Republic of Congo (DRC) and adjoining countries. As a result, the SEC has adopted annual disclosure and reporting requirements for those companies who use conflict minerals mined from the DRC and adjoining countries in their products. BTU filed its first Form SD and related conflict mineral report on June 2, 2014. Additional costs to BTU include complying with the SEC's requirements, including determining whether BTU's products contain conflict minerals, determining the source of the minerals, making changes to BTU's products, processes or suppliers and the diversion of management's attention away from business activities. In addition, BTU might be limited to a smaller pool of suppliers, relationships with suppliers may deteriorate and BTU might incur reputational harm among customers and stockholders if it is unable to determine that its products are conflict mineral free.

Provisions in BTU's organizational documents could prevent or frustrate attempts by stockholders to replace its current management and could make acquisitions more difficult.

BTU's certificate of incorporation and by-laws contain provisions that could make it more difficult for a third party to acquire it without the consent of its board of directors. BTU's certificate of incorporation provides that its stockholders may not take action by written consent. This provision may have the effect of preventing or hindering attempts by its stockholders to replace its current management. Furthermore, Delaware law prohibits a corporation from engaging in a business combination

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with any holder of 15% or more of its capital stock until the holder has held the stock for three years unless, among other possibilities, the corporation's board of directors approves the transaction. BTU's board of directors may use this provision to prevent changes in its management. Also, BTU's board of directors may adopt additional anti-takeover measures in the future.

BTU's officers and directors may be able to block proposals for a change in control.

Paul J. van der Wansem, BTU's chairman and chief executive officer, beneficially owns approximately 20.14% of BTU's outstanding common stock as of December 15, 2014. Due to this concentration of ownership, Mr. van der Wansem may be able to prevail on all matters requiring a stockholder vote, including:

the election of directors;

the amendment of BTU's organizational documents; or

the approval of a merger, sale of assets, or other major corporate transaction.

However, in connection with the merger agreement, Mr. van der Wansem and certain persons and trusts affiliated with him, who in the aggregate own approximately 13.76% of the outstanding BTU common stock, entered into a voting and support agreement with Amtech pursuant to which Mr. van der Wansem and his affiliates who are a party thereto have agreed, among other things, to vote all of their BTU common stock in favor of the BTU merger proposal and the transactions contemplated thereby.

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CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

Some of the statements contained or incorporated by reference in this joint proxy statement/prospectus are forward looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 giving Amtech's or BTU's expectations or predictions of future financial or business performance or conditions. Forward-looking statements are typically identified by words such as believe, expect, anticipate, intend, target, estimate, positions, prospects or potential, by future conditional verbs such as will, would, should, could or variations of such words or by similar expressions. Such forward-looking statements include, but are not limited to, statements about the benefits of the business combination transaction involving Amtech and BTU, including future financial and operating results, the combined company's plans, objectives, expectations and intentions and other statements that are not historical facts. These forward-looking statements are subject to numerous assumptions, risks and uncertainties which change over time. In addition to factors previously disclosed in Amtech's and BTU's reports filed with the Securities and Exchange Commission, the following factors, among others, could cause actual results to differ materially from forward-looking statements: ability to meet closing conditions to the merger, including the requisite approvals by Amtech and BTU stockholders; delay in closing the merger; difficulties and delays in integrating the Amtech and BTU businesses or fully realizing cost savings and other benefits; business disruption following the proposed transaction; the inability to sustain revenue and earnings growth; inflation; the introduction, withdrawal, success and timing of business initiatives; competitive conditions; the inability to realize cost savings or revenues or to implement integration plans and other consequences associated with mergers, acquisitions and divestitures; economic conditions; changes in Amtech's stock price before closing, including as a result of the financial performance of BTU prior to closing; the reaction to the transaction of the companies' customers, employees and counterparties; and the impact, extent and timing of technological changes.

For any forward-looking statements made in this joint proxy statement/prospectus or in any documents incorporated by reference into this joint proxy statement/prospectus, Amtech and BTU claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995. You are cautioned not to place undue reliance on these statements, which speak only as of the date of this joint proxy statement/prospectus or the date of the applicable document incorporated by reference in this joint proxy statement/prospectus. Amtech and BTU do not undertake to update forward-looking statements to reflect facts, circumstances, assumptions or events that occur after the date the forward-looking statements are made. All subsequent written and oral forward-looking statements concerning the merger or other matters addressed in this joint proxy statement/prospectus and attributable to Amtech, BTU or any person acting on their behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this joint proxy statement/prospectus.

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THE BTU SPECIAL MEETING

This section contains information for BTU stockholders about the special meeting that BTU has called to allow its stockholders to consider and vote on the merger agreement and other matters. BTU is mailing this joint proxy statement/prospectus to you, as a BTU stockholder, on or about December 30, 2014. This joint proxy statement/prospectus is accompanied by a notice of the special meeting of BTU stockholders and a form of proxy card that BTU's board of directors is soliciting for use at the special meeting and at any adjournments or postponements of the special meeting.

Date, Time and Place of Meeting

The special meeting of BTU stockholders will be held at BTU's offices at 23 Esquire Road, North Billerica, MA 01862 at 10:00 a.m., Eastern time, on January 29, 2015. On or about December 30, 2014, BTU commenced mailing this document and the enclosed form of proxy card to its stockholders entitled to vote at the BTU special meeting.

Matters to Be Considered

At the BTU special meeting, BTU stockholders will be asked to consider and vote upon the following matters:

the BTU merger proposal;

the BTU adjournment proposal;

the BTU merger-related compensation proposal; and

to transact such other business as may properly come before the meeting or any adjournment thereof.

Recommendation of BTU's Board of Directors

The BTU board of directors recommends that you vote **FOR** the BTU merger proposal, **FOR** the BTU adjournment proposal (if necessary or appropriate), and **FOR** the BTU merger-related compensation proposal.

BTU Record Date and Quorum

The BTU board of directors has fixed the close of business on December 16, 2014 as the record date for determining the holders of BTU common stock entitled to receive notice of and to vote at the BTU special meeting.

As of the BTU record date, there were 9,591,671 shares of BTU common stock outstanding and entitled to vote at the BTU special meeting held by 396 holders of record. Each share of BTU common stock entitles the holder to one vote at the BTU special meeting on each proposal to be considered at the BTU special meeting.

The representation (in person or by proxy) of holders of at least a majority of the issued and outstanding shares entitled to vote at the BTU special meeting constitutes a quorum for transacting business at the BTU special meeting. All shares of BTU common stock, whether present in person or represented by proxy, including abstentions and

broker non-votes, will be treated as present for purposes of determining the presence or absence of a quorum for all matters voted on at the BTU special meeting.

As of the record date, the directors and executive officers of BTU and their affiliates owned and were entitled to vote 1,721,184 outstanding shares of BTU common stock, representing approximately 17.9% of the shares of BTU common stock outstanding on that date. BTU currently expects that BTU's directors and executive officers will vote their shares in favor of the BTU merger proposal, the BTU merger-related compensation proposal and the BTU adjournment proposal, although none of them has entered into any agreements obligating them to do so (other than Mr. van der Wansem as described in the section of this joint proxy statement/prospectus entitled "The Merger Voting and Support Agreements"). As of the record date, Amtech did not beneficially hold any shares of BTU common stock.

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Required Vote; Treatment of Abstentions and Failure to Vote

BTU merger proposal:

Standard: The affirmative vote of at least two-thirds of the outstanding shares of BTU common stock.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU merger proposal, it will have the same effect as a vote **AGAINST** the proposal.

BTU adjournment proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the BTU special meeting and entitled to vote on such proposal, whether or not a quorum is present.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU adjournment proposal or the BTU merger-related compensation proposal, it will have no effect on such proposals.

BTU merger-related compensation proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the BTU special meeting and entitled to vote on such proposal.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the BTU special meeting or fail to instruct your bank or broker how to vote with respect to the BTU adjournment proposal or the BTU merger-related compensation proposal, it will have no effect on such proposals.

Although BTU is submitting the merger-related compensation proposal for consideration and approval, the approval of such proposal pursuant to the standard set forth above is not a condition to completion of the merger, and the vote with respect to such proposal is advisory only and will not be binding on Amtech or BTU. If the merger is completed, the merger-related compensation may be paid to BTU's named executive officers to the extent payable in accordance with the terms of the compensation agreements and arrangements even if BTU stockholders fail to approve the advisory vote regarding merger-related compensation.

Voting on Proxies; Incomplete Proxies

A BTU stockholder may vote by proxy or in person at the BTU special meeting. If you hold your shares of BTU common stock in your name as a stockholder of record, to submit a proxy, you, as a BTU stockholder, may use one of the following methods:

By telephone: by calling the toll-free number indicated on the proxy card and following the recorded instructions.

Through the Internet: by visiting the website indicated on the proxy card and following the instructions.

Complete and return the proxy card in the enclosed envelope. The envelope requires no additional postage if mailed in the United States.

BTU requests that BTU stockholders vote by telephone, over the Internet or by completing and signing the accompanying proxy card and returning it as soon as possible in the enclosed postage-paid envelope. When the accompanying proxy card is returned properly executed, the shares of BTU stock represented by it will be voted at the BTU special meeting in accordance with the instructions contained on the proxy card. If any proxy card is returned without indication as to how to vote, the shares of BTU common stock represented by the proxy card will be voted as recommended by the BTU board of directors.

If a BTU stockholder's shares are held in street name by a broker, bank or other nominee, the stockholder should check the voting form used by that firm to determine whether it may vote by telephone or the Internet.

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Every BTU stockholder's vote is important. Accordingly, each BTU stockholder should sign, date and return the enclosed proxy card, or vote via the Internet or by telephone, whether or not the BTU stockholder plans to attend the BTU special meeting in person. Sending in your proxy card or voting by telephone or on the Internet will not prevent you from voting your shares personally at the meeting, since you may revoke your proxy at any time before it is voted.

Shares Held in Street Name

If you are a BTU stockholder and your shares are held in street name through a bank, broker or other holder of record, you must provide the record holder of your shares with instructions on how to vote the shares. Please follow the voting instructions provided by the bank or broker. You may not vote shares held in street name by returning a proxy card directly to BTU or by voting in person at the BTU special meeting unless you provide a legal proxy, which you must obtain from your broker, bank or other nominee. Further, banks or other nominees who hold shares of BTU common stock on behalf of their customers may not give a proxy to BTU to vote those shares with respect to any of the proposals without specific instructions from their customers, as brokers, banks and other nominees do not have discretionary voting power on these matters.

Revocability of Proxies and Changes to a BTU Stockholder's Vote

You have the power to change your vote at any time before your shares of BTU common stock are voted at the BTU special meeting by:

attending and voting in person at the BTU special meeting;

giving notice of revocation of the proxy at the BTU special meeting;

voting by telephone or the Internet at a later time; or

delivering to the Corporate Secretary of BTU at 23 Esquire Road, North Billerica, MA 01862 (i) a written notice of revocation or (ii) a duly executed proxy card relating to the same shares and matters to be considered at the BTU special meeting, bearing a date later than the proxy card previously executed.

Attendance at the BTU special meeting will not in and of itself constitute a revocation of a proxy.

If you choose to send a completed proxy card bearing a later date than your original proxy card, the new proxy card must be received before the beginning of the BTU special meeting. If you have instructed a bank, broker or other nominee to vote your shares of BTU common stock, you must follow the directions you receive from your bank, broker or other nominee in order to change or revoke your vote.

Delivery of Proxy Materials

As permitted by applicable law, only one copy of this joint proxy statement/prospectus is being delivered to stockholders residing at the same address, unless such stockholders have notified BTU of their desire to receive multiple copies of the joint proxy statement/prospectus.

BTU will promptly deliver, upon oral or written request, a separate copy of the joint proxy statement/prospectus to any stockholder residing at an address to which only one copy of such document was mailed. Requests for additional copies should be directed to Investor Relations, at BTU's corporate offices, 23 Esquire Road, North Billerica, MA 01862 or by telephone at (978) 667-4111 ext. 107.

Solicitation of Proxies

In addition to solicitation by mail, directors, officers, and employees of BTU may solicit proxies by personal interview, telephone, or electronic mail. BTU reimburses brokerage houses, custodians, nominees, and fiduciaries for their expenses in forwarding proxies and proxy material to their principals. BTU has retained Georgeson, Inc. to assist in the solicitation of proxies, which firm will, by agreement, receive compensation of approximately \$10,000 plus reasonable expenses for these services. BTU will bear the entire cost of soliciting proxies from you.

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Attending the BTU Special Meeting

Subject to space availability, all BTU stockholders as of the record date, or their duly appointed proxies, may attend the BTU special meeting. Since seating is limited, admission to the BTU special meeting will be on a first-come, first-served basis. Registration and seating will begin at 9:30 a.m., local time.

If you hold your shares of BTU common stock in your name as a stockholder of record and you wish to attend the BTU special meeting, please bring your proxy card and evidence of your stock ownership, such as your most recent account statement, to the BTU special meeting. You should also bring a valid government-issued photo identification card.

If your shares of BTU common stock are held in street name in a stock brokerage account or by a bank or nominee and you wish to attend the BTU special meeting, you need to bring a copy of a bank or brokerage statement to the BTU special meeting reflecting your stock ownership as of the record date. You should also bring valid picture identification.

Other Matters to Come Before the BTU Special Meeting

Management knows of no other business to be presented at the BTU special meeting, but if any other matters are properly presented to the meeting or any adjournments thereof, the persons named in the proxies will vote upon them in accordance with the board of directors' recommendations.

Assistance

If you need assistance in completing your proxy card, have questions regarding BTU's special meeting or would like additional copies of this joint proxy statement/prospectus, please contact Investor Relations at (978) 667-4111 ext. 107 or BTU's proxy solicitor, Georgeson, Inc., at (866) 821-2570.

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BTU PROPOSALS

PROPOSAL NO. 1

BTU MERGER PROPOSAL

BTU is asking its stockholders to adopt the merger agreement and approve the transactions contemplated thereby. Holders of BTU common stock should read this joint proxy statement/prospectus carefully and in its entirety, including the annexes, for more detailed information concerning the merger agreement and the merger. A copy of the merger agreement is attached to this joint proxy statement/prospectus as Annex A.

After careful consideration, the BTU board of directors, by a unanimous vote of all directors, approved the merger agreement and declared the merger agreement and the transactions contemplated thereby, including the merger, to be advisable and in the best interest of BTU and the stockholders of BTU. See *The Merger BTU's Reasons for the Merger; Recommendation of BTU's Board of Directors* beginning on page 106 of this joint proxy statement/prospectus for a more detailed discussion of the BTU board of directors' recommendation.

The BTU board of directors recommends a vote FOR the BTU merger proposal.

PROPOSAL NO. 2

BTU ADJOURNMENT PROPOSAL

The BTU special meeting may be adjourned to another time or place, if necessary or appropriate, to solicit additional proxies if there are insufficient votes at the time of the BTU special meeting to adopt the BTU merger proposal.

If, at the BTU special meeting, the number of shares of BTU common stock present or represented and voting in favor of the BTU merger proposal is insufficient to adopt the BTU merger proposal, BTU intends to move to adjourn the BTU special meeting in order to enable the BTU board of directors to solicit additional proxies for approval of the merger. In that event, BTU will ask its stockholders to vote upon the BTU adjournment proposal, but not the BTU merger proposal or the BTU merger-related compensation proposal.

In this proposal, BTU is asking its stockholders to authorize the holder of any proxy solicited by the BTU board of directors on a discretionary basis to vote in favor of adjourning the BTU special meeting to another time and place for the purpose of soliciting additional proxies, including the solicitation of proxies from BTU stockholders who have previously voted.

The BTU board of directors recommends a vote FOR the BTU adjournment proposal.

PROPOSAL NO. 3

BTU MERGER-RELATED COMPENSATION PROPOSAL

Pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and Rule 14a-21(c) of the Exchange Act, BTU is seeking non-binding, advisory stockholder approval of the compensation of BTU's named executive officers that is based on or otherwise relates to the merger as disclosed in *The Merger Merger-Related Compensation for BTU's Named Executive Officers* beginning on page 131. The proposal gives BTU's stockholders the opportunity to express their views on the merger-related compensation of BTU's named executive officers.

Accordingly, BTU is requesting stockholders to adopt the following resolution, on a non-binding, advisory basis:

RESOLVED, that the compensation that may be paid or become payable to BTU's named executive officers in connection with the merger and the agreements or understandings pursuant to which such compensation may be paid or become payable, in each case as disclosed pursuant to Item 402(t) of Regulation S-K in The Merger Interests of BTU Directors and Executive Officers in the Merger Merger-Related Compensation for BTU's Named Executive Officers, are hereby APPROVED.

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Approval of this proposal is not a condition to completion of the merger, and the vote with respect to this proposal is advisory only and will not be binding on Amtech or BTU. If the merger is completed, the merger-related compensation may be paid to BTU's named executive officers to the extent payable in accordance with the terms of the compensation agreements and arrangements even if BTU stockholders fail to approve the advisory vote regarding merger-related compensation.

The BTU board of directors recommends a vote FOR, on an advisory basis, the BTU merger-related compensation proposal.

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THE AMTECH SPECIAL MEETING

This section contains information for Amtech stockholders about the special meeting that Amtech has called to allow its stockholders to consider and vote on the merger agreement and other related matters. Amtech is mailing this joint proxy statement/prospectus to you, as an Amtech stockholder, on or about December 30, 2014. This joint proxy statement/prospectus is accompanied by a notice of the special meeting of Amtech stockholders and a form of proxy card that Amtech's board of directors is soliciting for use at the special meeting and at any adjournments or postponements of the special meeting.

Date, Time and Place of Meeting

The special meeting will be held on January 29, 2015, at The Tempe Mission Palms Hotel, 60 East 5th Street, Tempe, Arizona, USA, at 9:00 a.m. local time.

Matters to Be Considered

At the special meeting of stockholders, you will be asked to consider and vote upon the following matters:

the Amtech merger proposal;

the Amtech adjournment proposal; and

to transact such other business as may properly come before the meeting or any adjournment thereof.

Recommendation of Amtech's Board of Directors

Amtech's board of directors has determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and in the best interests of Amtech and its stockholders, has unanimously approved the merger agreement and unanimously recommends that Amtech stockholders vote FOR the Amtech merger proposal and FOR the Amtech adjournment proposal. See The Merger Amtech's Reasons for the Merger; Recommendation of Amtech's Board of Directors beginning on page 117 for a more detailed discussion of Amtech's board of directors' recommendation.

Record Date and Quorum

Amtech's board of directors has fixed the close of business on December 16, 2014 as the record date for determining the holders of Amtech common stock entitled to receive notice of and to vote at the Amtech special meeting.

As of the record date, there were 9,869,916 shares of Amtech common stock outstanding and entitled to vote at the Amtech special meeting held by approximately 427 holders of record. Each share of Amtech common stock entitles the holder to one vote at the Amtech special meeting on each proposal to be considered at the Amtech special meeting.

As of the record date, the directors and executive officers of Amtech and their affiliates owned and were entitled to vote 180,137 shares of Amtech common stock, representing approximately 1.8% of the shares of Amtech common stock outstanding on that date. Amtech currently expects that Amtech's directors and executive officers will vote their

shares in favor of the Amtech merger proposal, and the Amtech adjournment proposal, although none of them (other than Mr. Whang as described in the section of this joint proxy statement/prospectus entitled "The Merger Voting Agreements") have entered into any agreements obligating them to do so.

The presence at the special meeting, in person or by proxy, of holders of a majority of the outstanding shares of Amtech common stock entitled to vote at the special meeting will constitute a quorum for the transaction of business. All shares of Amtech common stock present in person or represented by proxy, including abstentions and broker non-votes, will be treated as present for purposes of determining the presence or absence of a quorum for all matters voted on at the Amtech special meeting.

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Required Vote; Treatment of Abstentions and Failure to Vote

Amtech merger proposal:

Standard: The affirmative vote of a majority of the outstanding shares of Amtech common stock entitled to vote on the proposal.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the Amtech special meeting or fail to instruct your bank or broker how to vote with respect to the Amtech merger proposal, it will have the same effect as a vote **AGAINST** the proposal.

Amtech adjournment proposal:

Standard: The affirmative vote of a majority of votes cast (in person or by proxy) at the Amtech special meeting and entitled to vote on such proposals.

Effect of abstentions and broker non-votes: If you mark **ABSTAIN** on your proxy card, fail to submit a proxy card or vote in person at the Amtech special meeting or fail to instruct your bank or broker how to vote with respect to the Amtech adjournment proposal, it will have no effect on such proposal.

Voting on Proxies; Incomplete Proxies

An Amtech stockholder may vote by proxy or in person at the Amtech special meeting. If you hold your shares of Amtech common stock in your name as a stockholder of record, to submit a proxy, you, as an Amtech stockholder, may use one of the following methods:

By telephone: by calling the toll-free number indicated on their proxy card and following the recorded instructions.

Through the Internet: by visiting the website indicated on their proxy card and following the instructions.

Complete and return the proxy card in the enclosed envelope. The envelope requires no additional postage if mailed in the United States.

Amtech requests that Amtech stockholders vote by telephone, over the Internet or by completing and signing the accompanying proxy card and returning it to Amtech as soon as possible in the enclosed postage-paid envelope. When the accompanying proxy card is returned properly executed, the shares of Amtech stock represented by it will be voted at the Amtech special meeting in accordance with the instructions contained on the proxy card. If any proxy card is returned without indication as to how to vote, the shares of Amtech common stock represented by the proxy card will be voted as recommended by the Amtech board of directors.

If an Amtech stockholder's shares are held in street name by a broker, bank or other nominee, the stockholder should check the voting form used by that firm to determine whether it may vote by telephone or the Internet.

Every Amtech stockholder's vote is important. Accordingly, each Amtech stockholder should sign, date and return the enclosed proxy card, or vote via the Internet or by telephone, whether or not the Amtech stockholder plans to attend the Amtech special meeting in person. Sending in your proxy card or voting by telephone or on the Internet will not prevent you from voting your shares personally at the meeting, since you may revoke your proxy at any time before it is voted.

Shares Held in Street Name ; Broker Non-Votes

If you are an Amtech stockholder and your shares are held in street name through a bank, broker or other holder of record, you must provide the record holder of your shares with instructions on how to vote the shares. Please follow the voting instructions provided by the bank or broker. You may not vote shares held in street name by returning a proxy card directly to Amtech or by voting in person at the Amtech special meeting unless you provide a legal proxy, which you must obtain from your broker, bank or other nominee. Further, banks or other nominees who hold shares of Amtech common stock on behalf of their customers may not give a proxy to Amtech to vote those shares with respect to any of the proposals without specific instructions from their customers, as brokers, banks and other nominees do not have discretionary voting power on these matters.

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Revocability of Proxies and Changes to an Amtech Stockholder's Vote

You have the power to change your vote at any time before your shares of Amtech common stock are voted at the Amtech special meeting by:

attending and voting in person at the Amtech special meeting;

giving notice of revocation of the proxy at the Amtech special meeting;

voting by telephone or the Internet at a later time; or

delivering to the Corporate Secretary of Amtech at 131 South Clark Drive Tempe, Arizona 85281 (i) a written notice of revocation or (ii) a duly executed proxy card relating to the same shares and matters to be considered at the Amtech special meeting, bearing a date later than the proxy card previously executed.

Attendance at the Amtech special meeting will not in and of itself constitute a revocation of a proxy.

If you choose to send a completed proxy card bearing a later date than your original proxy card, the new proxy card must be received before the beginning of the Amtech special meeting. If you have instructed a bank, broker or other nominee to vote your shares of Amtech common stock, you must follow the directions you receive from your bank, broker or other nominee in order to change or revoke your vote.

Solicitation of Proxies

Amtech is soliciting your proxy in conjunction with the merger. Amtech will bear the entire cost of soliciting proxies from you. In addition to solicitation of proxies by mail, Amtech will request that banks, brokers and other record holders send proxies and proxy material to the beneficial owners of Amtech common stock and secure their voting instructions. Amtech will reimburse the record holders for their reasonable expenses in taking those actions. If necessary, Amtech may use its directors and several of its regular employees, who will not be specially compensated, to solicit proxies from the Amtech stockholders, either personally or by telephone, facsimile, letter or electronic means. Amtech has also made arrangements with Georgeson, Inc. to assist it in soliciting proxies and has agreed to pay Georgeson, Inc. approximately \$7,500 plus reasonable expenses for these services.

Attending the Meeting

Subject to space availability, all Amtech stockholders as of the record date, or their duly appointed proxies, may attend the Amtech special meeting. Since seating is limited, admission to the Amtech special meeting will be on a first-come, first-served basis. Registration and seating will begin at 8:30 a.m., local time.

If you hold your shares of Amtech common stock in your name as a stockholder of record and you wish to attend the Amtech special meeting, please bring your proxy card and evidence of your stock ownership, such as your most recent account statement, to the Amtech special meeting. You should also bring valid picture identification.

If your shares of Amtech common stock are held in street name in a stock brokerage account or by a bank or nominee and you wish to attend the Amtech special meeting, you need to bring a copy of a bank or brokerage statement to the Amtech special meeting reflecting your stock ownership as of the record date. You should also bring valid picture identification.

Delivery of Proxy Materials

As permitted by applicable law, only one copy of this joint proxy statement/prospectus is being delivered to stockholders residing at the same address, unless such stockholders have notified Amtech of their desire to receive multiple copies of the joint proxy statement/prospectus.

Amtech will promptly deliver, upon oral or written request, a separate copy of the joint proxy statement/prospectus to any stockholder residing at an address to which only one copy of such document was mailed. Requests for additional copies should be directed to Investor Relations at Amtech's corporate offices, 131 South Clark Drive Tempe, Arizona 85281 or by telephone at (480) 967-5146.

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Other Matters to Come Before the Amtech Special Meeting

Management knows of no other business to be presented at the Amtech special meeting, but if any other matters are properly presented at the meeting or any adjournments thereof, the persons named in the proxies will vote upon them in accordance with the board of directors' recommendations.

Assistance

If you have any questions concerning the merger or this joint proxy statement/prospectus, would like additional copies of this joint proxy statement/prospectus or need help voting your shares of Amtech common stock, please contact Amtech's proxy solicitor, Georgeson, Inc., at (866) 647-8872.

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AMTECH PROPOSALS

PROPOSAL NO. 1

AMTECH MERGER PROPOSAL

Amtech is asking its stockholders to adopt the merger agreement and approve the transactions contemplated thereby. Holders of Amtech common stock should read this joint proxy statement/prospectus carefully and in its entirety, including the annexes, for more detailed information concerning the merger agreement and the merger. A copy of the merger agreement is attached to this joint proxy statement/prospectus as Annex A.

After careful consideration, the Amtech board of directors, by a unanimous vote of all directors, approved the merger agreement and declared the merger agreement and the transactions contemplated thereby, including the merger, to be advisable and in the best interest of Amtech and the stockholders of Amtech. See *The Merger Amtech's Reasons for the Merger; Recommendation of Amtech's Board of Directors* beginning on page 117 in this joint proxy statement/prospectus for a more detailed discussion of the Amtech board of directors' recommendation.

The Amtech board of directors recommends a vote FOR the Amtech merger proposal.

PROPOSAL NO. 2

AMTECH ADJOURNMENT PROPOSAL

The Amtech special meeting may be adjourned to another time or place, if necessary or appropriate, to solicit additional proxies if there are insufficient votes at the time of the Amtech special meeting to adopt the Amtech merger proposal.

If, at the Amtech special meeting, the number of shares of Amtech common stock present or represented and voting in favor of the Amtech merger proposal is insufficient to adopt the Amtech merger proposal, Amtech intends to move to adjourn the Amtech special meeting in order to enable the Amtech board of directors to solicit additional proxies for approval of the merger. In that event, Amtech will ask its stockholders to vote upon the Amtech adjournment proposal, but not the Amtech merger proposal.

In this proposal, Amtech is asking its stockholders to authorize the holder of any proxy solicited by the Amtech board of directors on a discretionary basis to vote in favor of adjourning the Amtech special meeting to another time and place for the purpose of soliciting additional proxies, including the solicitation of proxies from Amtech stockholders who have previously voted.

The Amtech board of directors recommends a vote FOR the Amtech adjournment proposal.

INFORMATION ABOUT AMTECH

Amtech, which was incorporated in Arizona in October 1981, operates in two business segments: (i) solar and semiconductor equipment and (ii) polishing supplies. Amtech is a global manufacturer of capital equipment, including thermal processing, silicon wafer handling automation, and ion implant equipment and related consumables used in fabricating solar cells, LED and semiconductor devices. Semiconductors, or semiconductor chips, are fabricated on silicon wafer substrates, sliced from ingots, and are part of the circuitry, or electronic components, of many products including solar cells, computers, telecommunications devices, automotive products, consumer goods, and industrial

automation and control systems. Amtech's wafer handling, thermal processing and consumable products currently address the diffusion, oxidation, and deposition steps used in the fabrication of solar cells, LEDs, semiconductors, microelectromechanical systems (MEMS) and the polishing of newly sliced silicon wafers.

Amtech's stock is traded on NASDAQ under the symbol ASYS.

Amtech's principal office is located at 131 South Clark Drive Tempe, Arizona 85281. Additional information about Amtech and its subsidiaries is included in documents incorporated by reference in this joint proxy statement/prospectus. See "Where You Can Find More Information," beginning on page 163.

Table of Contents**INFORMATION ABOUT BTU****Overview**

BTU, which was founded in 1950, was incorporated as a Delaware corporation in 1981 and is headquartered in North Billerica, Massachusetts. BTU operates as a single business segment called Thermal Processing Capital Equipment. BTU's business consists of the designing, manufacturing, selling and servicing of thermal processing equipment and related process controls for use in the electronics, alternative energy, automotive and other industries. This includes the supply of solder reflow systems used for surface mount applications in printed circuit board assembly. Thermal processing equipment is used in: low temperature curing/encapsulation; hybrid integrated circuit manufacturing; integrated circuit packaging and sealing; and processing multi-chip modules. In addition, the equipment is used for solar cell processing, sintering nuclear fuel for commercial power generation, as well as brazing and the sintering of ceramics and powdered metals, and the deposition of precise thin film coatings. BTU's customers are multinational original equipment manufacturers and contract manufacturing companies.

BTU's customers require high throughput, high yield and highly reliable thermal processing systems with tightly controlled temperature and atmospheric parameters. In electronics assembly, BTU's convection solder reflow systems are used to attach electronic components to the printed circuit boards, primarily in the advanced, high-density, surface mount segments of this market. In the semiconductor market, BTU participates in both wafer level and die level packaging, where its thermal processing systems are used to connect and seal integrated circuits into a package. In the solar market, BTU offers processing equipment for both silicon and thin film photovoltaics. In the alternative energy market, BTU's customers use its thermal systems for the processing of nuclear fuel.

Industry Background*Electronics Markets*

Demand for increasingly sophisticated electronic devices continues, and BTU expects that new technologies such as wireless networks, next generation cellular phones and tablets will help to drive future growth. Electronic equipment continues to become more complex, yet end users are still demanding smaller, lighter and less expensive devices. This, in turn, requires increased performance and reduced cost, size, weight and power 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 BTU.

Printed Circuit Board Assembly. In the printed circuit board assembly process, semiconductor and discrete-devices plus other components are attached to printed circuit boards. The attachment process, which creates a permanent physical and electrical bond, is called solder reflow or surface mount reflow. Manufacturers rely on high throughput and highly reliable equipment to get the maximum efficiency in their production process.

Wafer Level and Die Level Semiconductor Packaging. Semiconductor packaging processes include precision thermal processing steps. In advanced semiconductor packaging, processing takes place at both the wafer level and die level. At the wafer level, deposited solder must be thermally treated to form perfectly spherical bumps. At the die level, these bumps allow the integrated circuits to be bonded to the semiconductor package. Advancements in the semiconductor industry toward higher chip speeds, smaller form factors and reduced costs are driving the transition to wafer level packaging from the traditional wire bonding technique.

Across all markets, the need for more versatile, more reliable and more advanced capital equipment persists. In addition, the continued globalization of manufacturing and the shift to low cost regions such as China, particularly for electronics and silicon photovoltaic producers, has driven the demand for equipment with a lower cost of ownership.

Alternative Energy Markets

BTU's alternative energy business primarily addresses two markets: the manufacturing of solar cells and nuclear fuels.

Photovoltaics. Silicon photovoltaic applications are served by BTU's metallization and annealing furnaces and in-line diffusion systems.

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BTU's metallization products include the recently introduced SINTERRA metallization firing furnace. SINTERRA combines advanced process features with industry-leading uptime as the new flagship of the BTU metallization line. These systems generally range in price from \$100,000 to \$250,000.

The MERIDIAN thermal processing system is used for phosphorous diffusion. This system is targeted for customers transitioning from batch to in-line processing. The MERIDIAN sells in the range of \$700,000 to \$1.3 million.

BTU offers solar processing equipment for both silicon and thin film photovoltaics. In thin film photovoltaics, BTU's equipment is used for both the Copper Indium Gallium Selenide (CIGS) and Cadmium Telluride (CdTe) processes. These thin film systems generally sell in the range of \$800,000 to \$2.0 million.

Nuclear Fuel. Another application for BTU systems is for sintering nuclear fuel. These sintering processes operate at approximately 1750°C in a hydrogen reduction atmosphere. Our leading product for this application is our patented Walking Beam system, which is ideally suited for the high volume manufacture of nuclear fuels. It uses a walking beam transport system to eliminate friction associated with the conveyance of heavy loads through the process chamber. Walking Beam systems, which are used to sinter gadolinium and uranium pellets used for nuclear fuel generation, generally sell in the range of \$2.7 million to \$3.3 million.

Technological Challenges

Continuous thermal processing systems present significant engineering challenges related to temperature control, atmosphere control, product handling, flux containment and disposal, and high system up time. Thermal processing systems must maintain accurate and uniform temperatures within their process chambers. The temperature within the process chamber is influenced by the rate at which components are moved through the system and the weight and density of the product. In addition, the thermal processing system's heat convection and/or radiation rate must be varied and controlled as components and materials are processed. The chamber must also dispense heat uniformly across the product at precise temperatures to ensure maximum process uniformity. Products must be heated and cooled at closely preset rates in order to avoid damage caused by thermal stress.

Another technological challenge for continuous thermal processing systems is achieving precisely controlled atmospheric conditions within the process chamber. In order to facilitate thermal processing without contamination of or damage to the product, many thermal processing systems use a substantially oxygen-free atmosphere of nitrogen or hydrogen in their process chambers. If such gases are used, the exit of process gases and/or the entry of contaminating air must be minimized, even though the product enters and exits the system continuously from the ambient atmosphere. Maintaining a pure, safe and controlled atmosphere in the open process chamber, while minimizing the consumption of nitrogen or hydrogen gases in order to reduce operating costs, presents significant engineering challenges.

Handling products in thermal processing systems requires highly reliable conveyance systems that can easily be converted to process a wide variety of products having different specifications, sometimes on side-by-side tracks through the process chamber. The product handling system must also fully support a wide variety of product sizes.

The mechanical components in thermal processing systems must operate almost continuously in a demanding, elevated temperature environment with frequent thermal cycles. The use of materials that are resistant to high temperature and thermal stress is important to achieving high reliability.

In applications using flux or other process chemicals, the volatile compounds that are vaporized during the thermal processing cycle must be safely contained and collected so that they do not condense in the system or damage the

environment. The efficient containment, collection and disposal of the flux or other process chemicals are important factors in achieving high system up time, high throughput and reliability.

BTU s Solution

BTU delivers a broad range of thermal processing systems to serve the needs of manufacturers that require high throughput, process yields and reliability with tightly controlled process parameters. BTU s systems are designed to enable BTU s customers

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to increase product performance, throughput and yield for electronics assembly, solar cell processing and nuclear fuel sintering by providing precise atmospheric and temperature control. In addition to the expected high performance of BTU's products, BTU believes maintaining the quality standards of its organization and its worldwide service and support are important to its success with industry leading global manufacturers.

BTU believes its customers continue to choose its products because of the following factors:

Accurate and Uniform Temperature. BTU's systems use convection, radiation and infrared heating technologies. BTU's high-rate convection and fully-enclosed coil heating modules are designed to provide controlled heating capacities across many different applications, thereby enabling BTU's customers to maximize process uniformity and throughput. In addition, BTU's systems are designed to apply heat uniformly across the product load, which is critical to ensure optimum processing. Heat up and cool down profiles are also closely controlled for process consistency and the protection of product.

Atmosphere Uniformity and Control. BTU's thermal processing systems are designed to provide precision control over atmospheric conditions within their process chambers by integrating its gas and physical curtain technologies. BTU's systems are designed to be capable of excluding virtually all oxygen from the critical process steps to maintain the safety and integrity of the process chamber atmosphere. In addition, BTU's systems are intended to minimize the consumption of nitrogen or hydrogen, thereby reducing the operating cost of maintaining the atmosphere.

Repeatability from System to System. BTU designs its systems to provide a high degree of repeatability from system to system through its atmospheric and temperature controls and the expected reliability of its systems. This repeatability is achieved through BTU's industry leading closed loop convection technology that is intended to ensure the same convection rate regardless of change in altitude or temperature. This is a critical attribute because BTU's customers must achieve consistent, uniform manufacturing performance in plants located throughout the world.

Processing Flexibility. Major electronics and solar cell manufacturers process many sizes of products and often need rapid product changeover capabilities. BTU's systems can process printed circuit boards or solar cells of different sizes with minimal or no reconfiguration. Rapid changeover reduces down time and increases manufacturing volume. In addition, BTU's solar cell processing equipment can be configured for multiple process applications allowing for versatility in materials manufacturing.

Reliability. BTU's customers place a high premium on reliability. Reliability is a major contributor to low cost of ownership because high up time can increase the productivity and efficiency of an entire production line. BTU believes its systems are the most reliable advanced thermal processing systems in the world.

Systems Integration. BTU provides fully integrated systems that include automated handling of its products, as well as full software integration with BTU's customers' factory management systems. This allows BTU's customers to monitor and analyze the process in real time from a central location.

Worldwide Customer Support. BTU's goal is to provide its customers with global technical service support, in-depth process engineering support and rapid delivery of its systems and parts. BTU provides its customer support through its on-site direct service organization and its independent sales and service representatives, supplemented with twenty-four hours a day, seven days a week telephone support and extensive customer training programs.

BTU's Strategy

BTU's objective is to be the leading provider of thermal and other processing systems to the electronics assembly and alternative energy markets. To achieve this goal and maximize value for BTU's shareholders, BTU's strategy includes the following elements:

1. Deepen relationships with key partners to facilitate product and process development for next generation technologies;
2. Continue to focus on cost reduction initiatives, including the improvement of BTU's global supply chain and reduction in materials costs;
3. Further penetrate existing markets, such as electronics, and new customers by developing innovative products with a low cost of ownership and by offering exceptional customer support; and
4. Expand BTU's low-cost manufacturing and engineering operations in China.

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Products

BTU supplies a broad range of primarily thermal processing systems for the electronics assembly and alternative energy markets. BTU's products are used for such applications as printed circuit board assembly and semiconductor packaging, solar cell manufacturing and nuclear fuel processing. Most of BTU's products are used for thermal processing operations; typically having a processing chamber that allows products to enter and exit in a continuous mode through the process chamber via a transport mechanism in most cases a conveyor belt. A control system regulates a series of electric heaters to produce a consistent, even temperature profile through radiant, convection or infrared heating as required by the customer's process.

Electronics Products

Printed Circuit Board Assembly. BTU currently sells thermal processing systems used in the solder reflow and curing stages of printed circuit board assembly. BTU's printed circuit board assembly products are used primarily in the advanced, high-density segments of the market that utilize surface mount technology.

At the end of 2012, BTU announced the DYNAMO, the newest reflow oven platform, designed specifically for processing portable electronics. The DYNAMO convection reflow oven is positioned to maximize customer value for portable electronics manufacturers, where products are typically lighter, smaller and less complex than other applications. Featuring a new convection design, the DYNAMO delivers high efficiency through innovative thermal transfer delivering excellent temperature and gas flow uniformity across the chamber. The DYNAMO platform is targeted geographically in markets with high concentrations of portable electronics manufacturers such as Asia and South America.

BTU's PYRAMAX family of convection reflow systems is designed on a single platform to be rapidly configurable, which is intended to reduce the product build cycle and allow BTU to meet customer demands for shorter delivery lead times. BTU believes PYRAMAX products offer its customers reduced capital cost, lower nitrogen consumption and reduced scheduled maintenance cycles.

PYRAMAX systems provide increased process flexibility due to their ability to process printed circuit boards up to 24 inches wide. Rated up to 400°C, these products are designed to be capable of operating in air or nitrogen atmospheres and to have increased convection flow for greater performance and lead free processes. PYRAMAX utilizes impingement technology to transfer heat to the substrate. These systems are offered in 6, 8, 10 and 12-zone heated lengths and are capable of processing lead free solder. They generally range in price from \$40,000 to \$150,000.

The market need for lead free solder reflow presents a unique challenge by requiring a process temperature that is critically close to the destruct temperature of the components that are being attached. The PYRAMAX system's unique closed loop convection control is designed to provide a repeatable tight temperature window that is optimized for lead free solder reflow.

The solder reflow process requires the thermal processing system to manage flux residues eliminated during the processing of the printed circuit boards. PYRAMAX systems are equipped with a patented flux management system that is structured to isolate the flux outside the main process chamber, thereby helping to maintain the integrity of the atmosphere and facilitate easy disposal.

Wafer Level and Die Level Semiconductor Packaging. We sell several systems for the thermal processes used in advanced semiconductor packaging.

Flip-chip reflow provides the physical and electronic bond of the semiconductor device to its package. The PYRAMAX families of convection reflow systems, utilizing our closed loop convection technology, rate at up to 400°C and operate in air or nitrogen atmospheres. These products utilize impingement technology to transfer heat to the substrate. Using thermal power arrays of five-kilowatt heaters, 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. The products generally range in price from \$70,000 to \$180,000.

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The processing of advanced materials used in non-fossil fuel power generation applications is a significant target market. The cost fluctuations of fossil fuels and environmental concerns have increased demand for clean power. For power generation applications, BTU serves the solar cell and nuclear fuel markets. BTU supports its worldwide alternative energy customers through its global sales and service network.

Solar Cells. BTU offers solar processing equipment for both silicon and thin film photovoltaics. Silicon photovoltaic applications are served by BTU's metallization, in-line diffusion, and annealing processes and systems. BTU's MERIDIAN in-line diffusion system features the MERIDIAN diffusion furnace and phosphorus coater, which includes key advances such as back-side and top-side coating and an integrated dryer. The system can be configured to achieve up to 1500 (156mm) wafers per hour and can also be configured to use third party coating applications. The in-line process offers reduced wafer handling and greater throughput than traditional batch processing. Reduced handling translates into lower breakage rates, improved yield and lower cost of ownership. The MERIDIAN system price starts at \$700,000 and varies depending on configuration.

For the metallization process, BTU offers a complete line of Rapid Thermal Processing furnaces utilizing near infrared heating technology. Systems come in varying lengths and widths to suit specific throughput requirements. The product line has been specifically designed for the solar cell metallization process and is used for contact drying and firing. Specialized features include rapid heating via densely spaced tungsten lamps and rapid cooling rates obtained through proprietary water cooling technology. BTU recently introduced the SINTERRA metallization product line. SINTERRA combines advanced process features with industry-leading uptime as the new flagship of the BTU metallization line. These systems generally range in price from \$100,000 to \$250,000.

To improve solar cell efficiency and reduce manufacturing cost, the solar market invests aggressively in new technologies. BTU offers next generation thermal processing equipment to enable such new technologies.

Annealing of additional and/or novel layers and plating are becoming important process steps. BTU has developed products for these applications, providing production scale equipment to several key solar companies and pilot units to others. BTU expects this to be an emerging business in the years to come, and BTU is well positioned to be a leader in this emerging area.

In thin film photovoltaics, BTU leverages its experience with large-scale, custom, in-line thermal processing systems. System designs are scalable and are sold for lab, pilot and production sized applications. These systems generally sell for in excess of \$1 million, although the price can vary widely based on size and features.

Nuclear Fuels. We offer both walking beam and pusher systems for sintering nuclear fuel. These processes operate at temperatures in the range of 1750°C in a hydrogen reduction atmosphere. BTU's most important product for this market is its patented Walking Beam system designed for high volume manufacture of nuclear fuels. It uses a walking beam transport system to eliminate friction associated with the conveyance of heavy loads. Walking Beam systems are used to sinter gadolinium and uranium fuel-pellets used for nuclear power generation. These systems generally sell in the range of \$2.7 million to \$3.3 million.

Customers

Many of BTU's principal customers are large-volume global manufacturers that use BTU's products in multiple facilities worldwide. Of BTU's top ten revenue generating customers in 2013, one customer accounted for \$8.2 million, or 17.4% of total net sales.

Sales and Support

BTU markets and sells its products primarily through its direct sales force and independent sales representatives throughout the world. BTU's on-site direct service organization and its independent sales representatives provide ongoing support to customers using BTU's products. These services include implementing continuous improvement tools related both to the cost of BTU's products and to their technical performance. As well as process support, BTU's strong global support infrastructure allows BTU to market future sales within its current customer base and contributes to its competitive position. BTU's management and

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sales teams participate in periodic trade conventions, through which BTU markets its products to potential customers. BTU has implemented a software based quotation system to simplify and accelerate its sales process for its customers.

Research, Development and Engineering

BTU's efforts in 2013 and 2014 have been directed towards development of new products for both the electronics and alternative energy businesses, improvements to its offerings in the solar cell equipment market, as well as upgrades to its core in-line furnace business. Product platform extensions are being handled by its U.S. and China technical team, while most new technology is being developed in the U.S. BTU's DYNAMO solder reflow platform was designed through collaboration between its China and U.S. teams. BTU's engineering and applications teams are working with a number of partners to further develop processes related to metallization, annealing and in-line diffusion for both standard and next generation high efficiency cells which would uniquely benefit from BTU's type of low cost process.

BTU's development team is looking at and modeling its heating, cooling, conveyance methods, insulation, and materials of construction to enhance its furnace performance and widen the possible number of process applications available to BTU. A number of these ideas are already being made available to BTU's customers, and BTU expects this to continue. BTU is also piloting a novel heating system and investigating possible applications for it.

BTU's research, development, and engineering costs for the years ending December 31, 2013, 2012, and 2011 can be found in BTU's historic financial statements beginning on page 72.

Manufacturing and Suppliers

BTU's principal manufacturing operations consist of final assembly, systems integration and testing at its facilities in North Billerica, Massachusetts and Shanghai, China. BTU outsources the manufacture of many of its subsystems to a number of key suppliers and maintains close relationships with them while also maintaining qualified alternative suppliers. In 2004, BTU's manufacturing facility in Shanghai, China was established for BTU's electronics assembly products and solar cell metallization products, as well as local sourcing of materials.

In the past few years, BTU has substantially improved its global supply chain and reduced its material costs. BTU has upgraded and reorganized its operations organization in the U.S. In addition, BTU has leveraged its presence in China to widen the supply base for its Shanghai manufactured electronics assembly and solar cell metallization products.

Continuous improvement in the supply chain is a key strategic imperative. BTU has established a global sourcing organization, based in China, to further develop high quality, cost effective suppliers throughout the world.

BTU's commitment to developing new products, a desire to increase collaboration between engineering teams located in the U.S. and China, and the need to protect BTU's intellectual property led BTU to implement an enterprise data management system in its North Billerica and Shanghai design centers. In addition to the overall benefits of increased collaboration and information control, the system has significantly improved the productivity of China-based engineers, speeding migration of new products to manufacturing facilities in Shanghai.

BTU has outsourced the manufacture of most of its significant component systems, thereby reducing cycle time and increasing its inventory turnover. BTU seeks to adhere closely to the principles of total quality management and has been ISO 9001 certified since 1998. In its North Billerica facility, it converted to ISO 9001:2008 in October 2009, and its Shanghai, China manufacturing operations have been ISO 9001:2008 certified since July 2009. BTU's customers, suppliers and employees are strongly encouraged to provide feedback and suggestions for improvements in products and services.

Intellectual Property

BTU seeks to protect its intellectual property by filing patents on proprietary features of its advanced thermal processing systems and by challenging third parties that it believes infringe on its patents. BTU also protects its intellectual property rights, including its trademarks, trade secrets and copyrights with nondisclosure and confidentiality agreements with employees,

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consultants and key customers. As a global supplier of equipment, BTU recognizes that the laws of certain foreign countries may not protect its intellectual property to the same extent as the laws of the U.S. BTU's current portfolio includes 68 issued patents, 27 trademarks that are registered and 20 pending patent applications.

BTU licenses software programs from third-party developers and incorporates them into its products. Generally, these agreements grant BTU non-exclusive licenses to use the software and terminate only upon a material breach by BTU. BTU believes that such licenses are generally available on commercially reasonable terms from a number of licensors.

Backlog

Backlog as of December 31, 2013, was \$6.5 million, compared to \$6.2 million as of December 31, 2012. As of December 31, 2013, BTU expected to ship its year-end backlog within 40 weeks. Solder reflow systems are typically shipped within 3 to 8 weeks. The backlog of BTU's custom systems is expected to be shipped within 12 to 40 weeks. BTU includes in backlog only those orders for which the customer has issued a purchase order and for which BTU has a defined delivery schedule within 12 months. Due to possible changes in delivery schedules, lead time variations and order cancellations, BTU's backlog at any particular date is not necessarily representative of sales for any subsequent period.

Competition

Several companies compete with BTU in selling thermal processing systems. Although price is a factor in buying decisions, BTU believes that technological leadership, process capability, throughput, environmental safeguards, uptime, mean time-to-repair, cost of ownership and after-sale support have become increasingly important factors. BTU competes primarily on the basis of these criteria, rather than on the basis of price only.

BTU's principal competitors for printed circuit board assembly equipment and advanced semiconductor packaging vary by product application. BTU's principal competitors for solder reflow systems are Vitronics-Soltec, Heller, Folungwin, ERSA, and Rehm. BTU's principal competitors for advanced semiconductor packaging are Vitronics-Soltec and Heller. BTU's systems for the alternative energy markets and other applications compete primarily against products offered by Despatch, Amtech, Centrotherm, SierraTherm, Smit and Harper. BTU also faces competition from emerging low cost Asian manufacturers and other established European manufacturers.

Employees

As of December 31, 2013, BTU had 290 employees, of whom 68 were engaged in sales, marketing and service, 27 in research, development and engineering, 32 in finance and administration and 163 in operations. Of these 290 employees, 190 reside outside of the U.S. None of BTU's employees are represented by a collective bargaining agreement, and BTU believes that it has satisfactory relations with its employees.

Environmental

One of BTU's core values is protecting the environment in which it operates and the environment in which its equipment operates. Compliance with laws and regulations regarding the discharge of materials into the environment, or otherwise relating to the protection of the environment, has not had any material effects on BTU's capital expenditures, earnings or competitive position. BTU does not anticipate any material capital expenditures for environmental control in its facilities in 2014.

As an equipment manufacturer, BTU generates and disposes of small quantities of solid waste that is considered hazardous under Environmental Protection Agency (EPA) regulations. Because BTU has historically used a waste disposal firm that disposed of the solid waste at a site that the EPA has designated as a Superfund site, BTU has been named by the EPA as one of the entities responsible for a portion of the expected clean-up costs. Based on its proportional responsibility, as negotiated with and agreed to by the EPA, BTU 's liability related to this matter is \$221,613. This amount is included in Accrued Expenses on the Consolidated Balance Sheet as of September 28, 2014.

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BTU's Web Site

Our web site is www.btu.com. It provides information about BTU, and allows interested persons to obtain, free of charge, a copy of BTU's Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, including exhibits, and any amendments to those reports filed with or furnished to the Securities and Exchange Commission pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. BTU makes these reports available through its web site as soon as reasonably practicable after its electronic filing of such materials with, or the furnishing of them to, the Securities and Exchange Commission. References to BTU's web site are inactive textual references only, and the information contained or incorporated on its web site is not a part of or incorporated into this joint proxy statement/prospectus.

Facilities

BTU maintains its headquarters in North Billerica, Massachusetts, where it owns a 150,000 square foot facility. The facility is subject to a mortgage which had an outstanding balance on September 28, 2014 of approximately \$7.3 million. BTU also operates an approximately 45,000 square foot leased manufacturing, engineering, sales and service facility in Shanghai, China.

In England, BTU leases a facility for its European and Near East sales and service operations. In the Asia Pacific region, BTU leases sales and service offices in Singapore and Malaysia.

Legal Proceedings

From time to time, BTU is involved in various legal matters arising in the ordinary course of business. BTU believes that the ultimate resolution of any existing matter will not have a material adverse effect on its business or consolidated financial results.

Shortly after BTU entered into the merger agreement with Amtech on October 21, 2014, BTU learned that two separate putative stockholder class action complaints were filed in the Court of Chancery of the State of Delaware. The first was filed on November 4, 2014, purportedly on behalf of BTU's public stockholders, against the members of the BTU Board, Amtech and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by causing BTU to enter into the merger agreement and by approving the merger, and that Amtech and Merger Sub aided and abetted such alleged breaches of fiduciary duties. In addition, the complaint alleges that the Merger Agreement improperly favors Amtech and unduly restricts BTU's ability to negotiate with other potential bidders. The complaint generally seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting Amtech, Merger Sub, and BTU from consummating the merger, other forms of equitable relief, and compensatory damages. BTU believes that the claims are without merit and it intends to defend against the litigation vigorously on behalf of BTU and the BTU board of directors.

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

to defend against the litigation vigorously on behalf of BTU and the BTU board of directors.

Table of Contents**Management's Discussion and Analysis of Financial Condition and Results of Operations of BTU**

You should read the following discussion and analysis of financial condition and results of operations together with the Selected Consolidated Historical Financial Data of BTU section of this joint proxy statement/prospectus and BTU's financial statements and the related notes included in this joint proxy statement/prospectus. In addition to historical information, the following discussion contains forward-looking statements that involve risks, uncertainties and assumptions. BTU's actual results could differ materially from those anticipated by the forward-looking statements due to important factors including, but not limited to, those set forth in the Risk Factors section of this joint proxy statement/prospectus beginning on page 29.

Overview

BTU, which was founded in 1950, was incorporated as a Delaware corporation in 1981 and is headquartered in North Billerica, Massachusetts. BTU operates as a single business segment called Thermal Processing Capital Equipment. BTU's business consists of the designing, manufacturing, selling and servicing of thermal processing equipment and related process controls for use in the electronics, alternative energy, automotive and other industries. This includes the supply of solder reflow systems used for surface mount applications in printed circuit board assembly. Thermal processing equipment is used in: low temperature curing/encapsulation; hybrid integrated circuit manufacturing; integrated circuit packaging and sealing; and processing multi-chip modules. In addition, the equipment is used for solar cell processing, sintering nuclear fuel for commercial power generation, as well as brazing and the sintering of ceramics and powdered metals, and the deposition of precise thin film coatings. BTU's customers are multinational original equipment manufacturers and contract manufacturing companies.

BTU's customers require high throughput, high yield and highly reliable thermal processing systems with tightly controlled temperature and atmospheric parameters. In electronics assembly, BTU's convection solder reflow systems are used to attach electronic components to the printed circuit boards, primarily in the advanced, high-density, surface mount segments of this market. In the semiconductor market, BTU participates in both wafer level and die level packaging, where its thermal processing systems are used to connect and seal integrated circuits into a package. In the solar market, BTU offers processing equipment for both silicon and thin film photovoltaics. In the alternative energy market, BTU's customers use BTU's thermal systems for the processing of nuclear fuel.

Critical Accounting Policies and Significant Estimates

The following is a discussion of those accounting policies that BTU deems to be critical—that is, they are important to the portrayal of BTU's financial condition and results of operations, and they reflect management's reliance on estimates regarding matters that are inherently uncertain.

Revenue Recognition. BTU recognizes revenue in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 605, *Revenue Recognition* (ASC 605). Under these guidelines, BTU recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred or services rendered, the price is fixed or determinable and payment is reasonably assured. Under these requirements, BTU recognizes revenue upon acceptance when the terms of sale include customer acceptance provisions and compliance with those customer acceptance provisions has not been previously demonstrated. Applying the requirements of ASC 605 to future sales arrangements used in BTU's equipment sales may result in the deferral of the revenue for some equipment sales. Products shipped to customers that do not meet the threshold requirements for revenue recognition as outlined above remain in BTU's inventory on the Consolidated Balance Sheet until revenue is recognized. Any cash collected from customers for products for which revenue has been deferred is recorded as Deferred Revenue on the Consolidated Balance Sheet.

BTU also has certain sales transactions for products which are not completed within the normal operating cycle of the business. It is BTU's policy to account for these transactions using the percentage of completion method for revenue recognition purposes when all of the following criteria exist: (1) BTU has received the purchase order or entered into a legally binding contract, (2) the customer is credit worthy and collection is probable or customer prepayments are required at product completion milestones or specific dates, (3) the sales value of the product to be delivered is significant in amount when compared to BTU's other products, and (4) the costs can be reasonably estimated, there is no major technological uncertainty and the total engineering, material procurement, product assembly and test cycle time extend over a period of six months or longer.

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Under the percentage of completion method, revenue and gross margins to date are recognized based upon the ratio of costs incurred to date compared to the latest estimate of total costs to complete the product as a percentage of the total contract revenue for the product. Revisions in costs and gross margin percentage estimates are reflected in the period in which the facts causing the revision become known. Provisions for total estimated losses on uncompleted contracts, if any, are made in the period in which such losses are determined. For the years ended December 31, 2013, 2012 and 2011, BTU recorded revenue of \$0, \$1,731,686 and \$2,406,714, using the percentage of completion method, respectively.

Inventory Valuation. BTU's inventories consist of material, labor and manufacturing overhead costs. BTU determines the cost of inventory based on standard cost and then adjusts inventories to actual cost at reasonable intervals to reflect current conditions to approximate the first-in, first-out method. BTU regularly reviews the quantity of inventories on hand and compares these quantities to the expected usage of each applicable product or product line. BTU's inventories are adjusted in value to the lower of costs or net realizable value. Since the value of BTU's inventories depends in part on its estimates of each product's net realizable value, adjustments may be needed to reflect changes in valuation. Any adjustments BTU is required to make to lower the value of the inventories are recorded as a charge to cost of sales and establish a new cost basis. BTU recorded inventory provisions in cost of goods sold of \$1,868,000, \$5,261,000 and \$2,294,000 for the years ended December 31, 2013, 2012 and 2011, respectively.

Stock-Based Compensation. BTU accounts for share-based compensation in accordance with the provisions of FASB ASC Topic 718, *Compensation - Stock Compensation* (ASC 718). Under these guidelines, BTU expenses share-based compensation under the straight-line method. The choice of a valuation technique, and the approach utilized to develop the underlying assumptions for that technique, involve significant judgments. These judgments reflect management's assessment of the most accurate method of valuing the stock options BTU issues based on our historical experience, knowledge of current conditions and beliefs of what could occur in the future given available information. BTU's judgments could change over time as additional information becomes available to BTU, or the facts underlying BTU's assumptions change over time, and any change in BTU's judgments could have a material effect on its financial statements. BTU believes that its estimates incorporate all relevant information and represent a reasonable approximation in light of the difficulties involved in valuing non-traded stock options. For the years ended December 31, 2013, 2012 and 2011, BTU recorded share based compensation of \$631,000, \$836,000 and \$1,272,000, respectively.

Accounting for Income Taxes. BTU determines its annual income tax provision in each of the jurisdictions in which it operates. This involves determining our current and deferred income tax expense as well as accounting for differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. The future tax consequences attributable to these differences result in deferred tax assets and liabilities, which are included in BTU's Consolidated Balance Sheets. BTU assesses the recoverability of the deferred tax assets by considering whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. To the extent BTU believes that recovery does not meet this more likely than not standard as required in FASB ASC Topic 740, *Income Taxes* (ASC 740), it must establish a valuation allowance.

Management's judgments and estimates are required in determining BTU's income tax provision, deferred tax assets and liabilities and any valuation allowance recorded against deferred tax assets. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the company operates and the length of carryback and carryforward periods. According to those standards, a valuation allowance may be needed when the negative evidence includes cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of management's review as of September 29, 2013, BTU concluded that it was appropriate to establish a full valuation allowance for net deferred tax assets in the China manufacturing subsidiary, where cumulative losses have been incurred during recent periods. The significant

fluctuations in BTU's quarterly tax rate, exclusive of the fluctuation related to the establishment of the valuation allowance, as a percent of consolidated pre-tax income or loss, are the result of the different statutory tax rates in each of BTU's non-U.S. locations and the fluctuations of pre-tax income (loss) generated in these jurisdictions. A portion of the consolidated annual tax provision relates to Chinese withholding taxes which are not directly related to pre-tax income in China. China withholding taxes primarily result from corporate royalty charges based on the China manufacturing subsidiary net sales. U.S. taxes have had no impact to the rate fluctuation as the U.S. company operates at a loss.

BTU assesses tax positions taken on tax returns, including recognition of potential interest and penalties, in accordance with the recognition thresholds and measurement attributes outlined in ASC 740. Interest and penalties recognized, if any, would be

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classified as a component of income tax expense. An uncertain tax position represents BTU's expected treatment of a tax position taken in a filed tax return, or planned to be taken in a future tax return, that has not been reflected in measuring income tax expense for financial reporting purposes. BTU believes that it has appropriate support for the income tax positions taken and to be taken on its tax returns and that its accruals for tax liabilities are adequate for all open years based on an assessment of many factors, including past experience and interpretations of tax law applied to the facts of each matter. As of December 31, 2013 and 2012, BTU has recorded accruals of approximately \$114,000 in connection with uncertain tax positions.

BTU's major tax jurisdictions include the United States and China. BTU is no longer subject to U.S. state or local and non-U.S. income tax examinations by tax authorities in its major jurisdictions for years before 2008, except to the extent of net operating loss and tax credit carryforwards from those years. For the year ended December 31, 2013, there were no material changes to the total amount of unrecognized tax benefits. BTU does not expect any significant increases or decreases for uncertain tax positions during the next 12 months.

In the past, BTU has benefited from a partial tax holiday in its Shanghai manufacturing subsidiary. The Chinese government tax authorities passed legislation that imposes an equalization of income tax rates for both domestic and foreign companies at a rate of 25%. This law became effective on January 1, 2008 and has been phased in by gradually increasing our tax rate until it reached 25% in the first quarter of 2012.

Results of Operations**Year ended December 31, 2013 compared to the year ended December 31, 2012**

The following table sets forth the percentage of net sales of certain items in BTU's Consolidated Statements of Operations for the periods indicated.

	Years Ended December 31,		
	2013	2012	2011
Net sales	100.0%	100.0%	100.0%
Cost of goods sold	69.2%	71.6%	62.5%
Gross profit	30.8%	28.4%	37.5%
Operating expenses:			
Selling, general and administrative	41.4%	36.1%	29.8%
Research, development and engineering	9.6%	9.4%	9.3%
Restructuring	0.0%	0.7%	0.5%
Operating loss	(20.3)%	(17.8)%	(2.1)%
Interest income	0.1%	0.1%	0.1%
Interest expense	(0.9)%	(0.8)%	(0.6)%
Foreign exchange loss	(0.4)%	(0.4)%	(0.2)%
Other income, net	0.1%	0.1%	0.5%
Loss before provision for income taxes	(21.3)%	(18.8)%	(2.3)%
Provision for income taxes	2.7%	0.1%	1.3%

Net loss	(24.0)%	(18.9)%	(3.6)%
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	Years Ended December 31,				Percent change
	2013	2012	(\$ in thousands)		
		% of net sales		% of net sales	
Net sales	\$ 47,754	100.0%	\$ 58,089	100.0%	(17.8)%
Cost of goods sold	33,048	69.2%	41,617	71.6%	(20.6)%
Gross profit	14,706	30.8%	16,472	28.4%	(10.7)%
Selling, general and administrative expenses	19,786	41.4%	20,965	36.1%	(5.6)%
Research, development and engineering expenses	4,604	9.6%	5,450	9.4%	(15.5)%
Restructuring		0.0%	424	0.7%	(100.0)%
Operating loss	(9,684)	(20.3)%	(10,367)	(17.8)%	(6.6)%
Loss before provision for income taxes	(10,177)	(21.3)%	(10,932)	(18.8)%	(6.9)%
Provision for income taxes	1,291	2.7%	65	0.1%	1886.2%
Net loss	\$ (11,468)	(24.0)%	\$ (10,997)	(18.9)%	4.3%

Net Sales. Net sales in 2013 decreased by \$10.3 million or 17.8% compared to 2012. Net sales for BTU's electronics market systems decreased from \$42.0 million in 2012 to \$40.2 million in 2013, a decrease of \$1.8 million or 4.4%. The alternative energy systems sales decreased from \$7.4 million in 2012 to \$1.6 million in 2013, a decrease of \$5.9 million or 79.1%. The other market systems, parts and service sales decreased from \$8.6 million in 2012 to \$6.0 million in 2013, a decrease of \$2.6 million or 30.3%. The electronic market systems decrease represents a decrease in demand for Surface Mount Technology systems and other electronics, particularly in Asia, offset by an increase in demand for semiconductor packaging systems in the United States. BTU's alternative energy systems 2013 sales decrease as compared to 2012 was due to the continued weakening of the worldwide solar industry which started in the second quarter of 2011. The other market systems, parts and service 2013 sales decrease as compared to 2012 was due to the cyclical nature of the parts and service business combined with a decrease in other market system sales.

As a result of the weakness in capital spending in the solar industry, BTU expects minimal revenue from solar products in the immediate future.

The following table sets forth, for the periods indicated, revenues from sales into select geographies expressed in dollars per thousand and as a percentage of total revenue. The values shown represent the amount sold into each of the listed geographical areas.

	2013		2012		2011	
United States	\$ 8,541	18%	\$ 8,756	15%	\$ 13,199	17%
Europe and Near East	6,647	14%	9,242	16%	5,759	8%

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Asia Pacific	29,138	61%	38,606	66%	53,052	70%
Other Americas	3,428	7%	1,485	3%	4,118	5%
Total Revenue	\$ 47,754		\$ 58,089		\$ 76,128	

Gross Profit. Gross profit for 2013 decreased to \$14.7 million or a decrease of 10.7% from \$16.5 million in 2012. The gross profit as a percentage of sales for 2013 increased to 30.8% from 28.4% for 2012, due primarily to lower inventory write-downs recorded in 2013 compared to 2012. BTU's results of operations in future quarters could also be affected by further inventory write-downs. BTU assesses inventory at each period end and records inventory write-downs as appropriate based on market conditions.

Selling, General and Administrative (SG&A). SG&A expenses decreased by \$1.2 million or 5.6% from \$21.0 million in 2012 to \$19.8 million in 2013, but increased as a percentage of sales from 36.1% in 2012 to 41.4% in 2013. For the year ended

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December 31, 2013 as compared to the year ended December 31, 2012, the decrease is primarily due to the lower commission on reduced sales and cost reduction actions taken in BTU's service, marketing and administrative functions; offset by higher legal expense in 2013 due to the settlement of previously disclosed litigation. BTU's results of operations in future quarters could also be affected by further reductions in operating expenses.

Research, Development and Engineering (RD&E). RD&E expenses decreased by \$0.8 million or 15.5% to \$4.6 million in 2013 from \$5.5 million in 2012. The decreases are the result of headcount reductions and expense reductions in the Company's RD&E functions as BTU moderated our spending on the development of new solar technologies.

Operating Loss. The 17.8% net sales decrease and its associated negative effect on gross profit combined with higher legal expenses in connection with the settlement of previously disclosed litigation resulted in an operating loss in 2013 of \$9.7 million as compared to an operating loss of \$10.4 million in 2012.

Interest Income (Expense). During the year ended December 31, 2013 as compared to the year ended December 31, 2012, net interest expense remained relatively flat at \$0.4 million.

Foreign Exchange Loss. The foreign exchange loss in 2013 was \$193,000 as compared to a loss of \$224,000 in 2012. The net exchange loss is primarily the result of foreign currency exposure in the Company's foreign operations.

Income Taxes. For the twelve months ended December 31, 2013, BTU recorded an income tax provision of \$1.3 million compared to a provision of \$65,000 in the same period in the prior year. The income tax provision recorded for the twelve months ended December 31, 2013 is primarily due to establishing a \$1.1 million valuation allowance on all deferred tax assets related to the China manufacturing subsidiary. The applicable accounting standards require that a valuation allowance be established when it is more likely than not that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the company operates and the length of carryback and carryforward periods. According to those standards, a valuation allowance may be needed when the negative evidence includes cumulative losses in recent years. Therefore, cumulative losses weigh heavily in the overall assessment. As a result of BTU's review as of September 29, 2013, it concluded that it was appropriate to establish a full valuation allowance for net deferred tax assets in the China manufacturing subsidiary, where cumulative losses have been incurred during recent periods. The significant fluctuations in BTU's quarterly tax rate, exclusive of the fluctuation related to the establishment of the valuation allowance, as a percent of consolidated pre-tax income or loss, are the result of the different statutory tax rates in each of BTU's non-U.S. locations and the fluctuations of pre-tax income (loss) generated in these jurisdictions. A portion of the consolidated annual tax provision relates to Chinese withholding taxes which are not directly related to pre-tax income in China. China withholding taxes primarily result from corporate royalty charges based on the China manufacturing subsidiary net sales. U.S. taxes have had no impact to the rate fluctuation as the U.S. company operates at a loss.

BTU's statutory federal income tax rate is 34.0%. BTU's statutory income tax rate for its China manufacturing subsidiary is 25% in 2013 and 2012 and 24% in 2011. In 2014, the statutory tax rate for BTU's China manufacturing subsidiary will remain at 25%.

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	Years Ended December 31,				Percent change
	2012	2011			
	(\$ in thousands)		% of	% of	
			net sales	net sales	
Net sales	\$ 58,089	\$ 76,128	100.0%	100.0%	(23.7)%
Cost of goods sold	41,617	47,542	71.6%	62.5%	(12.5)%
Gross profit	16,472	28,586	28.4%	37.5%	(42.4)%
Selling, general and administrative expenses	20,965	22,721	36.1%	29.8%	(7.7)%
Research, development and engineering expenses	5,450	7,056	9.4%	9.3%	(22.8)%
Restructuring	424	401	0.7%	0.5%	5.7%
Operating loss	(10,367)	(1,592)	(17.8)%	(2.1)%	551.2%
Loss before provision for income taxes	(10,932)	(1,770)	(18.8)%	(2.3)%	517.6%
Provision for income taxes	65	952	0.1%	1.3%	(93.2)%
Net loss	\$ (10,997)	\$ (2,722)	(18.9)%	(3.6)%	304.0%

Net Sales. Net sales in 2012 decreased by \$18.0 million or 23.7% compared to 2011. Net sales for BTU's electronics market systems increased from \$34.9 million in 2011 to \$42.0 million in 2012, an increase of \$7.1 million or 20.3%. The alternative energy systems sales decreased from \$29.2 million in 2011 to \$7.4 million in 2012, a decrease of \$21.8 million or 74.6%. The other market systems, parts and service sales decreased from \$11.9 million in 2011 to \$8.6 million in 2012, a decrease of \$3.3 million or 27.7%. The electronic market systems increase represents an increase in demand for Surface Mount Technology systems, particularly in China and an increase in demand for semiconductor packaging systems in the United States. BTU's alternative energy systems 2012 sales decrease as compared to 2011 was due to the continued weakening of the worldwide solar industry which started in the second quarter of 2011. The other market systems, parts and service 2012 sales decrease as compared to 2011 was due to the cyclical nature of the parts and service business combined with a decrease in other market system sales.

As a result of the weakness in capital spending in the solar industry, BTU expects minimal revenue from solar products over the immediate future.

Gross Profit. Gross profit for 2012 decreased to \$16.5 million or a decrease of 42.4% from \$28.6 million in 2011. The gross profit as a percentage of sales for 2012 decreased to 28.4% from 37.5% for 2011, due primarily to lower volume, product mix and overhead under absorption at BTU's factories combined with higher inventory write-downs. BTU's results of operations in future quarters could also be affected by further inventory write-downs. BTU assesses inventory at each period end and records inventory write-downs as appropriate based on market conditions.

Selling, General and Administrative (SG&A). SG&A expenses decreased by \$1.8 million or 7.7% from \$22.7 million in 2011 to \$21.0 million in 2012, but increased as a percentage of sales from 29.8% in 2011 to 36.1% in 2012. For the year ended December 31, 2012 as compared to the year ended December 31, 2011, the decrease is primarily due to the lower commission on reduced sales and cost reduction actions taken in BTU's service, marketing and administrative

functions; offset by higher bad debt expense in 2012. In 2012, management determined certain accounts receivables were uncollectable and recorded bad debt expense of approximately \$1.4 million. BTU's results of operations in future quarters could also be affected by further reductions in operating expenses.

Research, Development and Engineering (RD&E). RD&E expenses decreased by \$1.6 million or 22.8% to \$5.5 million in 2012 from \$7.1 million in 2011. The decreases are the result of headcount reductions and expense reductions in BTU's RD&E functions as BTU moderated its spending on the development of new solar technologies.

Restructuring. BTU recorded a restructuring charge of \$424,000 in 2012 as compared to \$401,000 in 2011. This restructuring action was taken due to the continued slowdown in BTU's solar market product line.

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Operating Loss. The 23.7% net sales decrease and its associated negative effect on gross profit combined with higher inventory and bad debt reserves resulted in an operating loss in 2012 of \$10.4 million as compared to an operating loss of \$1.6 million in 2011.

Interest Income (Expense). During the year ended December 31, 2012 as compared to the year ended December 31, 2011, net interest expense remained relatively flat at \$0.4 million.

Foreign Exchange Loss. The foreign exchange loss in 2012 was \$224,000 as compared to a loss of \$139,000 in 2011. The net exchange loss is primarily the result of foreign currency exposure in BTU's foreign operations.

Income Taxes. In 2012, BTU recorded an income tax provision of \$65,000 as compared to \$1.0 million in 2011. BTU's income tax provision primarily relates to income and withholding taxes related to its China operations.

The significant fluctuations in BTU's quarterly tax rate, as a percent of consolidated pre-tax income or loss is the result of the different statutory tax rates in each of its non-U.S. locations and the fluctuations of pre-tax income (loss) generated in these jurisdictions. A portion of the consolidated annual tax provision relates to Chinese withholding taxes which are not directly related to pre-tax income in China. China withholding taxes primarily result from corporate royalty charges based on its China manufacturing subsidiary's net sales. U.S. income taxes have had no impact to the rate fluctuation as the U.S. company operates at a loss.

BTU's statutory federal income tax rate is 34.0%. BTU's statutory income tax rate for its China manufacturing subsidiary is 25% in 2012 and 24% in 2011.

Three months ended September 28, 2014 compared to the three months ended September 29, 2013

The following table sets forth certain items in BTU's Consolidated Statements of Operations as a percentage of net sales for the periods indicated.

Summary Condensed Consolidated Statements of Operations

	Three Months Ended				Percent Change
	September 28, 2014	September 29, 2013			
	(\$ in thousands)				
		% of		% of	
		Net Sales		Net Sales	
Net sales	\$ 15,917	100.0%	\$ 12,014	100.0%	32.5%
Cost of goods sold	9,840	61.8%	8,480	70.6%	16.0%
Gross profit	6,077	38.2%	3,534	29.4%	72.0%
Selling, general and administrative expenses	4,921	30.9%	6,228	51.8%	(21.0)%
Research, development and engineering expenses	939	5.9%	1,276	10.6%	(26.4)%
Operating income (loss)	217	1.4%	(3,970)	(33.0)%	(105.5)%
Income (loss) before provision for income taxes	110	0.7%	(4,076)	(33.9)%	(102.7)%
Provision for income taxes	110	0.7%	998	8.3%	(89.0)%

Net loss	\$	(0)	(0.0)%	\$ (5,074)	(42.2)%	(100.0)%
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Net Sales. Net sales for the third quarter of 2014 were \$15.9 million representing an increase of \$3.9 million, or 32.5%, as compared to the same period in the prior year. Net sales of electronic market systems increased by \$3.4 million, or 36.4%, as compared to the same period in the prior year. Net sales of alternative energy systems increased by \$0.2 million or 13.7%, as compared to the same period in the prior year. Net sales for other market systems, parts and service increased by \$0.3 million, or 22.8%, as compared to the same period in the prior year. The electronic market systems increase represents an increase in demand for Surface Mount Technology systems, particularly in Asia. The increase in alternative energy sales is mainly due to increased

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nuclear product sales. BTU's overall alternative energy sales continue to be low due to the continued weakness of the worldwide solar industry which started in the second quarter of 2011. The increase in sales in the other market systems, parts and service is primarily due to an overall increase in our parts and service business.

The following table sets forth, for the periods indicated, revenues from sales into select geographies expressed in dollars per thousand and as a percentage of total revenue. The values shown represent the amount sold into each of the listed geographical areas.

	Three Months Ended			
	September 28, 2014		September 29, 2013	
	(\$ in thousands)			
	\$	% of Revenues	\$	% of Revenues
United States	\$ 3,665	23.0%	\$ 2,357	19.6%
Europe, Near East	2,196	13.8%	2,007	16.7%
Asia Pacific	9,794	61.5%	6,118	50.9%
Other Americas	262	1.7%	1,532	12.8%
Total Revenue	\$ 15,917		\$ 12,014	

Gross Profit. In the third quarter of 2014, gross profit was \$6.1 million, an increase of \$2.5 million, as compared to the same period in the prior year due primarily to the 32.5% increase in net sales. In the third quarter of 2014, gross profit as a percentage of sales increased to 38.2% as compared to 29.4% in the same period in the prior year. This increase in the third quarter of 2014 was mainly the result of product sales mix, lower inventory reserves and lower under-absorption in BTU's factories as compared to the same period in the prior year.

Selling, General and Administrative (SG&A). SG&A expense in the third quarter of 2014 of \$4.9 million decreased by \$1.3 million as compared to the same period in the prior year. The prior year comparable period SG&A expense included a legal settlement in the amount of \$1.5 million; offset by \$0.2 million of lower commission expense.

Research, Development and Engineering (RD&E). RD&E expense in the third quarter of 2014 of \$0.9 million decreased by \$0.3 million as compared to the same period in the prior year. This decrease in spending was the result of lower development project spending.

Interest Income (Expense). In the third quarter of 2014, net interest expense remained relatively flat at \$0.1 million as compared to the same period in the prior year.

Foreign Exchange Income (Loss). The foreign exchange loss in the third quarter of 2014 was \$34,000 as compared to a loss of \$33,000 in the same period in the prior year. The net exchange loss is primarily the result of foreign currency transactions in BTU's foreign operations for the applicable period.

Income Taxes. For the three months ended September 28, 2014, BTU recorded an income tax provision of \$110,000 as compared to an income tax provision of \$1.0 million for the same period in the prior year. BTU's income tax provision primarily relates to withholding taxes. However, the income tax provision recorded in the same period in the prior year included the establishment of a \$1.1 million valuation allowance on all deferred tax assets related to the China manufacturing subsidiary. The significant fluctuations in BTU's quarterly tax rate, exclusive of the fluctuation

related to the establishment of the valuation allowance, as a percent of consolidated pre-tax income or loss, are the result of the different statutory tax rates in each of BTU's non-U.S. locations and the fluctuations of pre-tax income (loss) generated in these jurisdictions. A portion of the consolidated annual tax provision relates to Chinese withholding taxes which are not directly related to pre-tax income in China. Chinese withholding taxes primarily result from corporate royalty charges on net sales of BTU's Chinese manufacturing subsidiary. U.S. taxes have had no impact on the rate fluctuation as the U.S. entity operates at a loss for which no benefit is recognized due to a full valuation allowance.

Table of Contents**Nine months ended September 28, 2014 compared to the nine months ended September 29, 2013**

The following table sets forth certain items in BTU's Consolidated Statements of Operations as a percentage of net sales for the periods indicated.

Summary Condensed Consolidated Statements of Operations

	September 28, 2014		September 29, 2013		Percent change
	(\$ in thousands)				
		% of net sales		% of net sales	
Net sales	\$ 44,037	100.0%	\$ 36,761	100.0%	19.8%
Cost of goods sold	26,925	61.1%	25,103	68.3%	7.3%
Gross profit	17,112	38.9%	11,658	31.7%	46.8%
Selling, general and administrative expenses	14,622	33.2%	15,237	41.4%	(4.0)%
Research, development and engineering expenses	3,179	7.2%	3,427	9.3%	(7.2)%
Operating loss	(689)	(1.6)%	(7,006)	(19.1)%	(90.2)%
Loss before provision for income taxes	(884)	(2.0)%	(7,377)	(20.1)%	(88.0)%
Provision for income taxes	308	0.7%	1,083	2.9%	(71.6)%
Net loss	\$ (1,192)	(2.7)%	\$ (8,460)	(23.0)%	(85.9)%

Net Sales. Net sales for the first nine months of 2014 were \$44.0 million representing an increase of \$7.3 million, or 19.8%, as compared to the same period in the prior year. Net sales of electronic market systems increased by \$4.8 million, or 15.9%, and net sales of alternative energy systems increased by \$1.1 million or 68.6%, as compared to the same period in the prior year. Net sales for BTU's other market systems, parts and service sales increased by \$1.4 million, or 29.0%, as compared to the same period in the prior year. The electronic market systems increase represents an increase in demand for Surface Mount Technology systems, particularly in Asia. The increase in alternative energy sales is mainly due to increased nuclear product sales. BTU's overall alternative energy sales continue to be low due to the continued weakness of the worldwide solar industry which started in the second quarter of 2011. The increase in sales in the other market systems and parts and service is primarily due to a \$1.1 million of other market custom sales in the first nine months of 2014 compared to no other market custom sales in the first nine months of 2013.

The following table sets forth, for the periods indicated, revenues from sales into select geographies expressed as a percentage of total revenues. The values shown represent the amount sold into each of the listed geographical areas.

	September 28, 2014		September 29, 2013	
	(\$ in thousands)			
	\$	% of revenues	\$	% of revenues

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United States	\$ 8,094	18.4%	\$ 6,333	17.2%
Europe, Near East	7,113	16.2%	4,695	12.8%
Asia Pacific	26,220	59.5%	22,567	61.4%
Other Americas	2,610	5.9%	3,166	8.6%
Total Revenue	\$ 44,037		\$ 36,761	

Gross Profit. The first nine months of 2014 gross profit of \$17.1 million increased by \$5.5 million compared to the first nine months of 2013 due primarily to the 19.8% increase in net sales. In the first nine months of 2014, gross profit as a percentage of sales increased to 38.9% as compared to 31.7% in the same period in 2013, due primarily to product mix and improved overhead under absorption at our factories combined with lower inventory write-downs. BTU assesses inventory at each period end and records inventory write-downs as appropriate based on market conditions.

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Selling, General and Administrative (SG&A). SG&A expense in the first nine months of 2014 of \$14.6 million decreased by \$0.6 million compared to the same period in the prior year. The prior year comparable period SG&A expense included a legal settlement in the amount of \$1.5 million; offset by current period increased commissions and warranty expense due to increased sales volume for the first nine months of 2014.

Research, Development and Engineering (RD&E). RD&E expense in the first nine months of 2014 of \$3.2 million decreased by \$0.2 million as compared to the same period in the prior year. This decrease in spending was the result of lower development project spending.

Interest Income (Expense). In the first nine months of 2014, net interest expense remained relatively flat at \$0.2 million as compared to the same period in 2013.

Foreign Exchange Income (Loss). The foreign exchange gain in the first nine months of 2014 was \$22,000 as compared to a loss of \$147,000 in the same period in the prior year. The net exchange gain or loss is primarily the result of foreign currency transactions in the BTU's foreign operations in the applicable period.

Income Taxes. For the nine months ended September 28, 2014, BTU recorded an income tax provision of \$308,000 compared to a provision of \$1.1 million in the same period in the prior year. BTU's income tax provision primarily relates to withholding taxes. However, the income tax provision recorded in the same period in the prior year included the establishment of a \$1.1 million valuation allowance on all deferred tax assets related to the China manufacturing subsidiary. The significant fluctuations in BTU's quarterly tax rate, exclusive of the fluctuation related to the establishment of the valuation allowance, as a percent of consolidated pre-tax income or loss, are the result of the different statutory tax rates in each of BTU's non-U.S. locations and the fluctuations of pre-tax income (loss) generated in these jurisdictions. A portion of the consolidated annual tax provision relates to Chinese withholding taxes which are not directly related to pre-tax income in China. Chinese withholding taxes primarily result from corporate royalty charges on net sales of BTU's Chinese manufacturing subsidiary. U.S. taxes have had no impact on the rate fluctuation as the U.S. entity operates at a loss for which no benefit is recognized due to the full valuation allowance.

Liquidity and Capital Resources

For the full year 2013, BTU's net cash used in operating activities was \$5.8 million. In the first nine months of 2014, BTU's net cash used in operating activities was \$3.2 million. BTU's operating loss was \$0.7 million in the first nine months of 2014. BTU's operating loss was \$9.7 million for the full year 2013. On September 28, 2014, BTU had cash and cash equivalents of approximately \$10.4 million, a decrease of \$3.6 million, compared to \$14.0 million at December 31, 2013.

During the nine months ended September 28, 2014, BTU used net cash of approximately \$3.2 million for operating activities. This use of cash was primarily the result of a net loss of \$1.2 million, a decrease in deferred revenue of \$1.4 million, an increase in accounts receivable of \$1.4 million, an increase in inventory of \$1.3 million, an increase in other assets of \$1.6 million and a decrease in accrued expenses of \$0.6 million; offset by an increase in accounts payable of \$2.0 million, a decrease in other current assets of \$0.4 million and the adding back of non-cash expenses for depreciation and amortization of \$0.9 million, stock-based compensation of \$0.5 million, and inventory provisions of \$0.3 million.

In recent years, BTU's sales have declined as it continues to experience a significant downturn in the solar industry. The electronics and semiconductor industries have historically been cyclical and have experienced periodic downturns which affect the demand for equipment that BTU manufactures and markets. If the solar market does not improve, or if BTU's products do not gain the acceptance it has planned, BTU's cash resources will not allow it to

continue making investments in the solar market and it may need to take action to restructure itself. To conserve cash and manage BTU's liquidity, BTU has implemented certain expense reductions throughout 2013 and 2014. BTU will continue to assess its cost structure as it relates to its revenues and cash position in 2014, and may take further actions as it deems necessary.

As of September 28, 2014, BTU has no material commitments relating to capital expenditures. There were no significant changes in BTU's commitments from those that were outlined in the "Contractual Obligations" section of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2013 and as set forth below.

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BTU's total current assets at September 28, 2014 were \$34.5 million, current liabilities were \$14.2 million and long-term debt was \$6.9 million. Although BTU has incurred increased legal, accounting and other administrative fees and costs in connection with its pending merger with Amtech, it believes that existing cash and anticipated cash flows from operations will be sufficient to support its current operating plan for the next twelve months. However, these cash flow and operating results expectations are subject to numerous assumptions, many of which may not actually occur. If some or all of such assumptions do not occur, BTU's results may be substantially different than expected, and its cash resources could be reduced faster than currently anticipated. Such assumptions include, without limitation, assumptions about the timing and progress of the Amtech merger, the success of certain expense reduction efforts, the market acceptance of BTU's products, and not experiencing an adverse result in potential litigation.

Mortgage Note

On March 30, 2006, BTU entered into a \$10 million mortgage note secured by its real property in Billerica, Massachusetts, which had an initial maturity date of December 23, 2015. On September 9, 2010, BTU signed a First Loan Modification Agreement relating to the mortgage note, which reduced the annual interest rate from 6.84% to 5.50% and the monthly payment from \$76,280 to \$69,000.

On September 26, 2013, BTU signed a Second Loan Modification Agreement relating to the mortgage note, which extended the maturity date from December 23, 2015 to September 26, 2023. The modification also reduced the annual interest rate from 5.50% to 4.43% through September 26, 2018, at which time the interest rate will be adjusted to a per annum fixed rate equal to the aggregate of the FHLB Five Year Classic Advance Rate plus two hundred forty basis points. The current monthly payment was reduced from \$69,000 to \$57,997. The mortgage note had an outstanding balance on September 28, 2014 of approximately \$7.3 million. All outstanding principal and accrued and unpaid interest will be due and payable on the maturity date.

Letters of Credit

On August 31, 2009, BTU entered into a pledge and assignment agreement with a bank, pursuant to which the bank agreed to issue letters of credit which BTU will cash collateralize via restricted cash deposits at the bank. As of September 28, 2014, the value of the outstanding letters of credit issued by the bank for BTU was \$249,221. This restricted cash value is included in BTU's balance sheet in other current assets.

Contractual Obligations

BTU's contractual obligations at December 31, 2013 were (in thousands):

Contractual Obligations	Total	Payments Due by Period			
		2014	2015- 2016	2017- 2018	2019 and Thereafter
Long-term debt(1)	\$ 7,586	\$ 367	\$ 785	\$ 858	\$ 5,576
Interest on long-term debt	2,407	329	607	534	937
Operating leases	281	196	85		
Open purchase orders	2,462	2,462			
Total	\$ 12,736	\$ 3,354	\$ 1,477	\$ 1,392	\$ 6,513

- (1) Mortgage Note Payable, due September 2023
- (2) BTU has a liability at December 31, 2013, including potential interest and penalties, of approximately \$114,000 for uncertain tax positions that have been taken or are expected to be taken in various income tax returns. BTU does not know the ultimate resolution of these uncertain tax positions and as such, does not know the ultimate timing of payments related to this liability. Accordingly, these amounts are not included in the table above. There have been no significant changes in BTU's contractual obligations since December 31, 2013.

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Quantitative and Qualitative Disclosures About Market Risk

BTU has international subsidiaries in China and the United Kingdom and representative offices in Singapore, Malaysia, South Korea and Taiwan. These subsidiaries and offices transact business in their functional or local currency. Therefore, BTU is exposed to foreign currency exchange risks and fluctuations in foreign currencies, along with economic and political instability in the foreign countries in which it operates, all of which could adversely impact its results of operations and financial condition.

As of September 28, 2014 and December 31, 2013, all of BTU's long-term debt obligations were fixed rate financial instruments. However, on September 26, 2018, the interest rate related to BTU's mortgage note will be adjusted to a per annum fixed rate, to be applicable until the maturity date of September 26, 2023, equal to the aggregate of the FHLB Five Year Classic Advance Rate plus two hundred forty basis points.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders

BTU International, Inc.:

We have audited the accompanying consolidated balance sheets of BTU International, Inc., and subsidiaries as of December 31, 2013 and 2012 and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2013. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

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

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of BTU International, Inc., and subsidiaries as of December 31, 2013 and 2012 and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2013 in conformity with U.S. generally accepted accounting principles.

/s/ KPMG LLP

Boston, Massachusetts

March 13, 2014

Table of Contents**BTU INTERNATIONAL, INC.****CONSOLIDATED BALANCE SHEETS****(in thousands, except share and per share data)**

	As of December 31,	
	2013	2012
Assets		
Current assets		
Cash and cash equivalents	\$ 13,991	\$ 20,218
Accounts receivable, less allowance of \$1,280 and \$1,583 at December 31, 2013 and 2012	11,370	9,623
Inventories	9,831	9,547
Other current assets	1,126	4,131
Total current assets	36,318	43,519
Property, plant and equipment, at cost		
Land	210	210
Buildings and improvements	11,268	11,200
Machinery and equipment	16,231	16,168
Furniture and fixtures	1,082	1,062
	28,791	28,640
Less accumulated depreciation	(25,405)	(23,971)
Net property, plant and equipment	3,386	4,669
Other assets, net of accumulated amortization of \$2,582 in 2013 and \$2,552 in 2012	626	481
Total assets	\$ 40,330	\$ 48,669
Liabilities and stockholders' equity		
Current liabilities		
Current portion of long-term debt	\$ 367	\$ 400
Trade accounts payable	5,408	5,185
Deferred revenue	2,052	893
Accrued expenses	6,361	5,147
Total current liabilities	14,188	11,625
Long-term debt, less current portion	7,219	7,564
Other long-term liabilities	14	
Total liabilities	21,421	19,189

Commitments and contingencies

Stockholders' equity

Preferred stock, \$1.00 par value 5,000,000 shares authorized; no shares issued or outstanding		
Common stock, \$0.01 par value 25,000,000 shares authorized; 10,924,856 shares issued and 9,556,889 shares outstanding at December 31, 2013 and 10,898,939 shares issued and 9,530,972 shares outstanding at December 31, 2012	109	109
Additional paid-in capital	52,204	51,545
Accumulated deficit	(30,853)	(19,385)
Less: treasury stock at cost, 1,367,967 shares at December 31, 2013 and December 31, 2012	(4,990)	(4,990)
Accumulated other comprehensive income	2,439	2,201
Total stockholders' equity	18,909	29,480
Total liabilities and stockholders' equity	\$ 40,330	\$ 48,669

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

Table of Contents**BTU INTERNATIONAL, INC.****CONSOLIDATED STATEMENTS OF OPERATIONS****(in thousands, except per share data)**

	Years Ended December 31,		
	2013	2012	2011
Net sales	\$ 47,754	\$ 58,089	\$ 76,128
Cost of goods sold	33,048	41,617	47,542
Gross profit	14,706	16,472	28,586
Selling, general and administrative	19,786	20,965	22,721
Research, development and engineering	4,604	5,450	7,056
Restructuring		424	401
Operating loss	(9,684)	(10,367)	(1,592)
Interest income	53	63	77
Interest expense	(418)	(462)	(481)
Foreign exchange loss	(193)	(224)	(139)
Other income, net	65	58	365
Loss before provision for income taxes	(10,177)	(10,932)	(1,770)
Provision for income taxes	1,291	65	952
Net loss	\$ (11,468)	\$ (10,997)	\$ (2,722)
Loss per share:			
Basic	\$ (1.20)	\$ (1.16)	\$ (0.29)
Diluted	\$ (1.20)	\$ (1.16)	\$ (0.29)
Weighted average number of shares outstanding:			
Basic	9,539	9,509	9,434
Diluted	9,539	9,509	9,434

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

Table of Contents**BTU INTERNATIONAL, INC.****CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**

	Years Ended December 31,		
	2013	2012	2011
	(In thousands)		
Comprehensive loss is calculated as follows:			
Net loss	\$ (11,468)	\$ (10,997)	\$ (2,722)
Other comprehensive income:			
Foreign currency translation adjustment	238	126	450
Comprehensive loss	\$ (11,230)	\$ (10,871)	\$ (2,272)

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

Table of Contents**BTU INTERNATIONAL, INC.****CONSOLIDATED STATEMENTS OF STOCKHOLDERS EQUITY**

(in thousands)

	Common Stock			Additional Paid-In Capital	Accumulated Deficit	Treasury Stock		Accumulated Other Comprehensive Income	Total
	# of shares	\$	\$			# of shares	\$		
Balance at December 31, 2010	10,718	\$ 107	\$ 48,764	\$ (5,666)	1,368	\$ (4,990)	\$ 1,625	\$ 39,840	
Net loss				(2,722)				(2,722)	
Exercise of stock options	123	2	519					521	
Issuance of common stock	27		91					91	
Translation adjustment							450	450	
Stock-based compensation			1,272					1,272	
Balance at December 31, 2011	10,868	\$ 109	\$ 50,646	\$ (8,388)	1,368	\$ (4,990)	\$ 2,075	\$ 39,452	
Net loss				(10,997)				(10,997)	
Exercise of stock options	3		10					10	
Issuance of common stock	28		53					53	
Translation adjustment							126	126	
Stock-based compensation			836					836	
Balance at December 31, 2012	10,899	\$ 109	\$ 51,545	\$ (19,385)	1,368	\$ (4,990)	\$ 2,201	\$ 29,480	
Net loss				(11,468)				(11,468)	
Issuance of common stock	26		28					28	
Translation adjustment							238	238	
Stock-based compensation			631					631	
Balance at December 31, 2013	10,925	\$ 109	\$ 52,204	\$ (30,853)	1,368	\$ (4,990)	\$ 2,439	\$ 18,909	

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

Table of Contents**BTU INTERNATIONAL, INC.****CONSOLIDATED STATEMENTS OF CASH FLOWS****(in thousands)**

	Years Ended December 31,		
	2013	2012	2011
Cash flows from operating activities:			
Net loss	\$ (11,468)	\$ (10,997)	\$ (2,722)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation and amortization	1,633	1,702	1,800
Provision (recovery) for bad debts	(266)	1,383	(49)
Provision for inventory	1,868	5,261	2,294
Stock-based compensation	631	836	1,272
Deferred taxes	852	(391)	(77)
Gain on sale of property, plant and equipment	(51)		
Loss on disposal of fixed assets			6
Net change in operating assets and liabilities:			
Accounts receivable	(1,369)	1,452	5,709
Inventories	(2,042)	2,191	(592)
Other current assets	2,354	(1,785)	(843)
Other assets	(305)	(203)	200
Accounts payable	108	1,632	(6,814)
Deferred revenue	1,158	398	(2,911)
Other long-term liabilities	14		
Accrued expenses	1,118	210	(780)
Net cash provided by (used in) operating activities	(5,765)	1,689	(3,507)
Cash flows provided by (used in) investing activities:			
Proceeds from sale of property, plant and equipment	57		
Purchases of property, plant and equipment	(302)	(221)	(711)
Net cash used in investing activities	(245)	(221)	(711)
Cash flows from financing activities:			
Principal payments under loan and capital lease agreements	(378)	(371)	(353)
Issuance of common stock	28	53	91
Proceeds from the exercise of stock options		10	521
Net cash provided by (used in) financing activities	(350)	(308)	259
Effects of exchange rates on cash	133	110	154

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Net increase (decrease) in cash and cash equivalents	(6,227)	1,270	(3,805)
Cash and cash equivalents, beginning of period	20,218	18,948	22,753
Cash and cash equivalents, end of period	\$ 13,991	\$ 20,218	\$ 18,948
Supplemental disclosures of cash flow information:			
Cash paid (received) during the periods for:			
Interest paid	\$ 365	\$ 397	\$ 435
Income taxes paid (received)	\$ 537	\$ (35)	\$ 388

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

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BTU INTERNATIONAL, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

NATURE OF OPERATIONS

BTU and its wholly owned subsidiaries (Company) are primarily engaged in the design, manufacture, sale, and service of thermal processing systems, which are used as capital equipment in various manufacturing processes, primarily in the electronics and alternative energy industries.

COMPREHENSIVE INCOME (LOSS)

The Company follows Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 220, *Comprehensive Income* (ASC 220) as amended by Accounting Standards Update (ASU) 2011-05, *Presentation of Comprehensive Income*. ASC 220 requires companies to report all changes in equity during a period, resulting from net income (loss) and transactions from non-owner sources, in a financial statement in the period in which they are recognized. On January 1, 2012, the date of adoption of ASU 2011-05, we had the option to report total comprehensive income, including components of net income and components of other comprehensive income, as a single continuous statement or in two separate but consecutive statements. We elected to present comprehensive income in two separate but consecutive statements as part of the consolidated financial statements. Other than a change in presentation, the implementation of this accounting pronouncement did not have a material impact on our consolidated financial statements.

PRINCIPLES OF CONSOLIDATION AND THE USE OF ESTIMATES

The accompanying consolidated financial statements include the accounts of the Company. All material inter-company balances and transactions have been eliminated in consolidation. The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. The primary estimates used in the consolidated financial statements include the percentage of completion revenue method, inventory valuation, allowance for doubtful accounts, valuation of deferred income taxes, stock-based compensation and warranty reserves.

CASH AND CASH EQUIVALENTS

The Company has classified certain highly liquid financial instruments, with original maturities of three months or less, as cash equivalents.

ACCOUNTS RECEIVABLE

Accounts receivable are stated at the amount management expects to collect from outstanding balances. An allowance for doubtful accounts is provided for those accounts receivable considered to be uncollectible based upon historical experience and management's evaluation of outstanding accounts receivable at the end of the year. Uncollectible accounts are written off against the allowance when identified. Bad debt expense (recovery) was (\$280,000), \$1,345,000, and (\$49,000) for 2013, 2012 and 2011, respectively.

INVENTORIES

Our inventories consist of material, labor and manufacturing overhead costs. We determine the cost of inventory based on a first-in, first-out method. We regularly review the quantity of inventories on hand and compare these quantities to the expected usage of each applicable product or product line. Our inventories are adjusted in value to the lower of cost or net realizable value and a new cost basis is established. Since the value of our inventories depends in part on our estimates of each product's net realizable value, adjustments may be needed to reflect changes in valuation. Any adjustments we are required to make to lower the value of the inventories are recorded as a charge to cost of sales.

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Inventories consist of the following (in thousands):

	Years Ended December 31,	
	2013	2012
Raw materials and manufactured components	\$ 6,010	\$ 4,772
Work-in-process	2,459	1,905
Finished goods	1,362	2,870
Total inventory	\$ 9,831	\$ 9,547

The Company recorded inventory write-downs of \$1,868,000, \$5,261,000, and \$2,294,000, for the years ended 2013, 2012 and 2011, respectively. The write-downs recorded are net of recoveries of sold inventory that had previously been written-down in the amounts of approximately \$250,000, \$60,000, and \$485,000 for the years ended 2013, 2012 and 2011, respectively.

PROPERTY, PLANT AND EQUIPMENT

The Company provides for depreciation using the straight-line method over the assets' useful lives. Leasehold improvements are amortized on a straight-line basis over the lesser of the estimated useful life of the asset or the lease term. The estimated useful lives for depreciation purposes are as follows:

Buildings and improvements	8-25 years
Machinery and equipment	2-8 years
Software	3-10 years
Furniture and fixtures	3-8 years
Leasehold improvements	3 years

Depreciation expense was approximately \$1,603,000, \$1,641,000, and \$1,624,000 for the years ended December 31, 2013, 2012, and 2011, respectively.

Maintenance and repairs are charged to operations as incurred. When equipment and improvements are sold or otherwise disposed of, the asset cost and accumulated depreciation are removed from the accounts, and the resulting gain or loss, if any, is included in the results of operations.

The Company evaluates long-lived assets such as intangible assets and property, plant and equipment under FASB ASC 360-10-35-15, *Impairment or Disposal of Long-Lived Assets*. This statement requires that long-lived assets and certain identifiable intangibles are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or asset group may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset or asset group to future undiscounted net cash flows expected to be generated by the asset or asset group. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets. No impairment of long-lived assets were identified during the years ended December 31, 2013, 2012 and 2011.

OTHER ASSETS

Other assets consist of the following (in thousands):

	2013	2012
Deferred financing costs, net of amortization	\$ 73	\$ 23
Intellectual property, net of amortization		23
Deferred tax asset non-current		143
Long term assets	553	292
Total	\$ 626	\$ 481

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Deferred financing costs, capitalized in 2013, are being amortized over ten years, the term of the mortgage note. Amortization on deferred financing costs was approximately \$7,000, \$7,000 and \$7,000 in 2013, 2012 and 2011, respectively. Amortization on intellectual property was approximately \$23,000, \$54,000, and \$169,000 in 2013, 2012 and 2011, respectively.

INCOME TAXES

Deferred tax assets and liabilities are recognized for the expected future tax consequences of events that have been included in the consolidated financial statements or tax returns. The amounts of deferred tax assets or liabilities are based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. A valuation allowance is provided if, based on the weight of the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

We assess tax positions taken on tax returns, including recognition of potential interest and penalties, in accordance with the recognition thresholds and measurement attributes outlined in ASC 740. Interest and penalties recognized, if any, would be classified as a component of income tax expense.

TRANSLATION OF FOREIGN CURRENCIES

Assets and liabilities of the Company's foreign operations are translated from their functional currency into U.S. dollars at year end exchange rates. Revenue and expense items are translated at weighted average rates of exchange prevailing during the year. Gains and losses arising from translation are accumulated as a separate component of stockholders' equity, as the functional currency of the subsidiaries is their local currency, and the reporting currency of the Company is the U.S. dollar. Exchange gains and losses arising from transactions denominated in foreign currencies are included in income as incurred.

PATENTS

The Company has patents in the U.S. and certain foreign countries for some of its products and processes. No value has been assigned to these patents in the accompanying consolidated financial statements.

REVENUE RECOGNITION

The Company recognizes revenue in accordance with FASB ASC Topic 605, *Revenue Recognition* (ASC 605). Under these guidelines, revenue is recognized when persuasive evidence of an arrangement exists, delivery has occurred or services rendered, the price is fixed or determinable and payment is reasonably assured. Under these requirements, when the terms of sale include customer acceptance provisions, and compliance with those provisions has not been demonstrated, revenues are recognized upon acceptance.

Applying the requirements of ASC 605 to future sales arrangements used in the Company's equipment sales may result in the deferral of the revenue for some equipment sales. Products shipped to customers that do not meet the threshold requirements for revenue recognition as outlined above remain in the Company's inventory on the Consolidated Balance Sheet until revenue is recognized. Any cash collected from customers for products for which revenue has been deferred is recorded as Deferred Revenue on the Consolidated Balance Sheet.

The Company also has certain sales transactions for products, which are not completed within the normal operating cycle of the business. It is the Company's policy to account for these transactions using the percentage of completion method for revenue recognition purposes when all of the following criteria exist: (1) The Company has received the customer's purchase order or entered into a legally binding contract, (2) The customer is credit worthy and collection is probable or customer prepayments are required at product completion milestones or specific dates, (3) The sales value of the product to be delivered is significant in amount when compared to the Company's other products, and (4) Product costs can be reasonably estimated, there is no major technological uncertainty and the total engineering, material procurement, product assembly and test cycle time extend over a period of six months or longer.

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Under the percentage of completion method, revenues and gross margins to date are recognized based upon the ratio of costs incurred to date compared to the latest estimate of total costs to complete the product as a percentage of the total contract revenue for the product. Revisions in costs and gross margin percentage estimates are reflected in the period in which the facts causing the revision become known. Provisions for total estimated losses on uncompleted contracts, if any, are made in the period in which such losses are determined. For the years ended December 31, 2013, 2012 and 2011, \$0, \$1,731,686, and \$2,406,714, respectively, were recognized as revenue using the percentage of completion method.

The Company accounts for shipping and handling costs billed to customers in accordance with FASB ASC 605-45, *Shipping and Handling Fees and Costs*. Amounts billed to customers for shipping and handling costs are recorded as revenues with the associated costs reported as cost of goods sold.

RESEARCH, DEVELOPMENT AND ENGINEERING

Research, development and engineering costs are charged to expense as incurred.

EARNINGS PER SHARE INFORMATION

Basic earnings per share (EPS) is computed by dividing net income (loss) available to common stockholders by the weighted-average number of common shares outstanding during the period. Diluted EPS is computed using the weighted-average number of common and potentially dilutive securities outstanding during the period, using the treasury stock method. Potentially dilutive securities include outstanding stock options and unvested restricted stock units (RSUs). Due to their antidilutive effect, approximately 1,454,292, 1,376,041, and 1,299,358 options to purchase common stock were excluded from the calculation of diluted loss per share for the years ended December 31, 2013, 2012 and 2011, respectively. However, these potentially dilutive securities could become dilutive in future periods.

The weighted average number of common shares used to compute basic and diluted earnings per share consists of the following classification:

	Years Ended December 31,		
	2013	2012	2011
	(In thousands)		
Basic shares	9,539	9,509	9,434
Effect of dilutive options			
Diluted shares	9,539	9,509	9,434

RECENT ACCOUNTING PRONOUNCEMENTS

In February 2013, the FASB issued ASU No. 2013-02, *Reporting of Amounts Reclassified out of Accumulated Other Comprehensive Income*, that requires entities to disclose items reclassified out of accumulated other Comprehensive Income (AOCI) and into net income in their entirety, the effect of the reclassification on each affected net income line item and for AOCI reclassification items that are not reclassified in their entirety into net income, a cross reference to other required U.S. GAAP disclosures. This consolidated standard is effective for annual periods beginning after December 15, 2012 and interim periods within those years. The application of this standard did not have material

impact on the Company's consolidated financial statements.

SUBSEQUENT EVENTS

For the fiscal year ended December 31, 2013, the Company has evaluated subsequent events for potential recognition and disclosure in the financial statements through the date these financial statements were filed with the Securities and Exchange Commission.

Table of Contents**(2) ACCRUED EXPENSES**

Accrued expenses at December 31, 2013 and 2012 consisted of the following (in thousands):

	2013	2012
Accrued commissions	\$ 1,086	\$ 935
Accrued warranty	379	393
Accrued taxes	1,858	1,817
Accrued audit	419	388
Accrued legal	1,430	240
Accrued bonus	85	87
Payroll and payroll taxes	688	793
Accrued cost of sales	142	300
Accrued restructuring		111
Other	274	83
	\$ 6,361	\$ 5,147

Warranties

The Company provides standard warranty coverage for parts and labor for 12 months and special extended material-only coverage on certain other products. The Company estimates and records a reserve for anticipated warranty claims based on historical warranty claims as a percentage of revenue by product line. The reserve for warranty covers the estimated costs of material, labor and travel. Actual warranty claims incurred are charged against the reserve. Factors that affect the Company's product warranty liability include the number of installed units, the anticipated cost of warranty repairs and historical and anticipated rates of warranty claims.

The following table reflects changes in the Company's accrued warranty account during the fiscal years ended December 31, 2013 and 2012:

	2013	2012
	(In thousands)	
Beginning balance	\$ 393	\$ 497
Plus: accruals related to new sales	397	538
Less: warranty claims incurred	(411)	(642)
Ending balance	\$ 379	\$ 393

Restructuring

Costs associated with restructuring activities are accounted for in accordance with ASC Topic 420, *Exit or Disposal Cost Obligations*, or ASC Topic 712, *Compensation Nonretirement Postemployment Benefits*, as applicable. Pursuant to ASC Topic 712, liabilities for employee severance are recorded when payment of severance is considered probable and the amount is estimable. For restructuring costs other than employee severance accounted under ASC

Topic 712, a liability is recognized in accordance with ASC Topic 420 only when incurred.

In April 2013, the Company eliminated 12 positions. Accordingly, the Company recorded a restructuring charge of \$176,000 in the three months ended June 30, 2013. The decision to eliminate 12 positions was taken due to the continued slowdown in the solar industry. The Company eliminated 31 and 17 positions and recorded restructuring charges of \$424,000 and \$401,000 in the years ended December 31, 2012 and December 31, 2011.

The restructuring charges were primarily severance and benefits.

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The following table reflects changes in the reserves for restructuring charges for the year ended December 31, 2013 (in thousands):

	2013
Beginning balance, December 31, 2012	\$ 111
Plus: charges to costs and expenses	176
Less: reduction of accrual	(71)
Less: cash payments	(216)
Ending balance, December 31, 2013	\$

(3) DEBT, CAPITAL LEASES, COMMITMENTS AND CONTINGENCIES

On March 30, 2006, the Company entered into a \$10 million mortgage note secured by its real property in Billerica, Massachusetts, which had an initial maturity date of December 23, 2015. On September 9, 2010, the Company signed a First Loan Modification Agreement relating to the mortgage note, which reduced the annual interest rate from 6.84% to 5.50% and the monthly payment from \$76,280 to \$69,000.

On August 31, 2009, the Company entered into a pledge and assignment agreement with a bank. The bank agrees, at the Company's request, to issue letters of credit in the bank's name and the Company agrees to cash collateralize letters of credit via restricted cash deposits at the bank. As of December 31, 2013 and 2012, the value of the outstanding letters of credit issued by the bank for the Company and cash collateralized by the Company was \$247,515 and \$247,090, respectively. This restricted cash value is included in the Company's balance sheet in other current assets.

On September 26, 2013, the Company signed a Second Loan Modification Agreement relating to the mortgage note, which extended the maturity date from December 23, 2015 to September 26, 2023. The modification also reduced the annual interest rate from 5.50% to 4.43% through September 26, 2018, at which time the interest rate will be adjusted to a per annum fixed rate equal to the aggregate of the Federal Home Loan Board (FHLB) Five Year Classic Advance Rate plus two hundred forty basis points. The current monthly payment was reduced from \$69,000 to \$57,997. The mortgage note had an outstanding balance on December 31, 2013 of approximately \$7.6 million. All outstanding principal and accrued and unpaid interest will be due and payable on the maturity date.

Long-term debt consisted of:

	December 31, 2013	December 31, 2012
	(\$ in thousands)	
Mortgage note payable, interest rate of 4.43% and 5.50% at December 31, 2013 and December 31, 2012, respectively	\$ 7,586	\$ 7,964
Less: current portion of long-term debt	367	400
Long-Term debt, less current portion	\$ 7,219	\$ 7,564

Under the terms of the debt, the minimum principal repayments of long-term debt and operating lease obligations by year are as follows (in thousands):

	Mortgage	Operating Leases	Total
2014	368	196	564
2015	384	61	445
2016	401	24	425
2017	419		419
2018 & Thereafter	6,014		6,014
	\$ 7,586	\$ 281	\$7,867

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Under the Company's operating lease agreements, the approximate future minimum obligation as of December 31, 2013 is as follows: \$195,000 for real estate, \$18,000 for automobiles and \$68,000 for equipment.

The Company has operating leases for its Shanghai manufacturing operations that allow extensions. As of December 31, 2013, the future minimum lease commitment for this facility is approximately \$86,000. The Company has an operating lease for its UK facility that expires in May 2015. As of December 31, 2013, the future minimum lease commitment for this facility is approximately \$54,000 payable through May 2015. As of December 31, 2013, the future minimum lease commitment for the Singapore and Malaysia office is approximately \$43,000 and \$11,000, respectively.

Rent expense was approximately \$421,000 in 2013, \$390,000 in 2012 and \$477,000 in 2011.

As an equipment manufacturer, the Company generates and disposes of small quantities of solid waste that are considered hazardous under Environmental Protection Agency (EPA) regulations. Because the Company historically used a waste disposal firm that disposed of the solid waste at a site that the EPA has designated as a Superfund site, the Company has been named by the EPA as one of the entities responsible for a portion of the expected clean-up costs. Based on the Company's proportional responsibility, as negotiated with and agreed to by the EPA, the Company's liability related to this matter is \$225,140. This amount is included in Accrued Expense on the Consolidated Balance Sheet as of December 31, 2013. On October 2, 2009, in accordance with the agreement, the Company established a letter of credit for \$225,140 to the benefit of the EPA for potential cash payments as settlements for the Company's proportional liability.

(4) FOREIGN OPERATIONS

The following table shows the amounts (in thousands) and percentages of the Company's revenues by geographic region, for the last three years:

	2013		2012		2011	
United States	\$ 8,541	18%	\$ 8,756	15%	\$ 13,199	17%
Europe and Near East	6,647	14%	9,242	16%	5,759	8%
Asia Pacific	29,138	61%	38,606	66%	53,052	70%
Other Americas	3,428	7%	1,485	3%	4,118	5%
Total Revenue	\$ 47,754		\$ 58,089		\$ 76,128	

The following table shows the amounts (in thousands) of the Company's tangible long-lived assets by geographic region, at December 31, 2013 and 2012:

	December 31, 2013	December 31, 2012
United States	\$ 2,889	\$ 3,936
Asia Pacific	497	733
	\$ 3,386	\$ 4,669

(5) CONCENTRATION OF CREDIT RISK AND SIGNIFICANT CUSTOMERS

The Company maintains the majority of its cash and cash equivalent balances with a small number of financial institutions who invest the funds in highly liquid financial instruments with terms not to exceed 90 days.

The Company has international subsidiaries in China, the United Kingdom, Singapore and Malaysia. These subsidiaries transact business in their functional or local currency. Therefore, the Company is exposed to foreign currency exchange risks and fluctuations in foreign currencies, along with economic and political instability in the foreign countries in which it operates, all of which could adversely impact its results of operations and financial condition. The Company's revenues are primarily derived from customers in the electronics and alternative energy manufacturing industries who are not required to provide collateral for

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amounts owed to the Company. The Company's customers are dispersed over a wide geographic area and are subject to periodic review under the Company's credit policies. The Company does not believe that it is subject to any unusual credit risks, other than the normal level of risk due to operating its business.

Concentration of credit risk with respect to accounts receivable is limited to certain customers to whom the Company makes substantial sales. To reduce its credit risk, the Company routinely assesses the financial strength of its customers. The Company maintains an allowance for potential credit losses, but historically has not experienced any losses in excess of the loss allowance related to individual customers or groups of customers in any particular industry or geographic area.

One customer accounted for \$8.2 million or 17.4% of total net sales in 2013. One customer accounted for \$7.3 million or 12.5% of total net sales and another customer accounted for \$6.5 million or 11.2% of total net sales in 2012. One customer accounted for \$11.9 million or 15.6% of total net sales and another accounted for \$7.9 million or 10.4% of total net sales in 2011. As of December 31, 2013, one customer accounted for more than 10% of accounts receivable comprising 14.0% of the total. As of December 31, 2012, two customers accounted for more than 10% of accounts receivable comprising 22.5% of the total.

(6) INCOME TAXES

The components of loss before provision for income taxes are as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Domestic	(\$ 7,776)	(\$ 9,254)	\$ (2,366)
Foreign	(2,401)	(1,678)	596
Total	(\$ 10,177)	(\$ 10,932)	\$ (1,770)

For the years ended December 31, 2013, 2012 and 2011, the Company's provision for income taxes were as shown below (in thousands):

	Federal	State	Foreign	Total
December 31, 2013				
Current	\$	\$ 2	\$ 437	\$ 439
Deferred			\$ 852	852
	\$	\$ 2	\$ 1,289	\$ 1,291
December 31, 2012				
Current	\$	\$ 2	\$ 454	\$ 456
Deferred			(391)	(391)

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\$ 2 \$ 63 \$ 65

	Federal	State	Foreign	Total
December 31, 2011				
Current	\$	\$ 28	\$ 1,001	\$ 1,029
Deferred			(77)	(77)
	\$	\$ 28	\$ 924	\$ 952

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The differences between the statutory United States federal income tax rate of 34% and the Company's effective tax rate are as follows (in thousands):

	2013	2012	2011
Provision (Benefit) at Statutory Rate	(\$ 3,460)	(\$ 3,752)	\$ (602)
State Tax Net of Federal Benefit	(261)	(92)	29
Foreign Tax Rate Differential	327	320	(56)
Losses and Credits not Benefitted	3,893	2,965	1,162
Non-deductible & Other	792	624	419
Net Provision	\$ 1,291	\$ 65	\$ 952

The components of the net deferred tax assets at December 31, 2013 and 2012 are as follows (in thousands):

Deferred Tax Assets:	2013	2012
Federal Net Operating Loss Carryforwards	\$ 3,051	\$ 1,674
State Net Operating Loss Carryforwards	360	163
Foreign Net Operating Loss Carryforwards	860	459
Inventory Reserve	3,753	3,441
Deferred Compensation	1,693	1,789
Federal, Foreign and Other Tax Credits	2,989	2,480
Accruals and Other	1,732	1,360
Intangibles	416	467
Total Deferred Tax Assets	14,854	11,833
Valuation Allowance	(14,854)	(10,961)
Deferred Tax Assets		872
Deferred Tax Liabilities:		
Depreciation and Amortization		(40)
Net Deferred Tax Assets	\$	\$ 832

Deferred tax assets at December 31, 2012 are recorded in Other Assets.

The deferred tax valuation allowance increased by \$3,893,000 and by \$2,982,000 for the years ended December 31, 2013 and 2012, respectively. In assessing the realizability of deferred tax assets, the Company considers 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. The Company considers the scheduled reversal of deferred tax liabilities, projected future income, and tax planning strategies in making this assessment. We have recorded a full valuation allowance against the U.S and China manufacturing subsidiary net deferred tax assets since we believe that, after considering all of the available objective evidence, both positive and negative, historical and prospective, with greater weight given to historical evidence, it is not more likely than not that these assets will be realized.

The Company has federal net operating loss carryforwards of approximately \$12,699,000 that expire between 2024 and 2033, \$3,354,070 of which relates to excess tax deductions from share based payments, the tax benefit of which will be recorded as an increase in additional paid-in capital when the deduction reduces current taxes payable. The Company also has state net operating loss carryforwards of approximately \$4,717,000 that expire between 2014 and 2033, \$1,255,000 of the tax benefit will be recorded as an increase in additional paid-in-capital when the deduction reduces current taxes payable. The Company also has foreign tax credit carryforwards of approximately \$2,941,000 that expire between 2018 and 2023, \$253,265 of the tax benefit will be recorded as an increase in additional paid-in capital when the deduction reduces current taxes payable.

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately \$2.7 million at December 31, 2013. The Company's historical and continuing policy is that its undistributed foreign earnings are indefinitely reinvested and,

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accordingly, no related provision for U.S. federal and state income taxes has been provided on the \$2.7 million of undistributed foreign earnings. The amount of taxes attributable to these undistributed earnings is immaterial.

The Company applies the provisions of FASB Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes* , (now codified as FASB ASC 740, *Income Tax*). In this regard, an uncertain tax position represents the Company's expected treatment of a tax position taken in a filed tax return, or planned to be taken in a future tax return, that has not been reflected in measuring income tax expense for financial reporting purposes.

A reconciliation of the beginning and ending amount of our unrecognized tax benefits is summarized as follows:

	2013	2012	2011
Balance at beginning of period	\$ 151	\$ 151	\$ 151
Increase (decrease) related to current year tax positions			
Increase (decrease) related to prior year tax positions	(37)		
Balance at end of period	\$ 114	\$ 151	\$ 151

The unrecognized tax benefits at December 31, 2013, if recognized, would reduce the Company's effective tax rate in the period recognized. For the year ended December 31, 2013, there were no material changes to the total amount of unrecognized tax benefits. We do not expect any significant increases or decreases for uncertain tax positions during the next 12 months.

The Company's major tax jurisdictions include the United States and China. The Company is no longer subject to U.S. state or local and non-U.S. income tax examinations by tax authorities in its major jurisdictions for years before 2007, except to the extent of net operating loss and tax credit carryforwards from those years. The Company's policy is to recognize interest and penalties accrued on any unrecognized tax benefits as a component of income tax expense. There is no interest or penalties accrued at December 31, 2013.

(7) EMPLOYEE BENEFITS

The Company has management incentive and profit sharing plans for its executives and all of its employees. These plans provide for bonuses upon the attainment of certain financial targets. Under these plans, \$84,000, \$70,000 and \$217,000 was expensed in 2013, 2012 and 2011, respectively.

The Company has a deferred 401(k) contribution plan that is available to cover all domestic employees of the Company. Subject to non-discriminatory restrictions on highly compensated employees, participants can voluntarily contribute a percentage of their compensation up to the plan limits, and the Company, at its discretion, may match this contribution up to a stipulated percentage. The Company's expense under the plan was approximately \$234,000, \$269,000 and \$321,000 for the years ended December 31, 2013, 2012 and 2011, respectively.

(8) STOCK OPTION AND PURCHASE PLANS**Stock Options**

The Company accounts for share-based compensation in accordance with the provisions of SFAS No. 123R, *Share-Based Payment* (now codified as FASB ASC Topic 718, *Compensation - Stock Compensation* (ASC 718)). This

statement establishes standards for accounting for transactions in which an entity exchanges its equity instruments for goods or services. The Company's stock option compensation expense was approximately \$574,000, \$808,000 and \$1,234,000 for the years ended December 31, 2013, 2012 and 2011 respectively. These amounts do not include expense related to restricted stock awards or the employee stock purchase plan.

The fair value of each option is estimated on the date of grant using the Black-Scholes option-pricing model. This model incorporates certain assumptions for inputs including a risk-free market interest rate, expected dividend yield of the underlying common stock, expected option life and expected volatility in the market value of the underlying common stock. The Company is also required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ

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from those estimates. Historical data is used to estimate pre-vesting forfeitures and record stock-based compensation expense only for those awards that are expected to vest. Accordingly, awards ultimately expected to vest were reduced for annualized estimated

forfeitures of 4% for each of the years ended December 31, 2013, 2012 and 2011. We used the following assumptions for options issued during the years ended December 31, 2013, 2012 and 2011, respectively:

Calculation of Fair Values Assumptions Used:	Dec. 31, 2013	Dec. 31, 2012	Dec. 31, 2011
Expected Volatility	65.6%	66.6%	63.7%
Expected Life	4.19	4.15	4.64
Risk-Free Interest Rate	0.92%	0.57%	1.23%
Expected Dividend Yield	0	0	0

Expected volatilities are based on the weighted average historical volatility of the Company's common stock for the expected life of the option. The Company has significant historical data to help evaluate the expected lives of options in developing its assumption. The risk-free interest rate is based upon quoted market yields for United States Treasury debt securities with a term approximating the expected life of the options. The expected dividend yield is based upon the Company's history of having never issued a dividend and management's current expectation of future action surrounding dividends.

The Company has two stock option plans for employees, the 1993 Equity Incentive Plan (1993 Plan), which expired in 2003 with 254,791 unissued options, and the 2003 Equity Incentive Plan (2003 Plan). These plans allow for the award of stock and stock options to employees, directors and consultants. Under the terms of the plans, other stock awards can also be granted at the discretion of the Company's board of directors. The Company also has two stock option plans for non-employee directors, the 1989 Stock Plan for Directors (1989 Plan), which expired in 2008 and the 1998 Stock Option Plan for Non-Employee Directors (1998 Plan). Under each plan, the exercise price of the options is not less than the fair market value at the date of the grant. Options expire from a minimum of two years to a maximum of ten years from the date of the grant. All new grants, for both employees and directors, are now issued from the same plan, the 2003 Plan.

In May 2003, the shareholders approved the 2003 Plan, which allows for up to 700,000 shares to be awarded (plus the addition of up to 300,000 options that could be forfeited under the expired 1993 Plan). Also in May 2003, the shareholders approved an amendment to add 70,000 shares to the 1998 Plan.

In May 2008, the shareholders approved an amendment to add 450,000 shares to the 2003 Plan. Also in May 2008, the shareholders approved an amendment to add 50,000 shares to the 1998 Plan.

In May 2011, the shareholders approved an amendment to add 600,000 shares to the 2003 Plan.

Shares available for future stock option and restricted stock unit grants, pursuant to the 2003 Plan and the 1998 Plan were 701,986 at December 31, 2013.

A summary of all stock option activity for the years ended December 31, 2013, 2012 and 2011 is as follows:

2013**2012****2011**

	Number of Shares	Weighted Average Price per Share	Number of Shares	Weighted Average Price per Share	Number of Shares	Weighted Average Price per Share
Outstanding at beginning of year	1,353,141	\$ 6.20	1,299,358	\$ 6.72	1,277,264	\$ 6.56
Granted	222,060	2.80	217,695	2.54	180,855	6.24
Exercised			(3,250)	3.00	(122,220)	4.26
Forfeited/Cancelled	(166,509)	9.29	(160,662)	5.48	(36,541)	7.04
Outstanding at end of year	1,408,692	\$ 5.30	1,353,141	\$ 6.20	1,299,358	\$ 6.72
Options exercisable at end of year	980,932	\$ 6.01	855,671	\$ 7.21	666,797	\$ 7.57

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At December 31, 2013, the outstanding options have exercise prices ranging from \$2.00 to \$11.93 and a weighted average remaining contractual life of 3.61 years. There were no options exercised during the year ended December 31, 2013. There were 61,810 exercisable in-the-money options as of December 31, 2013.

The following table summarizes information for options outstanding and for options exercisable at December 31, 2013:

Range of Prices	Options Outstanding			Options Exercisable	
	Number	Weighted Average Remaining Life	Weighted Average Exercise Price	Number	Weighted Average Exercise Price
2.00 to 3.00	230,293	5.86	\$ 2.26	61,810	\$ 2.12
3.01 to 3.34	202,966	5.72	3.18	60,239	3.10
3.35 to 5.01	366,611	2.66	4.22	335,011	4.28
5.02 to 6.68	258,492	2.96	5.62	230,992	5.65
6.69 to 8.35	99,420	3.71	7.01	76,020	7.02
8.36 to 10.02	71,300	4.26	9.06	37,250	9.08
10.03 to 11.69	97,010	1.41	10.08	97,010	10.08
11.70 to 11.93	82,600	0.38	11.93	82,600	11.93
	1,408,692	3.61	\$ 5.30	980,932	\$ 6.01

The aggregate intrinsic value of the outstanding options represents the total pre-tax intrinsic value, based on the Company's closing stock price of \$3.01 as of December 31, 2013 which would have been received by the option holders had all option holders exercised their options as of that date. As of December 31, 2013, there was \$640,968 of total unrecognized compensation cost related to non-vested options granted under all of the Company's option plans. That cost is expected to be recognized over a weighted average period of 1.39 years. The total fair value of shares vested during the year ended December 31, 2013 was \$617,667.

A summary of the status of the Company's non-vested options as of December 31, 2013 and 2012 is presented below:

Nonvested Activity:	December 31, 2013		December 31, 2012	
	Shares	Weighted-Fair Value	Shares	Weighted-Fair Value
Balance Beginning	497,470	\$ 2.38	632,561	\$ 3.60
Granted	222,060	\$ 1.42	217,695	\$ 1.29
Vested	(265,995)	\$ 2.32	(272,490)	\$ 4.13
Nonvested Forfeited	(25,775)	\$ 2.29	(80,296)	\$ 3.07
Nonvested	427,760	\$ 1.92	497,470	\$ 2.38

Restricted Stock Units

In June and November 2013, the Company granted 20,250 and 17,050 RSUs to various employees. The fair value of the RSUs at the date of the grant in June and November 2013 was \$2.35 and \$3.27, respectively. These RSUs vest over a two-year term. The Company has recorded compensation expense of \$43,117 and \$9,137 during the years ended December 31, 2013 and December 31, 2012, respectively, related to these grants. As of December 31, 2013, there was \$95,786 of unrecognized compensation costs related to these grants. These grants have a remaining life of 1.50 years.

The Company has an Employee Stock Purchase Plan. Under the terms of the plan, employees are entitled to purchase shares of common stock at the lower of 85% of fair market value at either the beginning or the end of each six-month option period. A total of 500,000 shares have been reserved for issuance under this plan, of which 38,295 remain available at December 31, 2013. During 2013, a total of 16,827 shares were purchased at prices ranging from \$1.80 to \$2.17 per share. The Company has recorded a compensation charge of \$13,200, \$18,721, and \$38,417 in 2013, 2012 and 2011, respectively, related to this plan.

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(9) DISCLOSURES ABOUT THE FAIR VALUE OF FINANCIAL INSTRUMENTS

In accordance with the requirements of FASB ASC Topic 820, *Fair Value Measurements and Disclosures* (ASC 820), the Company groups its financial assets and liabilities measured at fair value on a recurring basis in 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.

In accordance with the requirements of ASC 820, it is the Company's policy to maximize the use of observable inputs and minimize the use of unobservable inputs when developing fair value measurements. When available, the Company uses 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, the Company is 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 the results of current or future values.

At December 31, 2013 and 2012, the Company did not have any financial assets and liabilities that required being measured at fair value in accordance with ASC 820.

The carrying amounts of the Company's cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximate their fair value due to the instruments' short-term nature. Long-term debt is also reported at carrying value and approximates fair value as the interest rate on the mortgage note payable of 4.43% approximates the current market interest rate.

(10) SEGMENT REPORTING

Segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision-maker in deciding how to allocate resources and in assessing performance. The Company operates as a single business segment called Thermal Processing Capital Equipment.

The Thermal Processing Capital Equipment segment consists of the designing, manufacturing, selling and servicing of thermal processing equipment and related process controls for use in the electronics, alternative energy, automotive and other industries. This business segment includes the supply of solder reflow systems used for surface mount applications in printed circuit board assembly. Thermal processing equipment is used in: low temperature curing/encapsulation; hybrid integrated circuit manufacturing; integrated circuit packaging and sealing; and processing multi-chip modules. In addition, the thermal process equipment is used for solar cell processing, sintering

nuclear fuel for commercial power generation, as well as brazing and the sintering of ceramics and powdered metals, and the deposition of precise thin film coatings. The business segment's customers are multinational original equipment manufacturers and contract manufacturing companies.

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The following tables set forth selected quarterly financial information for the fiscal years ended December 31, 2013 and 2012. The operating results for any given quarter are not necessarily indicative of results for any future period.

	Quarters Ended							
	Apr. 01, 2012	July 01, 2012	Sep. 30, 2012	Dec. 31, 2012	March 31, 2013	June 30, 2013	Sep. 29, 2013	Dec. 31, 2013
	(in thousands, except per share data)							
Net sales	\$ 16,272	\$ 14,598	\$ 14,137	\$ 13,082	\$ 10,503	\$ 14,244	\$ 12,014	\$ 10,993
Cost of goods sold	10,994	9,891	10,018	10,714	7,773	8,850	8,480	7,945
Gross profit	5,278	4,707	4,119	2,368	2,730	5,394	3,534	3,048
Selling, general and administrative	5,413	5,240	4,925	5,387	4,653	4,355	6,228	4,550
Research, development and engineering	1,482	1,306	1,333	1,329	1,134	1,017	1,276	1,177
Restructuring	55	121		248				
Operating income (loss)	(1,672)	(1,960)	(2,139)	(4,596)	(3,057)	22	(3,970)	(2,679)
Interest expense, net	(98)	(98)	(104)	(99)	(101)	(96)	(90)	(78)
Foreign exchange gain (loss)	(62)	10	(3)	(169)	(76)	(38)	(33)	(46)
Other income, net		1	1	56	41	5	17	2
Loss before provision (benefit) for income taxes	(1,832)	(2,047)	(2,245)	(4,808)	(3,193)	(107)	(4,076)	(2,801)
Provision (benefit) for income taxes	175	102	153	(365)	(69)	154	998	208
Net loss	\$ (2,007)	\$ (2,149)	\$ (2,398)	\$ (4,443)	\$ (3,124)	\$ (261)	\$ (5,074)	\$ (3,009)
Loss per share:								
Basic	\$ (0.21)	\$ (0.23)	\$ (0.25)	\$ (0.47)	\$ (0.33)	\$ (0.03)	\$ (0.53)	\$ (0.32)
Diluted	\$ (0.21)	\$ (0.23)	\$ (0.25)	\$ (0.47)	\$ (0.33)	\$ (0.03)	\$ (0.53)	\$ (0.32)
Weighted average number of shares outstanding:								
Basic	9,502	9,503	9,516	9,516	9,531	9,532	9,545	9,548
Diluted	9,502	9,503	9,516	9,516	9,531	9,532	9,545	9,548
	Apr. 01, 2012	July 01, 2012	Sep. 30, 2012	Dec. 31, 2012	March 31, 2013	June 30, 2013	Sep. 29, 2013	Dec. 31, 2013

**PERCENTAGE OF
NET SALES:**

Net sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of goods sold	67.6%	67.8%	70.9%	81.9%	74.0%	62.1%	70.6%	72.3%
Gross profit	32.4%	32.2%	29.1%	18.1%	26.0%	37.9%	29.4%	27.7%
Selling, general and administrative	33.3%	35.9%	34.8%	41.2%	44.3%	30.6%	51.8%	41.4%
Research, development and engineering	9.1%	8.9%	9.4%	10.2%	10.8%	7.1%	10.6%	10.7%
Restructuring	0.3%	0.8%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%
Operating income (loss)	(10.3)%	(13.4)%	(15.1)%	(35.1)%	(29.1)%	0.2%	(33.0)%	(24.4)%
Interest expense, net	(0.6)%	(0.7)%	(0.7)%	(0.8)%	(1.0)%	(0.7)%	(0.7)%	(0.7)%
Foreign exchange gain (loss)	(0.4)%	0.1%	(0.0)%	(1.3)%	(0.7)%	(0.3)%	(0.3)%	(0.4)%
Other income, net	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.1%	0.0%
Loss before provision (benefit) for income taxes	(11.3)%	(14.0)%	(15.9)%	(36.8)%	(30.4)%	(0.8)%	(33.9)%	(25.5)%
Provision (benefit) for income taxes	1.1%	0.7%	1.1%	(2.8)%	(0.7)%	1.1%	8.3%	1.9%
Net loss	(12.3)%	(14.7)%	(17.0)%	(34.0)%	(29.7)%	(1.8)%	(42.2)%	(27.4)%

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BTU INTERNATIONAL, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

(in thousands, except share and per share data)

(unaudited)

	September 28, 2014	December 31, 2013
Assets		
Current assets		
Cash and cash equivalents	\$ 10,428	\$ 13,991
Accounts receivable, less allowance of \$1,245 and \$1,280 at September 28, 2014 and December 31, 2013	12,578	11,370
Inventories	10,696	9,831
Other current assets	764	1,126
Total current assets	34,466	36,318
Property, plant and equipment, net	2,624	3,386
Other assets, net	2,165	626
Total assets	\$ 39,255	\$ 40,330
Liabilities and stockholders equity		
Current liabilities		
Current portion of long-term debt	\$ 380	\$ 367
Accounts payable	7,418	5,408
Deferred revenue	680	2,052
Accrued expenses	5,710	6,361
Total current liabilities	14,188	14,188
Long-term debt, less current portion	6,935	7,219
Other long-term liabilities		14
Total liabilities	21,123	21,421
Commitments and contingencies		
Stockholders equity		
Preferred stock, \$1.00 par value 5,000,000 shares authorized; no shares issued or outstanding		
Common stock, \$0.01 par value 25,000,000 shares authorized; 10,942,310 shares issued and 9,574,343 shares outstanding at September 28, 2014 and 10,924,856 shares issued and 9,556,889 shares outstanding at December 31, 2013	109	109
Additional paid in capital	52,666	52,204

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Accumulated deficit	(32,045)	(30,853)
Treasury stock, at cost, 1,367,967 shares at September 28, 2014 and December 31, 2013	(4,990)	(4,990)
Accumulated other comprehensive income	2,392	2,439
Total stockholders' equity	18,132	18,909
Total liabilities and stockholders' equity	\$ 39,255	\$ 40,330

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

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BTU INTERNATIONAL, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except share and per share data)

(unaudited)

	Three Months Ended		Nine Months Ended	
	September 28, 2014	September 29, 2013	September 28, 2014	September 29, 2013
Net sales	\$ 15,917	\$ 12,014	\$ 44,037	\$ 36,761
Costs of goods sold	9,840	8,480	26,925	25,103
Gross profit	6,077	3,534	17,112	11,658
Operating expenses:				
Selling, general and administrative	4,921	6,228	14,622	15,237
Research, development and engineering	939	1,276	3,179	3,427
Operating income (loss)	217	(3,970)	(689)	(7,006)
Interest income	8	13	26	36
Interest expense	(84)	(103)	(253)	(323)
Foreign exchange income (loss)	(34)	(33)	22	(147)
Other income	3	17	10	63
Income (loss) before provision for income taxes	110	(4,076)	(884)	(7,377)
Provision for income taxes	110	998	308	1,083
Net loss	\$ (0)	\$ (5,074)	\$ (1,192)	\$ (8,460)
Loss per share:				
Basic	\$ (0.00)	\$ (0.53)	\$ (0.12)	\$ (0.89)
Diluted	\$ (0.00)	\$ (0.53)	\$ (0.12)	\$ (0.89)
Weighted average number of shares outstanding:				
Basic shares	9,574,343	9,544,864	9,563,934	9,536,010
Effect of dilutive options				
Diluted shares	9,574,343	9,544,864	9,563,934	9,536,010

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

Table of Contents**BTU INTERNATIONAL, INC.****CONDENSED CONSOLIDATED STATEMENT OF COMPREHENSIVE LOSS****(in thousands)****(unaudited)**

	Three Months Ended		Nine Months Ended	
	September 28, 2014	September 29, 2013	September 28, 2014	September 29, 2013
Comprehensive loss is calculated as follows:				
Net loss	\$ (0)	\$ (5,074)	\$ (1,192)	\$ (8,460)
Other comprehensive income (loss):				
Foreign currency translation adjustment	(17)	23	(47)	88
Comprehensive loss	\$ (17)	\$ (5,051)	\$ (1,239)	\$ (8,372)

BTU INTERNATIONAL, INC.**CONDENSED CONSOLIDATED STATEMENT OF STOCKHOLDERS EQUITY****FOR THE NINE MONTHS ENDED SEPTEMBER 28, 2014****(in thousands)****(unaudited)**

	Common Stock			Treasury Stock		Accumulated Other Comprehensive Income		Total
	shares	\$	Additional Paid-In Capital	Accumulated Deficit	shares	\$	Income	
Balance at December 31, 2013	10,925	\$ 109	\$ 52,204	\$ (30,853)	1,368	\$ (4,990)	\$ 2,439	\$ 18,909
Net loss				(1,192)				(1,192)
Exercise of stock options	1		1					1
Issuance of common stock	16		8					8
Stock-based compensation			453					453
Translation adjustment							(47)	(47)
Balance at September 28, 2014	10,942	\$ 109	\$ 52,666	\$ (32,045)	1,368	\$ (4,990)	\$ 2,392	\$ 18,132

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

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BTU INTERNATIONAL, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

FOR THE NINE MONTHS ENDED SEPTEMBER 28, 2014 AND SEPTEMBER 29, 2013

(\$ in thousands)

(unaudited)

	September 28, 2014	September 29, 2013
Cash flows from operating activities:		
Net loss	\$ (1,192)	\$ (8,460)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	889	1,307
Provision (recovery) for bad debts	115	(181)
Provision for inventory obsolescence	321	1,706
Gain on sale of property, plant and equipment		(51)
Stock-based compensation	453	477
Deferred taxes		825
Net change in operating assets and liabilities:		
Accounts receivable	(1,375)	692
Inventories	(1,288)	(2,327)
Other current assets	358	1,409
Deferred revenue	(1,371)	(629)
Other assets	(1,551)	(154)
Other long-term liabilities	(14)	620
Accounts payable	2,042	1,142
Accrued expenses	(614)	486
Net cash used in operating activities	(3,227)	(3,138)
Cash flows from investing activities:		
Proceeds from sale of property, plant and equipment		57
Purchases of property, plant and equipment	(57)	(208)
Net cash used in investing activities	(57)	(151)
Cash flows from financing activities:		
Principal payments under loan and capital lease agreements	(271)	(294)
Issuance of common stock	8	17
Proceeds from the exercise of stock options	1	
Net cash used in financing activities	(262)	(277)

Effects of exchange rates on cash	(17)	20
Net decrease in cash and cash equivalents	(3,563)	(3,546)
Cash and cash equivalents, beginning of period	13,991	20,218
Cash and cash equivalents, end of period	\$ 10,428	\$ 16,672
Supplemental disclosures of cash flow information:		
Cash paid during the periods for:		
Interest	\$ 228	\$ 293
Income taxes	332	484

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

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BTU INTERNATIONAL, INC.

NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(unaudited)

(1) Basis of Presentation

The condensed consolidated balance sheet, financial information and related disclosures as of December 31, 2013 have been derived from BTU's (the Company's) consolidated financial statements, which have been audited as of that date. The condensed consolidated balance sheet as of September 28, 2014 and the related condensed consolidated statements of operations and comprehensive loss for the three and nine months ended September 28, 2014 and September 29, 2013 are unaudited. The condensed consolidated statement of stockholders' equity and consolidated statements of cash flows for the nine months ended September 28, 2014 and September 29, 2013 are unaudited. In the opinion of management, all adjustments necessary for the fair presentation of such financial statements have been included. Such adjustments consisted only of normal recurring items. Interim results are not necessarily indicative of results for any other period or for the full year. These financial statements do not include all disclosures associated with annual financial statements and, accordingly, should be read in conjunction with the footnotes contained in the Company's consolidated financial statements as of and for the year ended December 31, 2013, together with the auditors' report, included in the Company's Annual Report on Form 10-K, as filed with the Securities and Exchange Commission (the SEC).

Pending Merger

On October 21, 2014, the Company entered into an Agreement and Plan of Merger (the Merger Agreement), by and among the Company, Amtech Systems, Inc., an Arizona corporation (Amtech), and BTU Merger Sub, Inc., a Delaware corporation (Merger Sub), pursuant to which Merger Sub will be merged with and into the Company (the Merger), with the Company surviving as a wholly owned subsidiary of Amtech. The Merger Agreement has been approved by the Boards of Directors of both the Company and Amtech and is subject to approval of the Company's and Amtech's stockholders.

Subject to the terms and conditions set forth in the Merger Agreement, at the effective time of the Merger, each share of common stock, par value \$0.01 per share, of the Company (Company Shares), issued and outstanding immediately prior to the effective time of the Merger will be converted into the right to receive and become exchangeable for 0.3291 shares (the Exchange Ratio) of common stock, par value \$0.01 per share, of Amtech (Amtech Shares). Any outstanding Company stock option shall be assumed by Amtech and shall be converted into an option to purchase shares of Amtech common stock on substantially the same terms and conditions as were applicable to such Company stock option, with appropriate adjustments based upon the Exchange Ratio to the exercise price and the number of shares of Amtech common stock subject to such stock option. Each Company restricted stock unit that remains unvested immediately prior to the effective time of the Merger will become a fully vested and unrestricted share of Company common stock.

The Company and Amtech have each made customary representations, warranties and covenants and the merger is subject to various closing conditions. The foregoing is not a complete description of all of the terms and conditions of the Merger Agreement and reference is made to the full text of the Merger Agreement, which is filed as an exhibit to our Current Report on Form 8-K filed with the SEC on October 22, 2014, for more information.

(2) Summary of Significant Accounting Policies

The accounting policies underlying the accompanying unaudited condensed consolidated financial statements are those set forth in Note 1 to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2013, as filed with the SEC.

Table of Contents**(3) Inventories**

The components of inventories are as follows:

	September 28, 2014	December 31, 2013
	(\$ in thousands)	
Raw materials and manufactured components	\$ 5,835	\$ 6,010
Work-in-process	2,940	2,459
Finished goods	1,921	1,362
Total inventory	\$ 10,696	\$ 9,831

(4) Accrued Expenses

The components of accrued expenses are as follows:

	September 28, 2014	December 31, 2013
	(\$ in thousands)	
Accrued commissions	\$ 861	\$ 1,086
Accrued warranty	488	379
Accrued taxes	1,912	1,858
Accrued audit	436	419
Accrued legal	872	1,430
Accrued bonus	88	85
Payroll and payroll taxes	501	688
Accrued cost of sales	162	142
Other	390	274
Total Accrued expenses	\$ 5,710	\$ 6,361

Warranty

The Company provides standard warranty coverage for labor for 12 months and special extended material-only coverage on certain products. The Company estimates and records an accrual for anticipated warranty claims based on sales. The accrual for warranty claims covers the estimated cost of materials. Actual warranty claims incurred are charged to the accrual. Factors that affect the Company's product warranty accrual include the number of installed units, the anticipated cost of warranty repairs and historical and anticipated rates of warranty claims.

The following table reflects changes in the Company's accrued warranty account during the nine months ended September 28, 2014 (in thousands):

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	Nine Months Ended September 28, 2014	
Beginning balance, December 31, 2013	\$	379
Plus: accruals related to new sales		426
Less: warranty claims incurred and reserve adjustment		(317)
Ending balance, September 28, 2014	\$	488

Table of Contents**(5) Debt**

Long-term debt at September 28, 2014 and December 31, 2013 consisted of:

	September 28, 2014	December 31, 2013
	(\$ in thousands)	
Mortgage note payable, interest rate of 4.43%	\$ 7,315	\$ 7,586
Less current portion of long-term debt	380	367
Long-Term debt, less current portion	\$ 6,935	\$ 7,219

Mortgage Note

On March 30, 2006, the Company entered into a \$10 million mortgage note secured by its real property in Billerica, Massachusetts, which had an initial maturity date of December 23, 2015. On September 9, 2010, the Company signed a First Loan Modification Agreement relating to the mortgage note, which reduced the annual interest rate from 6.84% to 5.50% and the monthly payment from \$76,280 to \$69,000.

On September 26, 2013, the Company signed a Second Loan Modification Agreement relating to the mortgage note, which extended the maturity date from December 23, 2015 to September 26, 2023. The modification also reduced the annual interest rate from 5.50% to 4.43% through September 26, 2018, at which time the interest rate will be adjusted to a per annum fixed rate equal to the aggregate of the Federal Home Loan Board (FHLB) Five Year Classic Advance Rate plus two hundred forty basis points. The current monthly payment was reduced from \$69,000 to \$57,997. The mortgage note had an outstanding balance on September 28, 2014 of approximately \$7.3 million. All outstanding principal and accrued and unpaid interest will be due and payable on the maturity date.

Letters of Credit

On August 31, 2009, the Company entered into a pledge and assignment agreement with a bank, pursuant to which the bank agreed to issue letters of credit which the Company will cash collateralize via restricted cash deposits at the bank. As of September 28, 2014, the value of the outstanding letters of credit issued by the bank for the Company was \$249,221. This restricted cash value is included in the Company's balance sheet in other current assets.

(6) Net Loss Per Share

Basic earnings per share (EPS) is computed by dividing net income (loss) available to common stockholders by the weighted-average number of common shares outstanding during the period. Diluted EPS is computed using the weighted-average number of common shares and potentially dilutive securities outstanding during the period, using the treasury stock method. Potentially dilutive securities include outstanding stock options and unvested restricted stock units (RSUs). Due to their anti-dilutive effect, approximately 1,394,720 and 1,315,670 securities to purchase common stock were excluded from the calculation of diluted loss per share for the three and nine months ended September 28, 2014 and September 29, 2013, respectively. However, these potentially dilutive securities could become dilutive in future periods.

(7) Accounting for Stock-Based Compensation

Stock Options

The Company accounts for share-based compensation in accordance with the provisions of SFAS No. 123R, *Share-Based Payment* (now codified as FASB ASC Topic 718, *Compensation-Stock Compensation* (ASC 718)). This statement establishes standards for accounting for transactions in which an entity exchanges its equity instruments for goods or services. The Company's stock option compensation expense was \$94,339 and \$340,329 for the three and nine months ended September 28, 2014, respectively and \$140,027 and \$436,984 for the three and nine months ended September 29, 2013, respectively. These amounts do not include expense related to restricted stock awards or the employee stock purchase plan.

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The fair value of each option is estimated on the date of grant using the Black-Scholes option-pricing model. This model incorporates certain assumptions for inputs including a risk-free market interest rate, expected dividend yield of the underlying common stock, expected option life and expected volatility in the market value of the underlying common stock. The Company is also required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. Historical data is used to estimate pre-vesting forfeitures and record stock-based compensation expense only for those awards that are expected to vest. Accordingly, awards ultimately expected to vest have been reduced by an annualized estimated forfeiture rate of 4%.

Calculation of Fair Value Assumptions Used:

	Nine months ended	
	September 28, 2014	September 29, 2013
Expected Volatility	64.88%	66.84%
Expected Life (in years)	4.10	4.21
Risk-Free Interest Rate	1.26%	0.79%
Expected Dividend Yield		

Expected volatilities are based on the weighted average historical volatility of the Company's common stock for the expected life of the option. The Company has significant historical data to help evaluate the expected lives of options in developing its assumption. The risk-free interest rate is based upon quoted market yields for United States Treasury debt securities with a term approximating the expected life of the options. The expected dividend yield is based upon the Company's history of not issuing dividends and management's current expectation of the same.

The following table summarizes the stock option activity during the nine months ended September 28, 2014:

	Shares	Weighted-Average Exercise Price	Average Remaining Contractual Term	Aggregate Intrinsic Value
Options				
Outstanding at December 31, 2013	1,408,692	\$ 5.30		
Granted	19,032	\$ 2.91		
Exercised	(700)	\$ 2.00		
Forfeited/Cancelled	(128,604)	\$ 9.21		
Outstanding at September 28, 2014	1,298,420	\$ 4.88	3.09	\$ 277,074
Exercisable at September 28, 2014	1,008,086	\$ 5.27	2.48	\$ 153,916

The weighted-average grant date fair value of options granted during the nine-month periods ended September 28, 2014 and September 29, 2013 were \$1.44 and \$1.21, respectively. The aggregate fair value of options exercised during the nine-month periods ended September 28, 2014 and September 29, 2013 was \$720 and \$0, respectively.

As of September 28, 2014, there was \$278,231 of total unrecognized compensation cost related to non-vested options granted under the Company's option plans. That cost is expected to be recognized over a weighted-average period of 1.09 years. The total fair value of options vested during the nine-month period ended September 28, 2014 was

\$282,460.

Restricted Stock Units

In April and September 2014, the Company granted a total of 69,725 restricted stock units to various employees. The weighted-average grant date fair value of the restricted stock units during the nine-month periods ended September 28, 2014 was \$2.99. The Company recorded compensation expense of \$104,667 and \$27,913 during the nine-month period ended September 28, 2014 and September 29, 2013, respectively, related to restricted stock units. As of September 28, 2014, there was \$185,391 of unrecognized compensation costs related to grants of restricted stock units and these grants have a remaining life of 1.09 years.

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(8) Fair Value of Financial Instruments

In accordance with the requirements of FASB ASC Topic 820, *Fair Value Measurements and Disclosures* (ASC 820), the Company groups its financial assets and liabilities measured at fair value on a recurring basis in 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.

In accordance with the requirements of ASC 820, it is the Company's policy to maximize the use of observable inputs and minimize the use of unobservable inputs when developing fair value measurements. When available, the Company uses 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, the Company is 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 the results of current or future values.

The carrying amounts of the Company's cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximate their fair value due to their short-term nature. Long-term debt is also reported at carrying value and approximates fair value as the interest rate on the mortgage note payable of 4.43% approximates the current market interest rate.

(9) Segment Reporting

Segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision-maker in deciding how to allocate resources and in assessing performance. The Company operates as a single business segment called Thermal Processing Capital Equipment.

The Thermal Processing Capital Equipment segment consists of designing, manufacturing, selling and servicing thermal processing equipment and related process controls for use in the electronics, alternative energy, automotive and other industries. This business segment includes the supply of solder reflow systems used for surface mount applications in printed circuit board assembly. Thermal processing equipment is used in low temperature curing/encapsulation, hybrid integrated circuit manufacturing, integrated circuit packaging and sealing, and processing multi-chip modules. In addition, thermal processing equipment is used for solar cell processing, sintering nuclear fuel for commercial power generation, brazing and sintering of ceramics and powdered metals, and depositing precise thin film coatings. The business segment's customers are multinational original equipment manufacturers and contract manufacturing companies.

Tangible long-lived assets by geographic location are as follows:

	September 28, 2014	December 31, 2013
	(\$ in thousands)	
United States	\$ 2,237	\$ 2,889
Asia Pacific	387	497
	\$ 2,624	\$ 3,386

(10) Subsequent Events

The Company evaluated subsequent events through the time of issuance of these condensed consolidated financial statements. Other than as set forth below, the Company is not aware of any significant events that occurred subsequent to the balance sheet date, but prior to the filing of this report that would have a material impact on its condensed consolidated financial statements.

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On October 21, 2014, the Company entered into an Agreement and Plan of Merger (the Merger Agreement), by and among the Company, Amtech Systems, Inc., an Arizona corporation (Amtech), and BTU Merger Sub, Inc., a Delaware corporation (Merger Sub), pursuant to which Merger Sub will be merged with and into the Company (the Merger), with the Company surviving as a wholly owned subsidiary of Amtech. The Merger Agreement has been approved by the Boards of Directors of both the Company and Amtech and is subject to the Company Stockholder Approval (as defined below) and the Amtech Stockholder Approval (as defined below).

Subject to the terms and conditions set forth in the Merger Agreement, at the effective time of the Merger, each share of common stock, par value \$0.01 per share, of the Company (Company Shares), issued and outstanding immediately prior to the effective time of the Merger will be converted into the right to receive and become exchangeable for 0.3291 shares (the Exchange Ratio) of common stock, par value \$0.01 per share, of Amtech (Amtech Shares). Any outstanding Company stock option shall be assumed by Amtech and shall be converted into an option to purchase shares of Amtech common stock on substantially the same terms and conditions as were applicable to such Company stock option, with appropriate adjustments based upon the Exchange Ratio to the exercise price and the number of shares of Amtech common stock subject to such stock option. Each Company restricted stock unit that remains unvested immediately prior to the effective time of the Merger will become a fully vested and unrestricted share of Company common stock.

The Merger Agreement contains customary representations and warranties of the Company and Amtech relating to their respective businesses and public filings. Additionally, the Merger Agreement provides for customary pre-closing covenants of the Company and Amtech, including, with regard to the Company, covenants (i) to conduct its business in the ordinary course consistent with past practice and to refrain from taking certain actions without Amtech s consent, (ii) not to solicit proposals relating to alternative transactions or, subject to certain exceptions, enter into discussions concerning or provide information in connection with alternative transactions, and (iii) subject to certain exceptions, to recommend that the Company s stockholders adopt the Merger Agreement.

Consummation of the Merger is subject to various conditions, including, among others, customary conditions relating to the adoption of the Merger Agreement by the requisite vote of the Company s stockholders (the Company Stockholder Approval) and the approval of the issuance of Amtech Shares in connection with the Merger by the requisite vote of Amtech s stockholders (the Amtech Stockholder Approval).

The Merger Agreement provides certain termination rights for both the Company and Amtech and further provides that upon termination of the Merger Agreement under certain circumstances (i) (including the Company entering into an alternative transaction), the Company will be obligated to pay Amtech a termination fee of \$1,320,000 or an expense reimbursement amount of \$1,000,000 or (ii) Amtech will be obligated to pay the Company a termination fee of \$1,320,000 or an expense reimbursement amount of \$1,000,000. In addition, either the Company or Amtech can terminate the Merger Agreement if the Merger has not been consummated on or before 120 days following the date the joint registration statement on Form S-4 and proxy statement is filed with the SEC, if the failure to close is not caused by the breach of the Merger Agreement by the party electing to terminate.

The foregoing description of the Merger Agreement and the transactions contemplated thereby does not purport to be complete and is qualified in its entirety by the full text of the Merger Agreement and related documents, copies of which have been filed with the SEC on a Current Report on Form 8-K filed on October 22, 2014 and the terms of which are incorporated by reference herein.

Shortly after the Company entered into the Merger Agreement with Amtech, the Company learned that a putative stockholder class action complaint was filed, purportedly on behalf of BTU s public stockholders, in the Court of Chancery of the State of Delaware against the members of the BTU Board, Amtech and Merger Sub. The complaint

generally alleges, among other things, that the members of the BTU Board breached their fiduciary duties owed to BTU's public stockholders by causing BTU to enter into the Merger Agreement and approving the merger, and that Amtech and Merger Sub aided and abetted such breaches of fiduciary duties. In addition, the complaint alleges that the Merger Agreement improperly favors Amtech and unduly restricts BTU's ability to negotiate with other potential bidders. The complaint generally seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting defendants from consummating the Merger, other forms of equitable relief, and compensatory damages. The Company believes that the claims are without merit and it intends to defend against the litigation vigorously on behalf of the BTU Board.

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THE MERGER

The following discussion contains certain information about the merger. The discussion is subject, and qualified in its entirety by reference, to the merger agreement attached as Annex A to this joint proxy statement/prospectus and incorporated herein by reference. We urge you to read carefully this entire joint proxy statement/prospectus, including the merger agreement attached as Annex A, for a more complete understanding of the merger.

Terms of the Merger

Each of Amtech's and BTU's respective boards of directors has approved the merger agreement. The merger agreement provides for the merger of Merger Sub with and into BTU, with BTU surviving as a wholly owned subsidiary of Amtech.

In the merger, each share of BTU common stock, par value \$0.01 per share, issued and outstanding immediately prior to the completion of the merger, except for specified shares of BTU common stock held by BTU or Amtech, will be converted into the right to receive 0.3291 shares of Amtech common stock, par value \$0.01 per share. No fractional shares of Amtech common stock will be issued in connection with the merger, and holders of BTU common stock will be entitled to receive one full share of Amtech common stock in lieu thereof.

Amtech stockholders and BTU stockholders are being asked to adopt the merger agreement. See "The Merger Agreement" for additional and more detailed information regarding the legal documents that govern the merger, including information about the conditions to the completion of the merger and the provisions for terminating or amending the merger agreement.

Background of the Merger

From time to time, members of management of each of Amtech and BTU have engaged in reviews and discussions of their respective long-term strategies and objectives, considering ways that they might collaborate to enhance stockholder value and their respective company's performance and prospects in light of competitive and other relevant factors. Generally, these reviews have centered on strategies to improve each company's operations or pursuit of opportunities in new markets or lines of business. At various times, these assessments included discussions and analysis of various potential business combination transactions as a means to enhance or improve stockholder value.

Representatives from both Amtech and BTU have been acquainted for more than ten years, and, from time to time, have discussed business issues and other matters, including the potential for the development of a strategic relationship between the companies.

During one of those discussions in early 2013, both J.S. Whang, Executive Chairman of Amtech, and Fokko Pentinga, President and Chief Executive Officer of Amtech, met with Paul J. van der Wansem, President and Chief Executive Officer of BTU to discuss general industry and business matters. In the course of those conversations and discussions, the parties expressed mutual interest in considering a potential strategic business combination between the two companies. In particular, Mr. Whang and Mr. van der Wansem informally discussed the concept of joining the two companies at a lunch meeting on April 10, 2013. In early May, Mr. Pentinga and Mr. van der Wansem met at BTU's Shanghai, China facility to further explore business combination opportunities. Mr. van der Wansem and Mr. Whang met again on June 27, 2013 in Boston.

During these early 2013 discussions between Messrs. Whang and Pentinga and Mr. van der Wansem, the parties continued to explore a potential strategic business combination involving their respective companies and the benefits

to each company from such a transaction. The discussions centered on general information about each company and the benefits that might result from a strategic merger transaction principally based on and reflecting the relative market values of the companies. The various structures discussed involved representation on the board of the potential combined company from each of Amtech and BTU, as well as proposed exchange ratios. Mr. Whang and Mr. van der Wanssem also discussed the results of these meetings, as well as the potential benefits of a strategic business combination, with members of their respective senior management teams and boards of directors.

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At meetings of the BTU board of directors on July 29, 2013, August 29, 2013, October 3, 2013, October 28, 2013 and December 4, and at meetings of the Amtech board of directors or a subset of the board of directors on November 13, 2013 and on December 12, 2013, the senior management teams of BTU and Amtech reviewed for their respective boards of directors or a subset of these directors their discussions with Amtech and BTU, respectively, and the directors of each company discussed the potential strategic fit and benefits of a business combination, including the potential synergies potentially resulting from such a transaction. Following these discussions, both boards of directors authorized their respective senior management teams to continue discussions relating to a possible business combination transaction between the two companies.

As these discussions continued during the spring and summer of 2013, Amtech and BTU each determined that the discussions to-date merited more detailed due diligence investigations and, accordingly, the companies executed a mutual non-disclosure agreement on August 8, 2013.

In August 2013, representatives of Amtech and BTU shared information regarding each company's prospects and businesses to enable the preparation of pro forma models for a combination. During this period, BTU engaged outside financial advisory assistance to assist in assessing the two businesses combined. At BTU's invitation, Mr. Whang and Mr. Bradley Anderson, Amtech's chief financial officer, traveled to Billerica, Massachusetts on August 28, 2013, met with BTU management at an off-site location, and delivered an informational presentation about Amtech and its business to the BTU board of directors on August 29, 2013. After the presentation, Mr. van der Wansem and Mr. Whang met again in Boston on August 30, 2013.

During September 2013, the parties continued to discuss a potential combination of BTU and Amtech. During this period, Mr. Anderson and Mr. Tallian prepared and exchanged preliminary combined company cost reduction scenarios. In addition, in early September Stifel upgraded Amtech's common stock to a Buy rating, with particular attention to Amtech's opportunities in the solar manufacturing market. On October 2 and October 3, 2013, Mr. Whang, Mr. van der Wansem, and Mr. Tallian met and continued discussions regarding a potential transaction, including personnel matters implicated in a combination, and followed up with additional communications regarding possible valuations. Mr. Whang, Mr. van der Wansem and Mr. Tallian met again at a dinner meeting on October 24, 2013 and a follow-on meeting on October 25, during which transaction matters, including implementation and potential valuations and exchange ratios for a transaction were discussed. For purposes of fostering continued discussion and in hopes of moving forward with the commencement of due diligence by both parties, Amtech proposed an initial total equity price for BTU of \$44.6 million.

On October 28, 2013, the BTU board of directors met, and Mr. van der Wansem and Mr. Tallian reported to the board of directors on the status of their discussions with Amtech and provided their analysis of the potential combination, available cost savings, possible exchange ratio scenarios and transaction structures. The BTU board of directors, after discussion, authorized management to continue discussions with Amtech and undertake a due diligence review in connection with the discussions.

Later that same day, Mr. Anderson had discussions with Mr. Tallian regarding the outcome of the BTU board meeting, and both Amtech and BTU agreed on an initial December 6, 2013 deadline for both parties to complete their initial due diligence.

As part of the continuing process, Mr. Tallian contacted BTU's legal counsel, Pierce Atwood LLP, on November 7, 2013, and requested that Pierce Atwood commence preparation of a draft template for a merger agreement, as well as to provide data room assistance to BTU. In addition, on November 14 and 15, 2013, Mr. van der Wansem and Mr. Tallian met with Mr. Pentinga and Mr. Anderson at Amtech's Netherlands facilities as part of a due diligence process. Further, on December 5 and 6, 2013, Mr. Whang, Mr. Pentinga and Mr. Anderson met with BTU

management and members of the BTU board of directors and discussed the potential benefits of a transaction, possible alternative scenarios, and otherwise provided Amtech's views of a proposed combination to BTU's board of directors.

Through the end of 2013 and into the first quarter of 2014, Amtech's and BTU's respective senior executives engaged in further discussions and continued to share information regarding a possible business combination and generally regarding the businesses of the two companies. During this time, the trading price of Amtech common stock began (and continued) to rise significantly, while the trading price of BTU common stock decreased and then remained relatively stagnant. Discussions between the parties regarding previously proposed valuations and exchange ratios focused on this trend and potential decrease in the equity value previously offered by Amtech in order to reflect the respective changes in the parties' trading prices as well as

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Amtech's results of its expanded business and legal due diligence of BTU. Accordingly, Amtech's and BTU's senior management teams began to discuss a potential business combination on terms which would provide for the merger of Amtech and BTU in a stock-for-stock transaction based on a fixed exchange ratio, as well as a potential Amtech board seat for Mr. van der Wansem. These discussions were consistent with the broad outlines of a potential transaction previously discussed.

During January 2014, Mr. Pentinga and Mr. Anderson met with Mr. van der Wansem and Mr. Tallian in New York on January 14, and met with Mr. Tallian and Mr. Griffin, BTU's vice president of sales, at BTU's headquarters facility on January 17, while Mr. Whang and Mr. van der Wansem met on January 21 in Boston. Additionally, on January 13, 2014, BTU issued a press release announcing that revenues for the fourth quarter failed to meet previously announced expectations.

Beginning in early 2014, representatives of Needham & Company, financial advisor to BTU, met with representatives of BTU management regarding a potential review of strategic alternatives, including a potential merger with Amtech; a merger, sale or joint venture with another party; and the possibility of continuing to operate the business on a stand-alone basis.

On January 14, 2014, representatives of Company A contacted BTU management and discussed potential strategic opportunities for the two companies, including a potential merger of the parties. On January 28, members of the BTU management team met with Company A's management at a Company A facility to discuss the two parties' businesses and financial prospects.

On February 24, 2014, the BTU board of directors met, during which the board discussed and agreed to explore further alternatives available to BTU to maximize shareholder value and to address its negative cash flow, including restructuring alternatives and pursuing a widespread acquisition strategy, including engaging Needham & Company for advisory services in this regard. The BTU board also agreed that a Transaction Committee of the directors, comprised of Mr. van der Wansem and Messrs. Loy and Wrinn, outside directors of BTU, be established to support management in evaluating and pursuing strategic alternatives that may become available to BTU and to serve as a conduit for keeping the full board informed of the negotiation and diligence processes to be undertaken. BTU subsequently entered into an engagement letter with Needham & Company on February 27, 2014. From that date through April 3, representatives of Needham & Company conducted due diligence on BTU, its business and prospects, and prepared materials to assist the BTU board with respect to its evaluation of potential strategic alternatives available to BTU. During this process, representatives of Needham & Company held telephonic and in-person meetings, including on March 3 and March 14, with members of the BTU board regarding the status of Needham & Company's work and next steps.

In mid-March, 2014, the Amtech board authorized the engagement of Stifel, Nicolaus & Company, Incorporated (Stifel) as its exclusive financial advisor in connection with the contemplated business combination with BTU.

Between March 14th and May 28th, 2014, Needham & Company and BTU management contacted 30 parties, including 11 financial sponsors or private equity firms and 19 strategic acquirers or merger partners, including Company A, Company B and Amtech. Of the 30 parties Needham & Company and BTU management contacted during this period, nine parties executed non-disclosure agreements and received confidential information with respect to BTU (including Amtech, Company A, and Company B). Of these nine parties, seven were provided with a bidding instructions letter by Needham & Company on April 10, 2014 (including Amtech, Company A, and Company B), and two declined to participate in further discussions. Of these seven parties who received a bidding instructions letter, on April 23, 2014, two submitted an initial, non-binding indication of interest with respect to a transaction: Amtech, proposing an all-stock transaction with an aggregate equity purchase price of \$35 million; and Company B, proposing

an all-cash transaction. Five parties (including Company A) declined to participate in further discussions.

During this period of time, the BTU board of directors met twice, on April 28, 2014 and on May 16, 2014. On April 28, the full board was joined by representatives of Needham & Company, who discussed the progress of the strategic options process. The board also formally ratified the creation of the Transaction Committee and Messrs. Loy, van der Wansem and Wrinn's role as members. On an informal basis, the Transaction Committee had been meeting prior to April 28, and thereafter continued to meet with representatives of Needham & Company and BTU management to discuss the process and to provide advice and direction to management and to Needham & Company. On May 16, 2014, the full board met following BTU's annual meeting of stockholders, at which time Mr. van der Wansem and BTU management updated the board members on the progress of the process and the status of due diligence discussions with interested parties.

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After submitting its non-binding indication of interest on April 23, Company B provided Needham & Company with a due diligence request list on April 29, to which BTU management responded. Representatives of Company B met for further due diligence at BTU's headquarters facility on May 8, 2014, and at BTU's Shanghai facility on May 21, 2014. On May 22, 2014 BTU provided Company B with information reflecting BTU's management's updated financial outlook for its 2014 second quarter. On May 27, 2014, Company B requested two additional days to submit a revised indication of interest, which was granted. On May 30, 2014 Company B declined to proceed with further discussions regarding a transaction.

During the period between March 14 and May 28, 2014, meetings took place between BTU and Amtech at Needham & Company's offices in New York City on March 28, 2014, at BTU's headquarters on May 8, 2014, May 13 and 14, 2014, on May 20 and 22, 2014 at BTU's Shanghai, China facilities, with extensive interviews of operations and sales personnel, and on May 23, 2014 at Amtech's Kingstone joint venture in Shanghai, China for the purpose of BTU's investigation and evaluation of the Kingstone operations. In addition, on May 22, 2014, BTU provided Amtech with information reflecting BTU's management's updated financial outlook for its 2014 second quarter. On May 27, 2014, Amtech provided BTU with certain additional forward-looking financial information and, on that day, Amtech management and BTU management met telephonically to discuss that information. On May 28, 2014, representatives from Stifel, on behalf of Amtech, submitted a revised non-binding indication of interest, which contemplated a 100% stock transaction with a fixed aggregate equity price of \$33 million.

On June 2, the BTU board of directors met with representatives of Needham & Company and Pierce Atwood LLP, BTU's outside legal counsel. Needham & Company representatives described the full scope of the process, including parties contacted, parties responding, diligence sessions and the resulting indication of interest by Amtech. The board discussed the Amtech proposal and discussed the alternatives available to BTU, including a restructuring and abandonment of the merger scenario. Also discussed was the proposed timeline for continuing negotiations with Amtech, as well as the appropriate timeline for implementing a restructuring, in light of BTU's cash reserves and use of cash during such periods. A representative of Pierce Atwood provided the board with advice concerning the scope and nature of its duties regarding the evaluation of the Amtech proposal and the restructuring alternative, as well as the Delaware law regarding the evaluation of its discharge of the board's fiduciary duties in the context of the contemplated transaction with Amtech. The board of directors instructed the representatives of Needham & Company to revert to Stifel with a proposal to improve the terms of the initial offer, including improving the pricing for the benefit of BTU's stockholders and shortening the requested exclusivity period.

Throughout June of 2014, representatives of Amtech and BTU conducted mutual due diligence involving the management teams from both companies. Amtech performed on-site diligence of BTU's Billerica and Shanghai properties, and the management teams from both companies, together with their respective financial advisors, engaged in strategic discussions regarding organizational structure, retention of key personnel, possible business unit redundancies, and other strategic issues following the completion of a potential merger.

Also in June of 2014, BTU management and the BTU Transaction Committee met several times with representatives of Needham & Company regarding the nature and progress of negotiations with Stifel and Amtech, and Needham & Company and Stifel met telephonically and communicated regarding proposals for revising Amtech's indication of interest.

On June 17th, 2014, representatives of Stifel, on behalf of Amtech, submitted a revised, non-binding indication of interest for a merger with BTU. The June 17th indication of interest contemplated an all-stock transaction with a fixed aggregate equity purchase price of \$33 million, in exchange for all of the outstanding BTU common stock and common shares underlying options and restricted stock units. In addition, Amtech agreed to a fixed price collar mechanism, whereby the value of the common stock to BTU common stock and option holders would be fixed at \$33

million, and the implied underlying number of Amtech shares to be delivered to BTU common stock and option holders would be determined within a collar of 85% and 115% of Amtech's average stock price at the time of signing of a transaction.

The June 17 Amtech indication of interest further provided that, outside of this 85% and 115% collar, the exchange ratio in the merger agreement would be fixed, and the value of the \$33 million of total consideration would correspondingly decrease, or increase, respectively.

After significant deliberations by the BTU Transaction Committee and the full BTU board of directors, including on June 20 and June 27, 2014, including presentations which included a preliminary financial analysis of the proposed Amtech transaction by

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Needham & Company and legal analysis by Pierce Atwood LLP, and consideration of restructuring alternatives available to BTU, the BTU board of directors instructed the representatives of Needham & Company to continue its negotiations with Amtech's representatives at Stifel to again seek a proposal with improved terms, including a higher value for BTU shares and revisions to address certain of BTU's other concerns with the Amtech proposal.

On or around June 30, 2014, BTU's board agreed to proceed with further discussions regarding the terms of Amtech's non-binding indication of interest, subject to agreeing on a timetable, due diligence schedule and exclusivity agreement, and, on July 8, 2014, the parties entered into a 45-day exclusivity agreement in order to complete due diligence, draft and negotiate transaction documents, and finalize business terms related to the potential business combination.

Following the execution of the exclusivity agreement, representatives of Amtech and BTU (including outside legal counsel and other advisors and consultants) conducted more detailed mutual due diligence investigations involving the management teams from both companies and their respective financial advisors and outside accountants, including meetings from July 15-18, 2014, July 28-29, 2014 and September 9 and 10, 2014 at BTU's headquarters and Amtech's facilities in Billerica, Massachusetts, meetings on August 8 at Amtech's Carlisle, Pennsylvania facility, August 11 and 12, 2014 at Amtech's facilities in Vaasen, the Netherlands, and August 28, 29 and 31, 2014 at BTU's Shanghai, China facility.

In mid-July 2014, Squire Patton Boggs (US) LLP, legal counsel for Amtech, began preliminary drafting of the merger agreement and related transaction documents.

During this time Mr. Whang and Amtech's senior management team and financial advisors regularly updated the board of directors of Amtech on the continuing conversations between the parties regarding the potential merger transaction, and senior management also updated the board on the results of their ongoing due diligence investigations.

On July 28, 2014, the BTU board of directors held a regularly scheduled meeting, at which the board of directors discussed with management the status of the diligence process both by and of Amtech, and also continued to discuss potential restructuring alternatives available to BTU, including the potential risks involved given BTU's declining cash reserves. Representatives of Needham & Company discussed the status of discussions and the diligence process with Amtech as well as the proposed timeline for completion of that process. A representative of Pierce Atwood LLP provided legal advice regarding certain process issues and the board's continuing monitoring of the status of the Amtech process.

On August 5, Messrs. Whang, Pentinga, and Anderson provided an update on the status of negotiations and due diligence at a regularly scheduled board meeting. In addition, Amtech's legal advisors, Squire Patton Boggs (US) LLP, updated the board on the results of its legal due diligence investigation and reviewed with the board the legal standards applicable to the board's decisions and actions on the proposed merger.

On August 13, Mr. Anderson met with Messrs. Tallian and van der Wansem to discuss key transaction terms, including the exchange ratio, corporate governance matters, and the potential discontinuation of certain BTU products following the closing of a business combination transaction. Following this meeting, Amtech instructed Squire Patton Boggs (US) LLP to continue with drafting the definitive merger agreement.

On August 23, 2014, Squire Patton Boggs (US) LLP, legal counsel to Amtech, provided an initial draft of the merger agreement to Pierce Atwood LLP, legal counsel to BTU.

On August 25, 2014, the BTU board of directors, members of BTU management, Pierce Atwood LLP and representatives of Needham & Company met and discussed the status of negotiations. At that meeting, BTU management provided an update to BTU's board of directors regarding the current state of and prospects for the business for calendar year 2014. Also during that meeting, representatives from Needham & Company provided an update to the BTU board of directors concerning the state of BTU management's and Needham & Company's negotiations and due diligence concerning Amtech, and a review of other feasible alternatives absent BTU management's ability to consummate a transaction with Amtech on mutually acceptable terms. During that meeting, members of BTU's board of directors expressed concerns regarding the state of BTU's progress and customer uptake in the solar industry despite recent evidence of some initial improvement for the solar capital equipment industry. Also during that meeting, BTU's board of directors expressed its concerns regarding the board's confidence in

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management's ability to execute the BTU status quo stand-alone business case without a substantial restructuring of the BTU Billerica operation. BTU's board of directors reviewed the possibility that in the absence of BTU management's ability to successfully consummate a transaction with Amtech on mutually acceptable terms, the likely requirement would be to undertake a significant restructuring or downsizing of BTU's Billerica operation. Finally, members of BTU's board of directors asked BTU management to work with Amtech management towards the development of a mutually agreeable operational plan for BTU's Billerica operation as part of the combined company, which would achieve the cost savings and operational efficiencies necessary to make BTU profitable as part of the combined company.

On August 29, 2014, representatives from Stifel contacted representatives from Needham & Company to communicate that, while Amtech management remained committed to moving forward toward a mutually acceptable transaction, significant steps would need to be implemented following the closing of a transaction to reduce the operating costs of BTU's Billerica operation. Between August 29th and September 25th, members of BTU management, Amtech management, and representatives of Needham & Company and Stifel held discussions regarding alternative cost efficiencies plans and operating scenarios for BTU's Billerica operation as part of a combined company.

Throughout September and the first two weeks of October, the parties continued discussions and meetings, both in-person in Billerica, Massachusetts, Shanghai, and Tempe, Arizona, and telephonically, regarding the due diligence reviews conducted by each party, post-transaction integration and personnel matters and status updates. BTU management, its Transaction Committee, representatives of Needham & Company and Pierce Atwood LLP met regularly by telephone to monitor the status, timing and outlook for the negotiations during this time.

On September 4, September 24 and October 15, 2014, BTU's board of directors met and considered the status of transaction negotiations and due diligence reviews of Amtech and by Amtech of BTU. During these meetings, BTU's board of directors authorized Needham & Company to seek to modify the July 8th fixed price collar mechanism to a fixed exchange ratio transaction.

On September 16, 2014, key executives at Amtech and BTU orally agreed to extend exclusivity through October 8, 2014, and on October 4, 2014, key executives at Amtech and BTU again orally agreed to extend exclusivity through October 17, 2014.

On October 9, Mr. Anderson from Amtech and certain members of Amtech's senior management presented a transaction summary to a subset of Amtech's board of directors. In addition, Amtech's legal advisors, Squire Patton Boggs (US) LLP, reviewed the most recent draft of the proposed merger agreement as well as the most recent results of their legal due diligence investigations.

As a result of continuing discussions, the parties agreed to recommend to their respective boards of directors a transaction in which BTU would merge with and into a merger subsidiary wholly owned by Amtech in an all-stock transaction, with BTU stockholders to receive 0.3291 shares of Amtech common stock in exchange for each share of BTU common stock, which as of the 30-day volume-weighted average price of Amtech's common stock through Friday, October 17th, valued BTU at \$3.38 per share, or \$33 million in total equity purchase price. The fixed exchange ratio was determined through negotiation of the parties based on the relative values of the respective companies, including then-current and historical market values and the expected contribution of each company to the value of the combined organization. The transaction would also provide that Mr. van der Wanssem would receive a seat on the board of directors of Amtech.

On October 19, 2014, Amtech's legal advisors, Squire Patton Boggs (US) LLP, telephonically reviewed the most recent draft of the proposed merger agreement (which was substantially similar in all material respects to the most recent draft it prepared and delivered to BTU and its counsel), as well as a review of the results of its U.S. and China legal due diligence investigations, with Messrs. Whang, Pentinga, and Anderson, as well as key executives from Amtech's management team.

On October 20, 2014, the Amtech board of directors held a special meeting during which the board received an update from Amtech's management on the status of negotiations with BTU. Also at this meeting, Stifel reviewed with Amtech's board of directors its financial analysis of the exchange ratio and delivered to Amtech's board of directors an oral opinion, which was confirmed by delivery of a written opinion dated October 20, 2014, to the effect that, as of that date and based on and subject to

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various assumptions and limitations described in its opinion, the exchange ratio provided for in the merger was fair, from a financial point of view, to Amtech.

Representatives of Squire Patton Boggs (US) LLP, legal advisors to Amtech, again discussed with the Amtech board of directors the legal standards applicable to its decisions and actions with respect to the proposed transaction, and reviewed the proposed merger agreement and related agreements, including the employment and consulting agreements to be entered into with Mr. van der Wansem and Mr. Tallian, as described elsewhere in this joint proxy statement/prospectus.

Following these discussions, and review and discussion among the members of the Amtech board of directors, including consideration of the factors described under Amtech's Reasons for the Merger; Recommendation of Amtech's Board of Directors, the Amtech board determined that a strategic transaction with BTU would create the opportunity for a combined company with superior future earnings prospects, a more diversified balance sheet and expanded opportunities, including organic growth and future acquisitions. The Amtech board further believed that the complementary nature of the product mix of the two companies, including with respect to strategic focus, target markets and client service, would facilitate integration and implementation of the transaction.

As a result of these discussions, the Amtech board of directors determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and in the best interests of Amtech and its stockholders, and the directors voted unanimously to approve the merger agreement and the transactions contemplated thereby and recommended that Amtech's stockholders adopt the merger agreement and the issuance of the Amtech shares as merger consideration as described more fully under The Merger Agreement.

On October 21, 2014, the BTU board of directors held a special meeting during which the board received an update from BTU's management on the status of negotiations with Amtech. Also at this meeting, representatives of Needham & Company reviewed with BTU's board of directors its financial analysis of the exchange ratio and delivered to BTU's board of directors an oral opinion, which was confirmed by delivery of a written opinion dated as of the same date, to the effect that, as of that date and based on and subject to assumptions and other matters described in its written opinion, the exchange ratio of 0.3291 pursuant to the merger agreement was fair, from a financial point of view, to the holders of BTU common stock (other than Amtech or BTU or any of their respective subsidiaries).

Representatives of Pierce Atwood LLP, legal advisors to BTU, again discussed with the BTU board of directors the legal standards applicable to its decisions and actions with respect to the proposed transaction, and reviewed the proposed merger agreement and related agreements, including the employment and consulting agreements to be entered into with Mr. van der Wansem and Mr. Tallian, as described elsewhere in this joint proxy statement/prospectus. The BTU board of directors considered the compensation arrangements between Amtech and Messrs. Van der Wansem and Tallian, including Mr. van der Wansem's termination as an employee of BTU and engagement as an employee of Amtech for one year and two year consultancy with Amtech thereafter, and determined that such arrangements were fair and reasonable and in the best interests of BTU's stockholders.

Following these discussions, and review and discussion among the members of the BTU board of directors, including consideration of the factors described under BTU's Reasons for the Merger; Recommendation of BTU's Board of Directors, the BTU board determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and in the best interests of BTU and its stockholders, and the directors voted unanimously to approve the merger agreement and the transactions contemplated thereby and recommended that BTU's stockholders adopt the merger agreement and the transactions contemplated thereby as described more fully under The Merger Agreement.

On October 21, 2014, Amtech and BTU executed the merger agreement, which was publicly announced on October 22, 2014.

BTU's Reasons for the Merger; Recommendation of the BTU Board of Directors

In approving the merger and merger agreement and recommending their approval by BTU stockholders, BTU's board of directors considered a number of factors and a substantial amount of information reviewed and discussed with BTU's

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management and legal and financial advisors. The following discussion of the information and factors considered by BTU's board of directors in reaching its conclusions and recommendation includes all of the material factors considered by BTU's board of directors, but is not intended to be exhaustive. In view of the wide variety of factors considered in connection with its evaluation of the merger and the complexity of these matters, BTU's board of directors did not find it practicable, and did not attempt, to quantify, rank or assign any relative or specific weights to the various factors that it considered in reaching its determination to approve the merger agreement and to recommend that BTU stockholders vote in favor of the proposal to approve the merger, the merger agreement and the principal terms thereof. The BTU board of directors conducted an overall analysis that included consideration of the factors described below, including through discussions with, and questioning of, BTU's management and outside legal and financial advisors, as well as meetings with Amtech management, regarding certain of the matters described below. In considering the factors described below, individual members of the BTU board of directors may have given differing weights to different factors.

The principal factors that the BTU board believes support its approval and recommendation of the merger with Amtech are:

BTU as a Stand-Alone Company. The BTU board of directors considered the current and historical financial condition and results of operations and anticipated future performance of BTU, as well as the risks and uncertainties associated with continuing to operate BTU as a stand-alone company, including the following:

BTU's recent histories of losses and diminished prospects for revenue growth in the near term, resulting in large part from slower than anticipated recovery of the solar market;

The risks involved in connection with BTU's need to reduce costs and expenditures to preserve available cash while simultaneously seeking to increase BTU's business and penetration in the semiconductor and solar markets;

The risks involved with slower than anticipated acceptance of product offerings in the solar and electronics markets;

BTU's dependence on key management, and the risks involved of losing critical personnel as a consequence of a prolonged deterioration in BTU's business;

The risks involved in maintaining and upgrading BTU's current suite of product offerings in light of the magnitude of the development efforts, uncertain growth prospects and limited and declining cash reserves; and

The potential diminution of growth prospects for BTU should it opt to pursue a significant restructuring and product line realignment designed to provide near-term positive cash flows.

Revenue growth synergies. The BTU board of directors believes that the combination with Amtech creates the opportunity to grow revenues at a faster rate due to:

Cost benefits from manufacturing and procurement efficiencies;

Leveraging complementary customer relationships to expand sales;

Technical benefits from adjacent technologies; and

Leveraging a broader and more comprehensive product portfolio.

Cost-reduction synergies. The board of directors expects the companies to realize cost synergies through this transaction of approximately \$4,000,000 to \$5,000,000 on an annualized basis within six to twelve months following consummation of the merger. It is expected that these synergies will be achieved by:

Reducing costs of compliance for one, rather than two, publicly traded companies, including legal, auditing and SEC reporting costs;

realigning selling, general and administrative expenses and combined research and development to improve operational efficiency;

Streamlining supply chains, costs of goods sold and manufacturing costs to achieve synergies;

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Achieving combined supply chain and production cost savings utilizing the BTU-China infrastructure; and

Realizing benefits from the complementary business model strengths of BTU and Amtech.

Strategic Considerations. The BTU board of directors believes that the merger will provide a number of strategic opportunities for the combined company, including the combined company s:

Ability to deliver solutions neither could offer independently;

Increased scale enabling even more comprehensive support capabilities tailored to customers needs;

Increased ability to withstand cyclical downturns in the markets the combined companies serve due to the increased stability resulting from greater scale and a stronger balance sheet;

Technical and engineering abilities to support rapid development of leading-edge solutions; and

Management depth and breadth.

Participation in Future Appreciation. The merger consideration will be paid in shares of Amtech common stock, which will provide BTU stockholders with ownership of approximately 24.5% of the combined company after the closing of the merger (assuming approximately 3,200,000 shares of Amtech common stock are issued in the merger and based upon 9,869,916 shares of Amtech common stock outstanding as of December 16, 2014). This will enable BTU stockholders to share in any synergies and participate in any future appreciation of Amtech common stock following the consummation of the merger, whether from future growth in earnings or as a result of any premium paid to Amtech stockholders in connection with a future sale of Amtech.

Fixed Exchange Ratio. The merger consideration is a fixed exchange ratio which will not fluctuate as a result of changes in the price of BTU common stock or Amtech common stock prior to the merger.

Accretive to EPS. The transaction is expected to be accretive to combined company EPS on a non-GAAP basis within 12 months of closing.

Strong Balance Sheet. The combined company will have a strong balance sheet to pursue strategic plans. As of September 30, 2014, the companies had approximately \$37,800,000 gross cash and investments and approximately \$7,300,000 debt on a combined basis.

Improved Liquidity. The merger is expected to result in improved liquidity for BTU stockholders as a result of the increased equity capitalization and the increased stockholder base of the combined company.

Tax-Free Transaction. The merger is expected to qualify as a tax-free transaction to BTU stockholders for U.S. federal income tax purposes.

Strategic Alternatives. After reviewing possible alternatives to the proposed merger with Amtech, including continuing to operate BTU as an independent company or seeking a business combination with another company, the BTU board of directors believe that based on the process of identifying alternative transactions, another party would be unlikely to have the motivation or ability to offer a superior transaction. The fact that after a comprehensive search led by BTU's financial advisor involving more than 30 potential merger partners or acquirers, only Amtech had indicated a strong level of interest in combining with BTU, and as a result of the comprehensive nature of the search, the BTU board of directors has determined that it was unlikely that any additional strong partners would be identified.

Superior Proposals. The BTU board of directors has the ability to change its recommendation in favor of the merger upon receipt of a superior proposal, if failure to take such action would be reasonably likely to constitute a breach of the directors' fiduciary duties under applicable law and after compliance with the requirements set forth in the merger agreement. The BTU board of directors believes that the termination fee, equal to approximately 4% of the equity value of the transaction, is reasonable and will not unduly impede the ability of a third party to make a superior proposal.

Opinion of Financial Advisor. The BTU board of directors also considered the opinion of Needham & Company, dated October 21, 2014, to BTU's board of directors as to the fairness, from a financial point of view and as of the date of the opinion,

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of the exchange ratio to the holders of BTU common stock, as more fully described below in the section entitled Opinion of Needham & Company.

Familiarity with Businesses. In the course of its review and evaluations of BTU's options and of the merger proposal from Amtech, the BTU board of directors considered its knowledge of the business, operations, financial condition, earnings and prospects of both BTU and Amtech, taking into account the results of BTU's due diligence review of Amtech, as well as its knowledge of the current and prospective environment in which BTU and Amtech operate, including general economic and market conditions and the more specific conditions of the solar cell manufacturing, electronic assembly and semiconductor businesses.

High Likelihood of Consummation. The BTU board of directors deems it highly likely that the merger will be completed in a timely manner given the commitment of both parties to complete the business combination pursuant to their respective obligations under the merger agreement, and the absence of any significant closing conditions under the merger agreement, other than the approvals by the holders of BTU's and Amtech's common stock.

The BTU board of directors also considered a variety of risks and other potentially negative factors concerning the merger agreement and the merger, including the following:

the fact that the merger consideration is a fixed exchange ratio which will not fluctuate as a result of changes in the price of BTU common stock or Amtech common stock prior to the merger, which means that the value of the merger consideration to BTU stockholders could decrease prior to the closing of the merger if the trading price of Amtech common stock decreases;

the obligation to pay to Amtech (i) a termination fee of \$1.32 million if the merger agreement is terminated under certain circumstances as provided in the merger agreement or (ii) an expense reimbursement amount of up to \$1 million if the BTU stockholders fail to approve the merger agreement under certain circumstances as provided in the merger agreement;

the possibility that the merger may not be completed, or that completion may be unduly delayed, for reasons including the failure of BTU stockholders to approve the merger or the merger agreement or the failure of Amtech stockholders to approve the issuance of shares of Amtech common stock in connection with the merger, or for other reasons beyond the control of BTU or Amtech;

the risk that failure to complete the merger could negatively affect the price of BTU common stock and future business and financial results of BTU;

the potential risk of diverting management focus and resources from operational matters and other strategic opportunities while working to implement the merger;

the risk of not capturing all of the anticipated operational synergies and cost savings between BTU and Amtech and the risk that other anticipated benefits might not be realized within expected timeframes or at all;

the substantial costs to be incurred in connection with the transaction, including the costs of integrating the businesses of BTU and Amtech and the transaction expenses arising from the merger;

the potential effect of the merger on BTU's business and relationships with employees, customers, suppliers, distributors, regulators and the communities in which it operates;

the risk that certain key members of senior management might choose not to remain employed with BTU prior to the completion of the merger or with the combined company after the merger;

the terms of the merger agreement, including covenants relating to restrictions on BTU's conduct of its business during the period between the signing of the merger agreement and the completion of the merger;

the possibility that the merger might not be completed, or that completion might be unduly delayed, for reasons beyond BTU's and/or Amtech's control and the potential negative impact that may have on BTU's business and relationships with employees, customers, suppliers, regulators and the communities in which it operates; and

the risks of the type and nature described under Risk Factors, and the matters described under Special Note Regarding Forward-Looking Statements.

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The BTU board of directors also was apprised of certain interests in the merger of executive officers and the directors that may be different from, or in addition to, the interests of BTU stockholders generally as discussed in The Merger Interests of BTU Directors and Executive Officers in the Merger.

The BTU board of directors unanimously approved the merger agreement and determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and fair to, and in the best interests of BTU and its shareholders. The BTU board of directors unanimously recommends that BTU stockholders vote FOR the BTU merger proposal.

Opinion of Needham & Company

BTU retained Needham & Company to act as financial advisor in connection with the merger and to render an opinion as to the fairness, from a financial point of view, to the holders of BTU common stock (other than Amtech or BTU or any of their respective subsidiaries) of the exchange ratio pursuant to the merger agreement.

On October 21, 2014, Needham & Company delivered its oral opinion, which it subsequently confirmed in writing, to the BTU board of directors that, as of that date and based upon and subject to the assumptions and other matters described in the written opinion, the exchange ratio of 0.3291 pursuant to the merger agreement was fair, from a financial point of view, to the holders of BTU common stock (other than Amtech or BTU or any of their respective subsidiaries). Needham & Company provided its opinion for the information and assistance of the BTU board of directors in connection with and for the purpose of the BTU board of directors' evaluation of the transactions contemplated by the merger agreement. Needham & Company's opinion relates only to the fairness, from a financial point of view, to the holders of BTU common stock (other than Amtech or BTU or any of their respective subsidiaries) of the exchange ratio, which was determined through arm's length negotiations between BTU and Amtech and not by Needham & Company. While Needham & Company provided independent financial advice to the BTU board of directors during the course of negotiations between BTU and Amtech, the decision to approve and recommend the merger was made independently by the BTU board. Needham & Company's opinion does not address any other aspect of the merger, or any related transaction, and does not constitute a recommendation to any stockholder of BTU as to how that stockholder should vote or act on any matter relating to the merger.

The complete text of Needham & Company's opinion, which sets forth the assumptions made, procedures followed, matters considered, and qualifications and limitations on and scope of the review undertaken by Needham & Company, is attached to this joint proxy statement/prospectus as Annex C and is incorporated by reference in this joint proxy statement/prospectus. The summary of Needham & Company's opinion set forth below is qualified in its entirety by reference to the full text of the opinion. **BTU stockholders should read this opinion carefully and in its entirety.**

In arriving at its opinion, Needham & Company, among other things:

reviewed a draft of the merger agreement dated October 20, 2014;

reviewed certain publicly available information concerning Amtech and BTU and certain other relevant financial and operating data of Amtech and BTU furnished to Needham & Company by Amtech and BTU;

reviewed the historical stock prices and trading volumes of Amtech common stock and BTU common stock;

held discussions with members of management of Amtech and BTU concerning the current operations of and future business prospects for Amtech and BTU and joint prospects for the combined companies, including the potential cost savings and other synergies that may be achieved by the combined companies;

reviewed certain financial forecasts with respect to Amtech and BTU prepared by the respective managements of those companies and held discussions with members of management concerning those forecasts;

compared certain publicly available financial data of companies whose securities are traded in the public markets and that Needham & Company deemed generally relevant to similar data for BTU;

reviewed the financial terms of certain business combinations that Needham & Company deemed generally relevant; and

reviewed such other financial studies and analyses and considered such other matters as Needham & Company deemed appropriate.

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In connection with its review and in arriving at its opinion, Needham & Company assumed and relied on the accuracy and completeness of all of the financial, accounting, legal, tax and other information discussed with or reviewed by it for purposes of its opinion and did not independently verify, nor did Needham & Company assume responsibility for independent verification of, any of that information. Needham & Company assumed the accuracy of the representations and warranties contained in the merger agreement and all agreements related thereto. In addition, Needham & Company assumed that the merger will qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986 and will be consummated on the terms and subject to the conditions set forth in the draft merger agreement furnished to Needham & Company without waiver, modification or amendment of any material term, condition or agreement thereof and that, in the course of obtaining the necessary regulatory or third party approvals, consents and releases for the merger, no delay, limitation, restriction or condition will be imposed that would have an adverse effect on Amtech, BTU or the contemplated benefits of the merger. In addition, Needham & Company assumed that the financial forecasts for Amtech and BTU provided to Needham & Company by Amtech and BTU management were reasonably prepared on bases reflecting the best currently available estimates and judgments of management, at the time of preparation, of the future operating and financial performance of Amtech and BTU and the combined companies, and Needham & Company relied, without independent verification, upon the estimates of Amtech and BTU management of the potential cost savings and other synergies, including the amount and timing thereof, that may be achieved as a result of the merger. Needham & Company expressed no opinion with respect to any of those forecasts, including those costs savings and other synergies, or the assumptions on which they were based.

Needham & Company did not assume any responsibility for or make or obtain any independent evaluation, appraisal or physical inspection of the assets or liabilities of Amtech, BTU or any of their respective subsidiaries nor did Needham & Company evaluate the solvency or fair value of Amtech, BTU or any of their respective subsidiaries under any state or federal laws relating to bankruptcy, insolvency or similar matters. Needham & Company's opinion states that it was based on economic, monetary and market conditions as they existed and could be evaluated as of its date, and Needham & Company assumed no responsibility to update or revise its opinion based upon circumstances and events occurring after its date. Needham & Company's opinion is limited to the fairness, from a financial point of view, to the holders of BTU common stock (other than Amtech, BTU or any of their respective subsidiaries) of the exchange ratio pursuant to the merger agreement and Needham & Company expressed no opinion as to the fairness of the merger to, or any consideration received in connection therewith by, the holders of any other class of securities, creditors or other constituencies of BTU, or as to BTU's underlying business decision to engage in the merger or the relative merits of the merger as compared to other business strategies that might be available to BTU. In addition, Needham & Company expressed no opinion with respect to the amount or nature or any other aspect of any compensation payable to or to be received by any officers, directors or employees of any party to the merger, or any class of those persons, relative to the exchange ratio pursuant to the merger agreement or with respect to the fairness of any such compensation. Needham & Company did not express any opinion as to what the value of Amtech common stock will be when issued pursuant to the merger or the prices at which Amtech common stock or BTU common stock will actually trade at any time.

BTU imposed no limitations on Needham & Company with respect to the investigations made or procedures followed by Needham & Company in rendering its opinion.

In preparing its opinion, Needham & Company performed a variety of financial and comparative analyses. The following paragraphs summarize the material financial analyses performed by Needham & Company in arriving at its opinion. The order of analyses described does not represent relative importance or weight given to those analyses by Needham & Company. Some of the summaries of the financial analyses include information presented in tabular format. The tables are not intended to stand alone, and in order to more fully understand the financial analyses used by Needham & Company, the tables must be read together with the full text of each summary. The following quantitative

information, to the extent it is based on market data, is, except as otherwise indicated, based on market data as it existed on or prior to October 20, 2014, and is not necessarily indicative of current or future market conditions.

Historical Stock Trading Ratio Analysis. Needham & Company reviewed the historical trading prices of Amtech common stock and BTU common stock as of and for various periods ending on October 20, 2014, the last full trading day prior to the date of Needham & Company's opinion, in order to determine the various stock price ratios that existed for those periods and to compare those average stock price ratios to the exchange ratio in the merger of 0.3291. The following table presents the average stock price ratios for October 20, 2014, and the three month, six month, one year, two year and five year periods ending on

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October 20, 2014. Average stock price ratio data represent the daily closing price of BTU common stock divided by the daily closing price of Amtech common stock averaged over the respective periods.

Date or Period	Average Stock Price Ratio
October 20, 2014	0.2776
Three month	0.3211
Six month	0.3092
One year	0.3228
Two year	0.4406
Five year	0.4734

Contribution Analysis. Needham & Company reviewed and analyzed the implied percentage contribution of each of Amtech and BTU to pro forma projected combined operating results. In calculating the pro forma projected combined operating results, Needham & Company used Amtech management's financial forecasts of Amtech's projected fiscal years 2014 through 2018 operating results and BTU management's standalone company financial forecasts of projected calendar years 2014 through 2018 operating results assuming restructuring of BTU. Needham & Company reviewed, among other things, the implied percentage contributions to pro forma combined revenues, gross profit, earnings before interest and taxes, or EBIT, and earnings before interest, taxes, depreciation, amortization, and stock compensation expense, or adjusted EBITDA. Needham & Company also reviewed the implied percentage contributions to pro forma combined net cash and total assets as of September 30, 2014. The following tables present the results of this analysis and the estimated percentage ownership of the combined company on a pro forma basis by the Amtech shareholders and the BTU stockholders and estimated pro forma enterprise value contributions of Amtech and BTU, based on the exchange ratio of 0.3291 and the September 30, 2014 and September 28, 2014 balance sheet amounts. In calculating pro forma equity ownership and enterprise value contributions, Needham & Company used the treasury stock method to calculate the number of pro forma fully diluted shares of Amtech common stock outstanding after the merger.

	Implied Actual/Estimated Percentage Contribution	
	Amtech	BTU
Pro forma combined revenues		
2014E	56.9%	43.1%
2015E	71.6%	28.4%
2016E	74.9%	25.1%
2017E	77.2%	22.8%
2018E	78.4%	21.6%
Pro forma combined gross profit		
2014E	42.5%	57.5%
2015E	65.1%	34.9%
2016E	69.4%	30.6%
2017E	73.1%	26.9%
2018E	74.9%	25.1%
Pro forma combined EBIT		

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2015E	62.2%	37.8%
2016E	59.9%	40.1%
2017E	71.0%	29.0%
2018E	75.2%	24.8%
Pro forma combined adjusted EBITDA		
2015E	67.6%	32.4%
2016E	65.4%	34.6%
2017E	72.2%	27.8%
2018E	74.9%	25.1%
Pro forma combined net cash at September 30, 2014	89.7%	10.3%
Pro forma combined total assets at September 30, 2014	70.2%	29.8%

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	Estimated Pro Forma Percentage Contribution	
	Amtech	BTU
Pro forma equity ownership contribution	75.8%	24.2%
Pro forma enterprise value contribution	70.7%	29.3%

The results of the contribution analysis are not necessarily indicative of the contributions that the respective businesses may have in the future, and may not rely on the exact same approximations as other places in this registration and joint proxy statement/prospectus.

Selected Companies Analysis. Using publicly available information, Needham & Company compared selected historical and projected financial and market data ratios for BTU to the corresponding data and ratios of publicly traded companies that Needham & Company deemed relevant because they have lines of businesses that may be considered similar to or have similar characteristics with BTU's lines of business. These companies, referred to as the selected companies, consisted of the following:

Amtech

Advantest Corporation

BE Semiconductor Industries N.V.

Cascade Microtech, Inc.

Cohu, Inc.

FormFactor, Inc.

inTEST Corporation

Kulicke and Soffa Industries, Inc.

Meyer Burger Technology AG

Teradyne, Inc.

Xcerra Corporation

The following table sets forth information concerning the following multiples for the selected companies and for BTU:

enterprise value as a multiple of last 12 months, or LTM, revenues;

enterprise value as a multiple of projected calendar year 2014 revenues;

enterprise value as a multiple of projected calendar year 2015 revenues;

enterprise value as a multiple of projected calendar year 2014 adjusted EBITDA;

enterprise value as a multiple of projected calendar year 2015 adjusted EBITDA; and

price as a multiple of book value.

Needham & Company also reviewed, for the selected companies, enterprise value as a multiple of LTM adjusted EBITDA, but determined that the results were not meaningful because of BTU's negative LTM adjusted EBITDA.

Needham & Company calculated multiples for the selected companies based on the closing stock prices of those companies on October 20, 2014 and for BTU based on the Amtech closing stock price of \$10.05 on October 20, 2014 and the exchange ratio of 0.3291. All financial information excludes the impact of non-recurring items. Adjusted EBITDA amounts excluded the impact of stock-based compensation expense. Projected calendar year 2014 results for BTU were based on management's stand-alone company financial forecasts assuming no restructuring, and projected calendar 2015 results for BTU were based on

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management's stand-alone company financial forecasts assuming restructuring of the company, which the BTU board had determined would likely be implemented should the merger not be completed.

	Selected Companies				BTU
	High	Low	Mean	Median	Implied by Merger
Enterprise value to LTM revenues	2.9x	0.7x	1.3x	1.1x	0.5x
Enterprise value to projected calendar year 2014 revenues	2.2x	0.7x	1.1x	1.0x	0.5x
Enterprise value to projected calendar year 2015 revenues	1.5x	0.6x	0.9x	0.8x	0.7x
Enterprise value to projected calendar year 2014 adjusted EBITDA	20.8x	3.9x	8.2x	6.8x	30.9x
Enterprise value to projected calendar year 2015 adjusted EBITDA	42.3x	3.3x	9.6x	4.9x	5.2x
Price to book value	2.1x	1.1x	1.6x	1.7x	1.8x

Needham & Company also reviewed, for the selected companies and for BTU, LTM gross margins and projected calendar year 2014 to calendar year 2015 revenue growth percentages, and noted that BTU's LTM gross margin of 36.5% fell below mean and median LTM gross margin of the selected companies of 40.8% and 45.7% and that BTU projected a decrease in calendar year 2014 to calendar year 2015 revenue of 27.7%, while the mean and median projected calendar year 2014 to calendar year 2015 revenue growth percentages for the selected companies were 18.7% and 10.0%. In calculating BTU's projected decrease in calendar year 2014 to calendar year 2015 revenue, Needham & Company used BTU management's calendar year 2014 standalone company financial forecasts assuming no restructuring and BTU management's calendar year 2015 standalone company financial forecasts assuming restructuring of BTU.

Selected Transactions Analysis. Needham & Company analyzed publicly available financial information for the following selected merger and acquisition transactions, which represent transactions completed since January 1, 2010 that involved target companies that were involved in lines of business that may be considered similar to or have similar characteristics with BTU's lines of business and with enterprise values of less than \$500 million:

Acquirer

Orbotech Ltd.
 ASM Pacific Technology Ltd.
 MKS Instruments, Inc.
 LTX-Credence Corporation
 Cohu, Inc.
 Tokyo Electron Limited
 Brooks Automation, Inc.
 FormFactor, Inc.
 Tokyo Electron Limited
 Ultra Clean Holdings, Inc.
 Tokyo Electron Limited
 Cascade Microtech, Inc.

Target

SPTS Technologies Group Limited
 Dover Corporation (DEK printing machines unit)
 Brooks Automation, Inc. (Granville-Phillips)
 Dover Corporation (ECT and Multitest businesses)
 Ismeca Semiconductor Holding SA
 OC Oerlikon AG (Oerlikon Solar)
 Crossing Automation, Inc.
 Astria Semiconductor Holdings, Inc. (Micro-Probe)
 FSI International, Inc.
 American Integration Technologies, LLC
 NEXX Systems, Inc.
 SUSS MicroTec AG (test systems business)

In reviewing the selected transactions, Needham & Company calculated, for the selected transactions and for BTU implied by the merger, enterprise value as a multiple of LTM revenues.

Needham & Company also reviewed, for the selected transactions, enterprise value as a multiple of LTM adjusted EBITDA, but determined that the results were not meaningful because of BTU's negative LTM adjusted EBITDA.

Needham & Company calculated multiples for BTU based on the Amtech closing stock price of \$10.05 on October 20, 2014 and the exchange ratio of 0.3291.

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The following table sets forth information concerning the multiples described above for the selected transactions and the same multiples implied by the merger.

	Selected Transactions				BTU Implied by Merger
	High	Low	Mean	Median	
Enterprise value to LTM revenues	3.1x	0.4x	1.4x	1.1x	0.5x

Premiums Paid Analysis. Needham & Company analyzed publicly available financial information for 14 merger and acquisition transactions, which represent transactions announced and closed between January 1, 2010 and October 20, 2014 that involved all stock consideration and acquired companies that were publicly-traded technology and technology-enabled service companies. In reviewing these transactions, Needham & Company analyzed the premium of consideration offered to the acquired company's stock price one trading day, five trading days and 20 trading days prior to the announcement of the transaction.

Needham & Company calculated premiums for BTU based on the Amtech closing stock price of \$10.05 on October 20, 2014 and the exchange ratio of 0.3291. The following table sets forth information concerning the stock price premiums in the selected transactions and the stock price premiums implied by the merger.

	Selected Transactions				Amtech / BTU Merger
	High	Low	Mean	Median	
One trading day stock price premium	159.1%	-19.3%	43.2%	27.5%	18.5%
Five trading day stock price premium	227.0%	-13.8%	49.1%	21.0%	15.6%
20 trading day stock price premium	185.1%	-24.3%	47.4%	25.6%	-3.6%

Discounted Cash Flow Analysis. Needham & Company performed illustrative discounted cash flow analyses to determine indicators of illustrative implied equity values for BTU and illustrative implied equity values per share of BTU common stock based on BTU and Amtech managements' financial forecasts. Needham & Company made calculations using two sets of forecasts: BTU management's standalone company forecasts assuming restructuring of BTU and Amtech and BTU managements' forecasts for the combined companies and BTU's proportion of the combined companies, based on the exchange ratio of 0.3291.

For the analysis using BTU management's standalone company forecasts assuming restructuring of BTU, Needham & Company calculated a range of indications of the present value of unlevered free cash flows for BTU for projected calendar years 2015 through 2018 using discount rates ranging from 19.0% to 23.0%. Needham & Company then calculated a range of illustrative terminal values at the end of 2018 by applying multiples ranging from 4.0x to 6.0x to BTU management's estimate of its 2018 adjusted EBITDA. These illustrative terminal values were then discounted to calculate ranges of implied indications of present values using discount rates ranging from 19.0% to 23.0%. Needham & Company then added the ranges of the implied present values of BTU's unlevered free cash flows for the projected years to the ranges of implied present values of BTU's terminal values to derive ranges of implied present enterprise values of BTU. Needham & Company then added net cash as projected by BTU management as of December 31, 2014, less assumed restructuring expenses, and assumed repayment of debt in the restructuring, to derive ranges of implied present equity values, and then calculated the per share amounts by dividing these amounts by the number of fully diluted shares outstanding to derive a range of illustrative implied equity values per share of \$2.66 to \$3.68. Needham & Company noted that the per share value implied by the assumed exchange ratio of 0.3291 and the Amtech closing stock price on October 20, 2014 of \$10.05 was \$3.31.

For the analysis using Amtech and BTU managements forecasts for the combined companies and BTU s proportion of the combined companies, based on the exchange ratio of 0.3291, Needham & Company calculated a range of indications of the present value of unlevered free cash flows for the combined companies for projected fiscal years 2015 through 2019 using discount rates ranging from 23.0% to 27.0%. Needham & Company then calculated a range of illustrative terminal values at the end of 2019 by applying multiples ranging from 0.8x to 1.6x to Amtech and BTU managements estimate of the combined companies 2019 revenue. These illustrative terminal values were then discounted to calculate ranges of implied indications of present values using discount rates ranging from 23.0% to 27.0%. Needham & Company then added the ranges of the implied

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present values of the combined companies unlevered free cash flows for the projected years to the ranges of implied present values of the combined companies terminal values to derive ranges of implied present enterprise values of the combined companies. Needham & Company then added total cash as of September 30, 2014 and subtracted total debt as of September 30, 2014 to derive ranges of implied present equity values, and then calculated the per share amounts attributable to BTU stockholders based on BTU stockholders proportionate ownership implied by the exchange ratio of 0.3291 to derive a range of illustrative implied equity values per share of \$3.77 to \$6.44. Needham & Company noted that the per share value implied by the assumed exchange ratio of 0.3291 and the Amtech closing stock price on October 20, 2014 of \$10.05 was \$3.31.

No company, transaction or business used in the Selected Companies Analysis, Selected Transactions Analysis or Premiums Paid Analysis as a comparison is identical to Amtech, BTU or the merger. Accordingly, an evaluation of the results of these analyses is not entirely mathematical; rather, it involves complex considerations and judgments concerning differences in the financial and operating characteristics and other factors that could affect the acquisition, public trading or other values of the selected companies or selected transactions or the business segment, company or transaction to which they are being compared.

The summary set forth above does not purport to be a complete description of the analyses performed by Needham & Company in connection with the rendering of its opinion. The preparation of a fairness opinion is a complex analytical process involving various determinations as to the most appropriate and relevant quantitative and qualitative methods of financial analyses and the application of those methods to the particular circumstances and, therefore, such an opinion is not readily susceptible to summary description. Accordingly, Needham & Company believes that its analyses must be considered as a whole and that selecting portions of its analyses or the factors it considered, without considering all analyses and factors, could create a misleading or incomplete view of the process underlying its analyses and opinion. Needham & Company did not attribute any specific weight to any factor or analysis considered by it. The fact that any specific analysis has been referred to in the summary above is not meant to indicate that such analysis was given greater weight than any other analysis.

In performing its analyses, Needham & Company made numerous assumptions with respect to industry performance, general business and economic conditions and other matters, many of which are beyond Amtech's or BTU's control. Any estimates contained in or underlying these analyses, including estimates of our future performance, are not necessarily indicative of actual values or predictive of future results or values, which may be significantly more or less favorable than those estimates. Additionally, analyses relating to the values of businesses or assets do not purport to be appraisals or necessarily reflect the prices at which businesses or assets may actually be sold or the prices at which any securities have traded or may trade at any time in the future. Accordingly, these analyses and estimates are inherently subject to substantial uncertainty. Needham & Company's opinion and its related analyses were only one of many factors considered by BTU's board of directors in their evaluation of the merger and should not be viewed as determinative of the views of BTU's board of directors or management with respect to the exchange ratio or the merger.

Under the terms of its engagement letter with Needham & Company, BTU has paid or agreed to pay Needham & Company fees in amounts that BTU and Needham & Company believe are customary in transactions of this nature. These fees include a retainer fee and a nonrefundable fee for rendering the Needham & Company opinion aggregating \$300,000, and a transaction fee payable upon consummation of the merger of \$600,000, against which the retainer and opinion fees would be credited. A substantial portion of Needham & Company's fees are contingent on the consummation of the merger. In addition, BTU has agreed to reimburse Needham & Company for certain of its out-of-pocket expenses and to indemnify Needham & Company and related persons against various liabilities, including certain liabilities under the federal securities laws.

Needham & Company is a nationally recognized investment banking firm. As part of its investment banking services, Needham & Company is regularly engaged in the valuation of businesses and their securities in connection with mergers and acquisitions, negotiated underwritings, secondary distributions of securities, private placements and other purposes. Needham & Company was retained by the BTU board of directors to act as its financial advisor based on Needham & Company's experience as a financial advisor in mergers and acquisitions as well as Needham & Company's familiarity with BTU and its industry generally. Needham & Company has not in the past two years provided investment banking or financial advisory services to BTU unrelated to the merger for which Needham & Company has received compensation and has not in the past two years provided investment banking or financial advisory services to Amtech for which Needham & Company has received compensation. Needham & Company may in the future provide investment banking and financial advisory services to Amtech, BTU or their

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respective affiliates unrelated to the merger, for which services Needham & Company would expect to receive compensation. In the normal course of its business, Needham & Company may actively trade the equity securities of Amtech and BTU for its own account or for the account of its customers and, therefore, may at any time hold a long or short position in those securities.

Amtech's Reasons for the Merger; Recommendation of Amtech's Board of Directors

After careful consideration, Amtech's board of directors, at a meeting held on October 20, 2014, unanimously determined that the merger agreement and all related transactions is in the best interests of Amtech and its stockholders. Accordingly, Amtech's board of directors approved the merger agreement and unanimously recommended that Amtech stockholders vote FOR the adoption of the merger agreement.

In reaching its decision to approve and adopt the merger agreement, the Amtech board of directors consulted with Amtech's management, as well as its financial and legal advisors, and considered a number of factors in favor of the merger, including the following material factors, which are not presented in order of priority:

its knowledge of Amtech's business, operations, financial condition, asset quality, earnings and prospects and of BTU's business, operations, financial condition, asset quality, earnings and prospects, taking into account the results of Amtech's due diligence review of BTU;

its belief that BTU and Amtech share compatible business models with good market position, operating margins, and longevity;

the fact that BTU would enable Amtech to expand its existing presence in the People's Republic of China;

the anticipated ability to retain certain key management personnel of BTU;

the fact that Amtech's and BTU's cash management and accounting system are already compliant with GAAP and SEC reporting requirements;

the fact that BTU stockholders would own no more than approximately 24.5% of the outstanding shares of Amtech common stock immediately following the completion of the merger, assuming approximately 3,200,000 shares of Amtech common stock are issued in the merger and based upon 9,848,253 of Amtech common stock outstanding as of October 17, 2014); and

the financial and other terms and conditions of the merger agreement, including the fact that the exchange ratio for the merger is fixed, and that the merger agreement contains provisions designed to limit the ability of the BTU board of directors to entertain third party proposals to acquire BTU and provisions providing for payment by BTU to Amtech of a termination fee if the merger agreement is terminated under certain circumstances.

The Amtech board of directors also considered a number of potentially negative factors in its deliberations concerning the merger agreement, including:

the need to obtain both Amtech and BTU stockholder approval to complete the merger and the risk that those or other conditions would not be satisfied;

the possibility that other merger and acquisition opportunities would be foregone while finalizing the merger with BTU;

the potential risks associated with integrating BTU's business, operations and workforce with those of Amtech, including the implementation of desirable improvements to BTU's risk management and internal control programs;

the potential of environmental exposures that may require remediation;

the tax reporting positions of BTU, particularly related to its China subsidiaries;

the potential risk of diverting management attention and resources from the operation of the business of Amtech and towards completion of the merger and integration of operations; and

the expenses to be incurred in working towards completion of the merger.

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The foregoing discussion of the factors considered by the Amtech board of directors is not intended to be exhaustive, but rather includes the material factors considered by the Amtech board of directors. In reaching its decision to approve and adopt the merger agreement and the transactions contemplated thereby, the Amtech board of directors did not quantify or assign any relative weights to the factors considered, and individual directors may have given different weights to different factors. The Amtech board of directors considered all these factors as a whole, including discussions with, and questioning of, Amtech management and Amtech's financial and legal advisors, and overall considered the factors to be favorable to, and to support, its determination. The Amtech board of directors considered the foregoing factors as a whole and unanimously concluded that the positive factors outweighed the negative factors, and that the factors as a whole supported a determination to approve and adopt the merger agreement.

The Amtech board of directors unanimously approved the merger agreement and determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable and fair to, and in the best interests of Amtech and its shareholders. The Amtech board of directors unanimously recommends that Amtech stockholders vote FOR the Amtech merger proposal.

Opinion of Stifel

The Amtech board of directors requested from Stifel Nicolaus & Company (who we refer to as Stifel), an opinion, as investment bankers, as to the fairness, from a financial point of view, of the exchange ratio to the holders of shares of common stock, par value \$.01 per share, of Amtech. Based on the exchange ratio of 0.3291 and Amtech's closing stock price of \$10.04 per share on October 17, 2014, the implied stock price of BTU in the merger agreement as of October 17, 2014 was \$3.30 per share. On October 20, 2014, Stifel delivered to the Amtech board of directors its written opinion that, as of the date of the opinion and subject to and based on the assumptions made, procedures followed, matters considered, limitations of the review undertaken and qualifications contained in such opinion, the exchange ratio employed in the merger agreement was fair to the holders of Amtech common stock, from a financial point of view.

The Amtech board of directors did not impose any limitations on Stifel with respect to the investigations made or procedures followed in rendering its opinion. In selecting Stifel, the Amtech board of directors considered, among other things, the fact that Stifel is a reputable investment banking firm with substantial experience advising companies in the technology sector and in providing strategic advisory services in general, and Stifel's familiarity with Amtech and its business. Stifel, as part of its investment banking services, is regularly engaged in the independent valuation of businesses and securities in connection with mergers, acquisitions, underwritings, sales and distributions of listed and unlisted securities, private placements and valuations for estate, corporate and other purposes.

The full text of the opinion is attached to this proxy statement/prospectus as Annex B and is incorporated herein by reference. The summary of the opinion contained in this proxy statement/prospectus is qualified in its entirety by reference to the full text of the opinion. Amtech stockholders are encouraged to read the opinion carefully and in its entirety for a discussion of the procedures followed, assumptions made, other matters considered and limits of the review undertaken by Stifel in connection with the opinion.

In rendering its opinion, Stifel, among other things:

discussed the merger and related matters with Amtech's counsel and reviewed a draft of the merger agreement, dated October 19, 2014;

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reviewed a draft of the form of voting agreement to be entered into between Paul J. van der Wansem in his capacity as a stockholder of BTU with Amtech;

reviewed the audited consolidated financial statements of Amtech contained in its Annual Reports on Form 10-K for the three years ended September 30, 2013, 2012 and 2011, and the unaudited consolidated interim financial statements of Amtech contained in its Quarterly Reports on Form 10-Q for the quarters ended December 31, 2013, March 31, 2014 and June 30, 2014;

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reviewed the audited consolidated financial statements of BTU contained in its Annual Reports on Form 10-K for the three years ended December 31, 2013, 2012 and 2011, and the unaudited consolidated interim financial statements of BTU contained in its Quarterly Reports on Form 10-Q for the quarters ended March 30, 2014, and June 29, 2014;

reviewed and discussed with Amtech's management and BTU's management certain other publicly available information concerning Amtech and BTU;

held discussions with the Amtech's senior management, including estimates of merger charges and the pro forma financial impact of the merger on the combined company;

reviewed certain non-publicly available information concerning Amtech and BTU, including internal financial analyses and forecasts prepared by their respective managements for their respective companies, as well as certain internal financial analyses and forecasts of BTU prepared by Amtech's management, and held discussions with Amtech's senior management regarding recent developments;

reviewed and analyzed certain publicly available information concerning the terms of selected merger and acquisition transactions that it considered relevant to its analysis;

reviewed and analyzed certain publicly available financial and stock market data relating to selected comparable public companies that it deemed relevant to its analysis;

participated in certain discussions and negotiations between representatives of Amtech and BTU;

reviewed the reported prices and trading activity of the equity securities of Amtech and BTU;

conducted such other financial studies, analyses and investigations and considered such other information as it deemed necessary or appropriate for purposes of its opinion; and

took into account its assessment of general economic, market and financial conditions and its experience in other transactions, as well as its experience in securities valuations and its knowledge of Amtech's and BTU's industries generally.

In rendering its opinion, Stifel, with Amtech's consent, relied upon and assumed, without independent verification, the accuracy and completeness of all of the financial and other information that was made available, supplied or otherwise communicated to Stifel by or on behalf of Amtech or BTU, or that was otherwise reviewed by Stifel, including, without limitation, publicly available information, and did not assume any responsibility for independently verifying any of such information. Stifel relied on such information being complete and correct in all material respects and further relied upon the assurances of the management of Amtech or BTU, as applicable, that it was unaware of any facts that would make such information incomplete or misleading. With respect to the financial forecasts supplied to

Stifel by Amtech and BTU (including, without limitation, the financial forecasts regarding BTU supplied to Stifel by Amtech and potential cost savings and operating synergies which may be realized by Amtech), Stifel assumed, at the direction of Amtech, that they were reasonably prepared on the basis reflecting the best currently available estimates and judgments of the management of Amtech or BTU, as applicable, as to the future operating and financial performance of Amtech or BTU, as applicable, and that they provided a reasonable basis upon which Stifel could form its opinion. Such forecasts and projections were not prepared with the expectation of public disclosure. At the direction of Amtech, in Stifel's analysis of the future performance of BTU, Stifel utilized and relied upon the financial forecasts for BTU prepared by Amtech's management. All such projected financial information is based on numerous variables and assumptions that are inherently uncertain, including, without limitation, factors related to general economic and competitive conditions. Accordingly, actual results could vary significantly from those set forth in such projected financial information. Stifel relied on this projected information without independent verification or analyses and does not in any respect assume any responsibility for the accuracy or completeness thereof.

Stifel also assumed that there were no material changes in the assets, liabilities, financial condition, results of operations, business or prospects of either Amtech or BTU since the date of the last financial statements of each company made available to Stifel. Stifel did not make or obtain any independent evaluation, appraisal or physical inspection of either Amtech's or BTU's assets or liabilities, nor had Stifel been furnished with any such evaluation or appraisal. Stifel's opinion states that estimates of values of companies and assets do not purport to be appraisals or necessarily reflect the prices at which companies or assets may actually be sold. Because such estimates are inherently subject to uncertainty, Stifel assumes no responsibility for their accuracy.

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Stifel assumed, with the Amtech board of directors' consent, that there are no factors that would delay or subject Amtech to any adverse conditions or any necessary regulatory or governmental approval, and that all conditions to the merger will be satisfied and not waived. In addition, Stifel assumed that the merger agreement will not differ materially from the draft Stifel reviewed. Stifel also assumed that the merger will be consummated substantially on the terms and conditions described in the merger agreement, without any waiver of material terms or conditions by any party thereto and without any adjustment to the exchange ratio (beyond the adjustment provisions set forth in the merger agreement), and that obtaining any necessary regulatory approvals or satisfying any other conditions for consummation of the merger will not have an adverse effect on Amtech, BTU or the merger. Stifel assumed that the merger will be consummated in a manner that complies with the applicable provisions of the Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, and all other applicable federal and state statutes, rules and regulations. Stifel further assumed that the Company has relied upon the advice of its counsel, independent accountants and other advisors (other than Stifel) as to all legal, financial reporting, tax, accounting and regulatory matters with respect to Amtech, the merger and the merger agreement.

Stifel's opinion is limited to whether the exchange ratio is fair to the holders of Amtech common stock, from a financial point of view, and does not address any other terms, aspects or implications of the merger, including, without limitation, the form or structure of the merger, any consequences of the merger on Amtech, its stockholders, creditors or otherwise, or any terms, aspects or implications of any voting, support, stockholder or other agreements, arrangements or understandings contemplated or entered into in connection with the merger or otherwise. Stifel's opinion also does not consider, address or include: (i) any other strategic alternatives currently (or which have been or may be) contemplated by Amtech or its board of directors; (ii) the legal, tax or accounting consequences of the merger on Amtech or the holders of Amtech common stock, including, without limitation, whether or not the merger will qualify as a tax-free reorganization pursuant to Section 368 of the Internal Revenue Code of 1986, as amended; (iii) the fairness of the amount or nature of any compensation to any of Amtech's or BTU's officers, directors or employees, or class of such persons, relative to the compensation to the holders of Amtech common stock or BTU common stock; (iv) the effect of the merger on, or the fairness of the consideration to be paid to, holders of any class of securities of Amtech or BTU other than the holders of Amtech common stock, or any class of securities of any other party to any transaction contemplated by the merger agreement; (v) any advice or opinions provided by any other advisor to Amtech or BTU; or (vi) the treatment of, or effect of the merger on, any securities of Amtech other than the Amtech common stock (or the holders of any such securities). Furthermore, Stifel's opinion does not express any opinion as to the prices, trading range or volume at which Amtech's securities (including Amtech common stock) will trade following public announcement or consummation of the merger (including, without limitation, the effect that any increase or decrease in the price of Amtech common stock may have or the conclusions reached in Stifel's opinion).

Stifel's opinion is necessarily based on economic, market, financial and other conditions as they exist on, and on the information made available to Stifel by or on behalf of Amtech and BTU or their respective advisors, or information otherwise reviewed by Stifel, as of, the date of its opinion. It is understood that subsequent developments may affect the conclusion reached in Stifel's opinion and that Stifel does not have any obligation to update, revise or reaffirm its opinion.

Stifel's opinion was approved by Stifel's fairness committee. Stifel's opinion is for the information of, and directed to, Amtech's board of directors (in its capacity as such) for its information and assistance in connection with its consideration of the financial terms of the merger. Stifel's opinion does not constitute a recommendation to the Amtech board of directors as to how they should vote on the merger or to any stockholder of Amtech as to how any such stockholder should vote at any stockholders' meeting at which the merger is considered, or whether or not any stockholder of Amtech should enter into a voting, shareholders' or affiliates' agreement with respect to the merger, or exercise any dissenters' or appraisal rights that may be available to such stockholder. In addition, Stifel's opinion does

not compare the relative merits of the merger with any other alternative transactions or business strategies which may have been available to the Company and does not address the underlying business decision of Amtech's board of directors or Amtech to proceed with or effect the merger.

Stifel was not requested to, and did not, explore alternatives to the merger or solicit the interest of any other parties in pursuing transactions with Amtech. Stifel did not consider any potential legislative or regulatory changes then being considered or recently enacted by the United States Congress, the SEC, or any other regulatory bodies, or any changes in accounting methods or generally accepted accounting principles that may be adopted by the SEC or the Financial Accounting Standards Board. Stifel's opinion states that it is not a solvency opinion and does not in any way address the solvency or financial condition of Amtech, BTU, or any other party.

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The following represents a brief summary of the material financial analyses performed by Stifel in connection with its opinion. Some of the summaries of financial analyses performed by Stifel include information presented in tabular format. In order to fully understand the financial analyses performed by Stifel, you should read the tables together with the text of each summary. The tables alone do not constitute a complete description of the financial analyses. Considering the information set forth in the tables without considering the full narrative description of the financial analyses, including the methodologies and assumptions underlying the analyses, could create a misleading or incomplete view of the financial analyses performed by Stifel.

Except as otherwise noted, the information utilized by Stifel in its analyses, to the extent that it was based on market data, is based on market data as it existed on or before October 17, 2014 and is not necessarily indicative of current market conditions. The analyses described below do not purport to be indicative of actual future results, or to reflect the prices at which any securities may trade in the public markets, which may vary depending upon various factors, including changes in interest rates, dividend rates, market conditions, economic conditions and other factors that influence the price of securities.

Selected Comparable Companies Analysis

BTU

Stifel compared BTU, from a financial point of view, to 14 publicly traded companies in the electronics equipment and semiconductor packaging, assembly and test industries that Stifel deemed to be relevant based on their business profiles and financial metrics. Stifel compared BTU's last 12 months (which we refer to as "LTM"), estimated calendar year 2014 and 2015 financial metrics, as provided by Amtech's management, to the LTM, estimated calendar year 2014 and 2015 financial metrics, obtained from available public sources, of the 14 companies. Stifel believes that the group of companies listed below has business models similar to those of BTU, but noted that none of these companies have the same management, composition, size, operations, financial profile, or combination of businesses as BTU:

Fuji Machine Mfg. Co., Ltd.

Orbotech Ltd.

Mycronic AB

Electro Scientific Industries, Inc.

Camtek Ltd.

CyberOptics Corporation

Kulicke and Soffa Industries, Inc.

BE Semiconductor Industries N.V.

Xcerra Corporation

FormFactor, Inc.

Cohu, Inc.

Cascade Microtech, Inc.

inTEST Corporation

Aehr Test Systems

Based on this information, Stifel calculated and compared the following multiples for BTU and the selected comparable companies:

Multiples of enterprise value (EV), which Stifel defined as fully-diluted equity value using the treasury stock method, plus debt, preferred stock and minority interests, less cash and cash equivalents, to LTM, estimated calendar year 2014 and 2015 revenues (EV/Revenue).

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Multiples of EV to estimated calendar year 2014 and 2015 earnings before one-time charges, interest, taxes, stock-based compensation and depreciation and amortization (EV/ EBITDA).

Multiples of fully-diluted equity value using the treasury stock method (EQV) to estimated calendar year 2015 adjusted net income (Net Income) as adjusted to exclude stock-based compensation, amortization of intangibles and one-time charges (EQV / Net Income).

The following table sets forth the multiples indicated by this analysis, including the first quartile and third quartile multiples relative to the selected companies and the multiples implied by the merger:

Multiple:	1 st Quartile	Median	Mean	3 rd Quartile	Range of Multiples Utilized in the Proposed Transaction		
					Analysis	Analysis	Transaction
LTM EV/Revenue	0.8x	1.1x	1.2x	1.4x	0.8x	1.4x	0.6x
CY 2014 EV/Revenue	0.7x	1.0x	1.0x	1.1x	0.7x	1.1x	0.5x
CY 2015 EV/Revenue	0.7x	0.8x	0.9x	1.0x	0.7x	1.0x	0.5x
CY 2014 EV/EBITDA	5.4x	7.0x	8.6x	10.0x	5.4x	10.0x	30.5x
CY 2015 EV/EBITDA	4.9x	5.5x	7.2x	7.3x	4.9x	7.3x	5.8x
CY 2015 EQV/Net Income	8.4x	11.1x	11.3x	13.8x	8.4x	13.8x	12.8x

This analysis resulted in a range of implied equity values for BTUI of \$3.07 \$4.57 per share.

No company utilized in the selected company analysis is identical to BTU. Accordingly, an analysis of the results of the foregoing is not mathematical; rather it involves complex considerations and judgments concerning differences in financial and operating characteristics of the companies and other factors that could affect the public trading value of BTU or any of the companies involved in the selected company analysis. In evaluating the selected companies, Stifel made judgments and assumptions with regard to industry performance, general business, economic, market and financial conditions and other matters, many of which are beyond BTU's control, such as the impact of competition on its business and the industry generally, industry growth and the absence of any adverse material change in the financial condition and prospects of BTU or any of the companies involved in the selected company analysis or in the industry or in the financial markets in general. Mathematical analysis (such as determining the mean or median) is not in itself a meaningful method of using peer group data.

Amtech

Stifel compared Amtech, from a financial point of view, to the same 14 publicly traded companies in the electronics equipment and semiconductor packaging, assembly and test industries to which Stifel compared BTU. Stifel compared Amtech's LTM, estimated calendar year 2014 and 2015 financial metrics, as provided by Amtech's management, to the LTM, estimated calendar year 2014 and 2015 financial metrics, obtained from available public sources, of the 14 companies. Stifel believes that this group of companies has business models similar to those of Amtech, but noted that none of these companies have the same management, composition, size, operations, financial profile, or combination of businesses as Amtech:

Based on this information, Stifel calculated and compared the following multiples for Amtech and the selected comparable companies:

Multiples of EV/Revenue based upon Amtech's LTM, estimated calendar year 2014 and 2015 revenues.

Multiples of EV/ EBITDA based upon Amtech's estimated calendar year 2015 earnings before one-time charges, interest, taxes, stock-based compensation and depreciation and amortization.

Multiples of EQV/Net Income based upon Amtech's estimated calendar year 2015 adjusted Net Income as adjusted to exclude stock-based compensation, amortization of intangibles and one-time charges.

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The following table sets forth the multiples indicated by this analysis, including the first quartile and third quartile multiples relative to the selected companies and the multiples implied by Amtech's price per share as of the market close on October 17, 2014:

Multiple:	1 st Quartile	Median	Mean	3 rd Quartile	Range of		Implied by Amtech's Closing Stock Price as of October 17, 2014
					Multiples Utilized in the Analysis	Multiples	
LTM EV/Revenue	0.8x	1.1x	1.2x	1.4x	0.8x	1.4x	1.6x
CY 2014 EV/Revenue	0.7x	1.0x	1.0x	1.1x	0.7x	1.1x	1.1x
CY 2015 EV/Revenue	0.7x	0.8x	0.9x	1.0x	0.7x	1.0x	0.6x
CY 2015 EV/EBITDA	4.9x	5.5x	7.2x	7.3x	4.9x	7.3x	4.9x
CY 2015 EQV/ Net Income	8.4x	11.1x	11.3x	13.8x	8.4x	13.8x	11.9x

This analysis resulted in a range of implied equity values for Amtech of \$8.59 – \$11.63 per share.

No company utilized in the selected company analysis is identical to Amtech. Accordingly, an analysis of the results of the foregoing is not mathematical; rather it involves complex considerations and judgments concerning differences in financial and operating characteristics of the companies and other factors that could affect the public trading value of Amtech or any of the companies involved in the selected company analysis. In evaluating the selected companies, Stifel made judgments and assumptions with regard to industry performance, general business, economic, market and financial conditions and other matters, many of which are beyond Amtech's control, such as the impact of competition on its business and the industry generally, industry growth and the absence of any adverse material change in the financial condition and prospects of Amtech or any of the companies involved in the selected company analysis or in the industry or in the financial markets in general. Mathematical analysis (such as determining the mean or median) is not in itself a meaningful method of using peer group data.

Selected Precedent Transactions Analysis***BTU***

Based on public and other information available to Stifel, Stifel calculated and compared the multiples of (1) EV to LTM and next twelve months (which we refer to as NTM) Revenue, (2) EV to NTM EBITDA, and (3) EQV to NTM Net Income

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(NTM EQV/Net Income) implied in the merger for BTU to the corresponding multiples implied in the following 20 selected acquisitions of companies in the electronics equipment and semiconductor packaging, assembly and test industries:

Announcement Date	Acquirer	Target
07/07/14	Orbotech Ltd.	SPTS Technologies Limited
12/03/13	ASM Pacific Technology Limited	DEK International GmbH
10/02/13	Cascade Microtech, Inc.	Advanced Temperature Test Systems GmbH
08/19/13	Atlas Copco AB	Edwards Group Limited
04/10/13	Electro Scientific Industries, Inc.	GSI Semi Systems Business
12/12/12	Rudolph Technologies Inc.	Azores Corp.
12/10/12	Cohu, Inc.	Ismeca Semiconductor Holding S.A.
08/13/12	Tokyo Electron Limited	FSI International, Inc.
05/18/12	Ultra Clean Holdings, Inc.	Advanced Integration Technologies
03/16/12	Tokyo Electron Limited	Nexx Systems, Inc.
03/02/12	Tokyo Electron Limited	Oerlikon Solar AG
04/11/11	Meyer Burger Technology Ltd.	Roth & Rau AG
03/28/11	Advantest Corporation	Verigy, Ltd.
01/27/10	Cascade Microtech Inc.	Suss Microtec Test Systems
04/21/09	Mycronic Laser Systems AB	MYDATA automation AB
12/08/08	Cohu, Inc.	Rasco GmbH
09/01/08	Teradyne, Inc.	Eagle Test Systems, Inc.
07/31/08	Kulicke and Soffa Industries, Inc.	Orthodyne Electronics Corp.
06/26/08	Orbotech Ltd.	Photon Dynamics, Inc.
06/22/08	LTX Corp.	Credence Systems Corporation

The following table sets forth the multiples indicated by this analysis, including the first quartile and third quartile multiples relative to the selected precedent transactions and the multiples implied by the merger:

Multiple:	1st Quartile	Median	Mean	3rd Quartile	Range of Multiples Utilized in the Analysis	
LTM EV/Revenue	0.7x	1.4x	1.5x	2.0x	0.7x	2.0x
NTM EV/Revenue	0.7x	1.2x	1.2x	1.5x	0.7x	1.5x
NTM EV/EBITDA	7.7x	7.9x	8.9x	8.1x	7.7x	8.1x
NTM EQV/Net Income	11.5x	13.9x	14.8x	16.4x	11.5x	16.4x

Based on its review of the precedent transactions, Stifel applied selected multiples to the corresponding LTM and NTM Revenue, EBITDA and Net Income of BTU, in each case as provided by Amtech's management. This analysis resulted in a range of implied equity values for BTU of \$2.98 - \$5.73 per share.

No transaction used in the precedent transactions analyses is identical to the merger. Accordingly, an analysis of the results of the foregoing is not mathematical; rather, it involves complex considerations and judgments concerning differences in financial and operating characteristics of the companies and other factors that could affect the public trading value of the companies involved in the precedent transactions which in turn, affect the enterprise value and

equity value of the companies involved in the transactions to which the merger is being compared. In evaluating the precedent transactions, Stifel made judgments and assumptions with regard to industry performance, general business, economic, market and financial conditions, and other matters, such as the impact of competition, industry growth and the absence of any adverse material change in the financial condition or prospects of BTU or the companies involved in the selected precedent transactions analysis or in the industry or in the financial markets in general, which could affect the public trading value of the companies involved in the selected precedent transactions analysis which, in turn, affect the enterprise value and equity value of the companies involved in the transactions to which the merger is being compared.

Table of Contents**Discounted Cash Flow Analysis*****BTU***

Stifel utilized the financial projections and estimates provided by Amtech's management to perform a discounted cash flow analysis of BTU. In conducting this analysis, Stifel assumed that BTU would perform in accordance with these projections and estimates. Stifel performed an analysis of the present value of the unlevered free cash flows that Amtech's management projected BTU will generate from 06/30/2014 to 12/31/2018. Stifel utilized illustrative terminal values in calendar year 2018 based on a multiple range of 5.5x-10.0x on projected calendar year 2018 EBITDA. This selected range of EV/EBITDA multiples was based upon the range utilized for calendar year 2014 EV/EBITDA in the BTU Selected Comparable Companies Analysis. Stifel discounted the cash flows projected for the specified period using discount rates ranging from 19.5% to 23.5%, reflecting estimates of BTU's weighted average cost of capital. This analysis resulted in a range of implied equity values for BTU of \$2.66 to \$3.78 per share.

Amtech

Stifel utilized the financial projections and estimates provided by the Company's management to perform a discounted cash flow analysis of Amtech. In conducting this analysis, Stifel assumed that Amtech would perform in accordance with these projections and estimates. Stifel performed an analysis of the present value of the unlevered free cash flows that Amtech's management projected it will generate from 06/30/2014 to 12/31/2018. Stifel utilized illustrative terminal values in calendar year 2018 based on a multiple range of 5.5x-10.0x on projected calendar year 2018 EBITDA. This selected range of EV/EBITDA multiples was based upon the range observed for calendar year 2014 EV/EBITDA in the Amtech Selected Comparable Companies Analysis. Stifel discounted the cash flows projected for the specified period using discount rates ranging from 17.5% to 19.5%, reflecting estimates of Amtech's weighted average cost of capital. This analysis resulted in a range of implied equity values for Amtech of \$11.18 to \$15.61 per share.

Discounted Equity Analysis***BTU***

Stifel performed an analysis of the implied present value of the future price per share of BTU common stock, which is designed to provide an indication of the present value of a theoretical future value of a company's equity value per share as a function of the company's estimated future earnings per share (which we refer to as EPS) and its assumed price/earnings (which we refer to as P/E) multiple. Stifel applied a selected range of P/E multiples of 13.0x to 20.4x to estimated EPS of BTU for each of the calendar years 2015 and 2016, as provided by Amtech's management. This selected range of P/E multiples was based upon the range observed for calendar year 2014 P/E in the BTU Selected Comparable Companies Analysis. Stifel then discounted the 2015 and 2016 values back to present by using a discount rate of 21.6%, reflecting an estimate of BTU's cost of equity that was derived by application of the Capital Asset Pricing Model, which takes into account certain company-specific metrics, including a company's equity value, as well as certain financial metrics for the United States financial markets generally. This analysis resulted in a range of implied equity values for BTU of \$2.63 to \$4.13 per share.

Amtech

Stifel also performed an analysis of the implied present value of the future price per share of Amtech common stock. Stifel applied a selected range of P/E multiples of 13.0x to 20.4x to estimated EPS of Amtech for each of the calendar years 2015 and 2016, as provided by Amtech's management. This selected range of P/E multiples was based upon the

range observed for calendar year 2014 P/E in the Amtech Selected Comparable Companies Analysis. Stifel then discounted the 2015 and 2016 values back to present by using a discount rate of 18.5%, reflecting an estimate of Amtech's cost of equity that was derived by application of the Capital Asset Pricing Model. This analysis resulted in a range of implied equity values for Amtech of \$8.86 to \$13.91 per share.

The foregoing description is only a summary of the material financial analyses performed by Stifel in arriving at its opinion. The summary alone does not constitute a complete description of the financial analyses Stifel employed in reaching its

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conclusions. None of the analyses performed by Stifel were assigned a greater significance by Stifel than any other, nor does the order of analyses described represent relative importance or weight given to those analyses by Stifel. No methodology employed by Stifel can be viewed individually, and if viewed in isolation could create a misleading or incomplete view of the financial analyses performed by Stifel. Additionally, no company or transaction used in any analysis as a comparison is identical to BTU, Amtech or the merger, and they all differ in material ways. Accordingly, an analysis of the results described above is not mathematical; rather it involves complex considerations and judgments concerning differences in financial and operating characteristics of the companies and other factors that could affect the public trading value of the selected companies or transactions to which they are being compared. Stifel used these analyses to determine the impact of various operating metrics on the implied enterprise values and implied per share equity values of BTU and Amtech. Each of these analyses yielded a range of implied enterprise values and implied per share equity values, and therefore, such implied enterprise value ranges and implied per share equity values developed from these analyses were viewed by Stifel collectively and not individually. Stifel made its determination as to the fairness, from a financial point of view, of the exchange ratio to the holders of Amtech common stock, as of the date of the opinion, on the basis of its experience and professional judgment after considering the results of all of the analyses performed.

Miscellaneous

Amtech agreed to pay Stifel an initial fee (which we refer to as the Retainer Fee) of \$50,000 upon its engagement to provide financial advisory services to Amtech and a fee (which we refer to as the Opinion Fee) of \$250,000 for its services as financial advisor to Amtech's board of directors upon delivery of Stifel's opinion (neither of which fees are contingent upon the consummation of the merger) and a fee (which we refer to as the Transaction Fee) for its services as financial advisor to Amtech in connection with the merger in an amount equal to \$800,000, against which the Retainer Fee and the Opinion Fee will be credited. Stifel will not receive any other significant payment or compensation contingent upon the successful consummation of the merger. In the event the merger is not consummated and Amtech receives a termination or break-up fee, then Amtech shall pay Stifel a fee (which we refer to as the Termination Fee) equal to 10% of such termination or break-up fee received by Amtech, less the amount of the Retainer Fee and the Opinion Fee. In addition, Amtech has agreed to reimburse Stifel for its expenses in connection with its engagement, subject to certain limitations, and to indemnify Stifel for certain liabilities arising out of its engagement.

Stifel may seek to provide investment banking services to Amtech or its affiliates, or BTU or its affiliates in the future, for which Stifel would seek customary compensation. In the ordinary course of business, Stifel and its clients may transact in the equity securities of each of BTU and Amtech and may at any time hold a long or short position in such securities.

Interests of BTU's Directors and Executive Officers in the Merger

In considering the recommendations of BTU's board of directors with respect to the merger, you should be aware that certain executive officers and members of the board of directors of BTU have agreements or arrangements that provide them with interests in the merger, including financial interests, that may be different from, or in addition to, the interests of the other stockholders of BTU. BTU's board of directors was aware of these interests during its deliberations of the merits of the merger and in determining to recommend to BTU stockholders that they vote for the proposal to adopt the merger agreement and thereby approve the transactions contemplated by the merger agreement, including the merger. The amounts set forth in the discussions below regarding director and executive officer compensation are based on compensation levels as of the date of this joint proxy statement/prospectus unless otherwise specified.

BTU Stock-Based Awards

Stock Options. The executive officers hold outstanding awards of BTU stock options, some of which are currently underwater (i.e., the exercise price of such stock option exceeds the current price of a share of BTU common stock), based on the closing price of a share of BTU common stock as of December 15, 2014. The merger agreement provides that at the effective time of the merger, each option granted by BTU to purchase shares of BTU common stock under the BTU Equity Incentive Plan, whether vested or unvested, that is outstanding and unexercised shall cease to represent a right to acquire shares of BTU common stock and shall be converted automatically into an option to purchase shares of Amtech common stock with such converted option to

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continue to be subject to the same terms and conditions as were applicable to the BTU stock option under the BTU Equity Incentive Plan and the applicable award agreement thereunder as follows: (i) the number of shares of Amtech common stock to be subject to the new option will be equal to the product of the number of shares of BTU common stock subject to the existing option and the exchange ratio, and (ii) the exercise price per share of Amtech common stock under the new option will be equal to the exercise price per share of BTU common stock of the existing option divided by the exchange ratio.

The non-employee directors of BTU hold outstanding awards of BTU stock options. The vesting of these awards will accelerate prior to the merger and such awards will terminate, if not exercised, upon consummation of the merger.

RSUs. The executive officers hold restricted stock units (RSUs) of BTU Common Stock. The merger agreement provides that immediately prior to the consummation of the merger, each RSU will become a fully vested and unrestricted share of BTU Common Stock.

Equity Awards Held by BTU's Executive Officers and Directors. Based upon equity compensation holdings as of December 15, 2014, BTU's executive officers and directors hold the following equity awards, which will be treated as described above:

	Number of Shares subject to BTU stock options that will accelerate(1)	Number of Shares subject to BTU RSUs that will accelerate(1)	Estimated Total value \$(2)
Executive Officers			
Paul J. van der Wansem	25,750	2,500	\$ 7,860
Peter J. Tallian		4,250	\$ 10,952
John J. McCaffrey		5,750	\$ 14,817
Directors			
Bertrand Loy	12,083		\$ 510
J. Samuel Parkhill	7,500		\$ 510
Joseph F. Wrinn	12,083		\$ 510
G. Mead Wyman	12,083		\$ 510

(1) As described above, BTU RSUs will accelerate vesting in connection with the merger. BTU options granted to Mr. van der Wansem will be accelerated pursuant to his employment agreement, as it is anticipated that his employment will be terminated in connection with the merger. Mr. Tallian's options shall be converted into options to acquire Amtech stock and will continue to vest in accordance with their existing vesting terms. Mr. McCaffrey's employment with BTU is expected to be terminated at the time of the merger and none of his unvested options will accelerate in connection therewith.

(2) The estimated total value of the unvested BTU Stock Options that will accelerate vesting in connection with the merger (or upon a subsequent termination of employment) was determined by multiplying (A) the product of (i) the number of shares of BTU common stock estimated to be subject to each unvested BTU Stock Option as of

immediately prior to March 1, 2015 (the assumed date on which the merger will occur), and that will accelerate in connection with the merger (or upon a subsequent termination of employment), and (ii) 0.3291, the exchange ratio, and (B) the excess of \$7.83 (the estimated value of one share of Amtech common stock based on the average closing price of Amtech common stock on The NASDAQ Global Market over the five (5) trading days beginning on December 9, 2014, and ending on December 15, 2014) over the quotient obtained by dividing (i) the exercise price per share of such BTU Stock Option by (ii) 0.3291 the exchange ratio. The estimated total value of the BTU RSUs that will accelerate vesting in connection with the merger (or upon a subsequent termination of employment) was determined by multiplying (A) the product of (i) the number of shares of BTU common stock estimated to be subject to the BTU RSUs, as of immediately prior to March 1, 2015, and (ii) 0.3291, the exchange ratio, and (B) \$7.83 (the estimated value of one share of Amtech common stock based on the average closing price of Amtech common stock on The NASDAQ Global Market over the five (5) trading days beginning on December 9, 2014, and ending on December 15, 2014).

Employment and Change of Control Agreements with BTU Executive Officers

BTU previously entered into an employment agreement with each of its executive officers. BTU entered into these agreements at the time to promote stability and the continuity of senior management, and these agreements contained provisions

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regarding payments to be made to the executive officers upon the occurrence of certain terminations of employment and/or change of control events. Mr. van der Wansem's employment with BTU will be terminated, and he has entered into a one-year employment agreement with Amtech, which will become effective upon consummation of the merger. Mr. van der Wansem has also entered into a two-year consulting agreement with Amtech, which will become effective following the termination of the employment agreement. In connection with the merger, and as further described below, Mr. Tallian, who is expected to continue employment with Amtech following the merger, has agreed to amend his existing BTU agreement, which will become effective upon consummation of the merger. Each of these agreements was negotiated by the individual BTU executive officer with Amtech. Mr. McCaffrey's employment with BTU will terminate as of the consummation of the merger. Amtech has not entered into an agreement with Mr. McCaffrey.

Mr. van der Wansem**Employment Contract with BTU**

Upon consummation of the merger, Mr. van der Wansem's employment with BTU will be terminated and he will be entitled to receive the benefits set forth below. Mr. van der Wansem's employment agreement with BTU, originally entered into in June 2005, provides as follows:

If Mr. van der Wansem's employment is terminated in the event of death or disability or if he terminates his employment with BTU for other than good reason, as defined in the agreement, then BTU will pay to him: (i) base salary through the termination date, (ii) vacation earned but not used, (iii) any bonus for the preceding year to the extent earned but not yet paid, (iv) if he has worked at least 90 days during the fiscal year, a pro-rated portion of the current year's bonus, and (v) business expenses incurred but not yet paid.

If Mr. van der Wansem is terminated by BTU for cause, as defined in the agreement, then BTU will pay to him: (i) base salary through the termination date, (ii) vacation earned but not used, (iii) any bonus for the preceding year to the extent earned but not yet paid and (iv) business expenses incurred but not yet paid.

If Mr. van der Wansem is terminated by BTU for reasons other than for cause or if he terminates his employment with BTU for good reason, then BTU will pay to him: (i) base salary through the termination date, (ii) vacation earned but not used, (iii) any bonus for the preceding year to the extent earned but not yet paid, (iv) if he has worked at least 90 days during the fiscal year, a pro-rated portion of the current year's bonus, (v) business expenses incurred but not yet paid, and (vi) an amount equal to his base salary for a period equal to twelve months. In addition, BTU will continue Mr. van der Wansem's medical and dental payments for six months after termination and his automobile allowance for three months after termination.

If a change of control occurs and if Mr. van der Wansem's employment is terminated for a reason other than for cause, BTU will pay to him: (i) base salary through the termination date, (ii) vacation earned but not used, (iii) any bonus for the preceding year to the extent earned but not yet paid, (iv) any bonus for the fiscal year of the termination, pro-rated based on the number of days during which Mr. van der Wansem was employed by BTU, (v) business expenses incurred but not yet paid and (vi) an amount equal to his annual base salary paid in a single lump-sum payment. Additionally, BTU will accelerate the exercisability of any options and cancel any restrictions on any restricted stock he holds.

If Mr. van der Wansem's employment is terminated and a change in control occurs in the following four months, BTU will pay to Mr. van der Wansem a lump sum payment reflecting his aggregate remaining severance payments that he would have been entitled to upon a termination following a change in control, as described above, and the difference

between the exercise price and the closing price (on the date of the change of control) on all options held by Mr. van der Wanssem that were cancelled or expired upon his termination.

Mr. van der Wanssem has agreed to confidentiality provisions and to a one-year non-competition covenant, following any termination of his employment.

In connection with the merger, Mr. van der Wanssem entered into a one-year employment agreement with Amtech, which term will commence on the first day after the merger. Mr. van der Wanssem's employment with BTU will be terminated immediately following the effective time of the merger. In addition, Mr. van der Wanssem also entered into a two-year consulting agreement with Amtech to continue following the termination of the employment agreement.

Table of Contents**Amtech Employment and Consulting Agreement**

Amtech's Employment agreement with Mr. van der Wansem provides for his service as a member of the Management Executive Committee and the Amtech board of directors following the completion of the merger, as well as for general advisory services as requested by the Executive Chairman of Amtech for a term of one year. Amtech has also agreed to nominate Mr. van der Wansem to its board of directors for a period of three years following the merger. During the term of the agreement, Mr. van der Wansem will also be paid an annual salary of \$350,000, and will be provided with health insurance and other benefits in effect for executives of Amtech and an automobile allowance. Mr. van der Wansem will also receive a grant of 30,000 options promptly following the completion of the merger, which will vest equally over each of the first three anniversaries of the grant date subject to Mr. van der Wansem's continued service.

Under the employment agreement with Amtech, if Amtech terminates the services of Mr. van der Wansem without cause, or if Mr. van der Wansem terminates his employment for good reason, each as defined in the agreement, then Mr. van der Wansem will, subject to continued compliance with certain restrictive covenants, be entitled to (i) the unpaid portion of the compensation he would have received for the one-year term of the agreement, payable at such times as such compensation would be paid had he continued to perform services under the agreement and (ii) acceleration of vesting of the options granted to Mr. van der Wansem.

Mr. van der Wansem's agreement also provides that, for a period of two years following the termination of the agreement with Amtech for any reason, Mr. van der Wansem will be restricted from competing with Amtech and its affiliates, from soliciting Amtech's and its affiliates' respective customers or employees, and from engaging in certain activities in connection with acquiring the voting stock or assets of Amtech or involvement in any proxy contest involving Amtech.

In addition, Mr. van der Wansem entered into a consulting agreement with Amtech to be effective following the termination of his employment agreement, unless the employment agreement is terminated as a result of death or disability, or termination by Amtech for cause or other than for cause, as defined in the employment agreement, or termination by Mr. van der Wansem for good reason or other than for good reason, as defined in the employment agreement. The consulting agreement will extend for a period of two years, shall involve Mr. van der Wansem's provision of consulting, strategic or advisory services as agreed to by Amtech and Mr. van der Wansem, and shall provide compensation of \$22,083.33 per month. In the event that Mr. van der Wansem's consulting agreement is terminated other than for cause or if Mr. van der Wansem terminates the consulting agreement for good reason as those terms are defined in the consulting agreement, Mr. van der Wansem shall be entitled to (i) the unpaid portion of the compensation he would have received for the two year period of the agreement, payable at such times as such compensation would be paid had he continued to perform services under the agreement and (ii) acceleration of options granted to Mr. van der Wansem pursuant to the employment agreement.

Mr. Tallian

In connection with the merger, Mr. Tallian entered into an amendment to his employment agreement with BTU, which amendment will be effective upon consummation of the merger. Pursuant to that amendment, the following terms of employment were agreed to:

Mr. Tallian's job title will change to General Manager of BTU, reporting to the Chief Executive Officer of Amtech.

Mr. Tallian's base salary shall be decreased to an annualized amount equal to \$265,000.

Mr. Tallian will be entitled to receive an annual bonus equal to 30% of base salary upon achievement by BTU of 100% of its EBITDA target for such year, increasing to up to 45% of base salary in the event BTU exceeds such target, provided that Mr. Tallian remains employed as of the date of payment of such bonus.

Mr. Tallian will receive an option to purchase 15,000 shares of Amtech Common Stock, such option to vest equally over four years from date of grant.

Mr. Tallian's double trigger change of control severance payment is amended to not apply to the merger, but shall apply in connection with any subsequent change of control of Amtech.

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Employment Contract with BTU

Upon consummation of the merger, the amendment to Mr. Tallian's employment agreement described above will become effective. Mr. Tallian's current employment agreement with BTU, which will remain in force upon consummation of the merger, subject only to being amended by the terms of the amendment described above, currently provides as follows:

In the event that BTU terminates Mr. Tallian's employment other than for cause, as defined in the agreement, BTU will continue to pay Mr. Tallian's salary for up to 12 months, will continue to contribute to the premium cost of Mr. Tallian's medical and dental coverage during this period, and will pay a pro-rata portion of Mr. Tallian's bonus for the year of termination.

If a change of control occurs, and (i) Mr. Tallian remains employed by BTU on the date that is six months thereafter or (ii) BTU terminates Mr. Tallian's employment other than for cause before six months thereafter, BTU will provide Mr. Tallian with either (A) a cash payment equal to the value of 7,000 shares of BTU's Common Stock at the time of the change of control or (B) at BTU's option, if BTU is the surviving corporation, 7,000 shares of BTU's Common Stock.

In the event that within one year of a change in control BTU terminates Mr. Tallian's employment other than for cause or Mr. Tallian terminates his employment for good reason, as defined in the agreement, BTU will make a lump-sum payment to Mr. Tallian equal to 12 months of Mr. Tallian's base salary, subject to the terms and conditions set forth in the amended retention agreement, and a pro-rata portion of Mr. Tallian's bonus for the year of termination.

Mr. Tallian also agrees to comply with certain confidentiality, standstill and non-solicit covenants following a termination of employment.

Mr. McCaffrey

Upon consummation of the merger, Mr. McCaffrey's employment with BTU will be terminated and he will be entitled to receive the benefits set forth below. Mr. McCaffrey's employment agreement with BTU provides as follows:

In the event that BTU terminates Mr. McCaffrey's employment other than for cause, as defined in the agreement, BTU will continue to pay Mr. McCaffrey's salary for up to 12 months, depending on length of service, will continue to contribute to the premium cost of Mr. McCaffrey's medical and dental coverage during this period, and will pay a pro-rata portion of Mr. McCaffrey's bonus for the year of termination.

If a change of control occurs, and (i) Mr. McCaffrey remains employed by BTU on the date that is six months thereafter or (ii) BTU terminates Mr. McCaffrey's employment other than for cause before six months thereafter, BTU will provide Mr. McCaffrey with either (A) a cash payment equal to the value of 7,000 shares of BTU's Common Stock at the time of the change of control or (B) at BTU's option, if BTU is

the surviving corporation, 7,000 shares of BTU's Common Stock.

In the event that within one year of a change in control BTU terminates Mr. McCaffrey's employment other than for cause or Mr. McCaffrey terminates his employment for good reason, as defined in the agreement, BTU will make a lump-sum payment to Mr. McCaffrey equal to a maximum of 12 months of Mr. McCaffrey's base salary and a pro-rata portion of Mr. McCaffrey's bonus for the year of termination.

Mr. McCaffrey also agrees to comply with certain confidentiality, standstill and non-solicit covenants following a termination of employment.

Merger-Related Compensation for BTU's Named Executive Officers

Golden Parachute Compensation

This section sets forth the information required by Item 402(t) of Regulation S-K regarding the compensation for each named executive officer of BTU that is based on or otherwise relates to the merger. This compensation is referred to as "golden parachute" compensation by the applicable SEC disclosure rules, and in this section we use such term to describe the merger-related

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compensation payable to our named executive officers. The golden parachute compensation payable to these individuals is subject to a nonbinding advisory vote of BTU's stockholders, as described above in BTU Merger-Related Proposals Proposal No. 3: BTU Merger-Related Compensation Proposal beginning on page 42.

The terms of the merger agreement provide for the conversion of outstanding BTU stock option awards into stock option awards in respect of Amtech common stock upon the closing of the merger. For a description of the treatment of outstanding equity awards held by BTU directors and executive officers, see The Merger Interests of BTU's Directors and Executive Officers in the Merger beginning on page 126.

The named executive officers are entitled to certain double-trigger severance payments and benefits, which are paid upon a qualifying termination of employment or other event following a change in control, in each case, pursuant to the employment and retention agreements described above in The Merger Interests of BTU's Directors and Executive Officers in the Merger Employment and Change of Control Agreements with BTU Executive Officers beginning on page 128. Compensation that may be paid or become payable to BTU's named executive officers in connection with the merger pursuant to agreements solely between the named executive officers and Amtech is not subject to the non-binding advisory vote but is described, inclusive of the potential payments and benefits under the employment agreements and services agreements with Amtech, above in The Merger Interests of BTU's Directors and Executive Officers in the Merger Employment and Change of Control Agreements with BTU Executive Officers.

The following table sets forth the amount of payments and benefits that may be paid or become payable to each of the named executive officers in connection with the merger pursuant to their employment arrangements with BTU, assuming: (1) the effective time of the merger occurred on December 15, 2014 (the last practicable date prior to the filing of this proxy statement/prospectus); and (2) a per share price of BTU common stock of \$3.12, the average closing price per share over the first five business days following the announcement of the merger agreement. The amounts shown below are estimates based on multiple assumptions that may or may not actually occur, including assumptions described in this proxy statement/prospectus, and do not reflect certain compensation actions that may occur before the completion of the merger. As a result, the actual amounts to be received by a named executive officer may differ materially from the amounts set forth below.

Name	Cash (\$)	Equity (\$)	Perquisites/Benefits(\$)	Total (\$)
Paul J. van der Wansem(1)	\$ 546,250	\$ 12,613		\$ 558,863
Peter J. Tallian(2)		\$ 13,260		\$ 13,260
John J. McCaffrey(3)	\$ 303,840	\$ 17,940		\$ 321,780

- (1) In connection with the merger and the termination of his employment in connection therewith, Mr. van der Wansem is entitled to the following cash payments under his employment agreement: (i) any bonus for the fiscal year of the termination, pro-rated based on the number of days during which Mr. van der Wansem was employed by BTU (\$109,250) (the value of the bonus is based upon the maximum potential payout to Mr. van der Wansem, which may not be the actual amount payable to Mr. van der Wansem), and (ii) an amount equal to his annual base salary paid in a single lump-sum payment (\$437,000). In connection with the merger and the termination of his employment in connection therewith, all of Mr. van der Wansem's unvested options to purchase BTU common stock will accelerate (\$4,813). As a result solely of the consummation of the merger, all of Mr. van der Wansem's unvested RSUs would be accelerated (\$7,800). Under his employment agreement, Mr. van der Wansem would also be entitled to base salary through the date of termination, a payment for vacation earned but not used through

the date of termination and a payment for business expenses incurred but not reimbursed as of the termination date, which payments are not reflected in the table above. Mr. van der Wansem's vested but unexercised stock options have a value of approximately \$35,063.

- (2) Mr. Tallian is not entitled to any payments in connection with the merger other than in connection with this continued employment as an employee of BTU. As a result solely of the consummation of the merger, all of Mr. Tallian's unvested RSUs would be accelerated (\$13,260) and all of Mr. Tallian's stock options would be converted to Amtech stock options pursuant to and in accordance with the merger agreement. Assuming a per share price of \$3.12 as set forth above, Mr. Tallian does not have any in-the-money stock options.

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- (3) In connection with the merger and the termination of his employment in connection therewith, Mr. McCaffrey is entitled to the following cash payments under his employment agreement: (i) any bonus for the fiscal year of the termination, pro-rated based on the number of days during which Mr. McCaffrey was employed by BTU (\$47,000) (the value of the bonus is based upon the maximum potential payout to Mr. McCaffrey, which may not be the actual amount payable to Mr. McCaffrey), and (ii) an amount equal to his annual base salary paid in a single lump-sum payment (\$235,000). Additionally, BTU will make a cash payment equal to the value of 7,000 shares of BTU's common stock at the time of the change of control (for purposes of this table, \$3.12) (\$21,840). In connection with the merger and the termination of his employment in connection therewith, all of Mr. McCaffrey's unvested options to purchase BTU common stock will terminate. As a result solely of the consummation of the merger, all of Mr. McCaffrey's unvested RSUs would be accelerated (\$17,940). Mr. McCaffrey's vested but unexercised stock options have a value of approximately \$6,624.

Vote Required

Section 951 of the Dodd-Frank Act and Rule 14a-21(c) under the Exchange Act requires that BTU seek a non-binding advisory vote from its stockholders to approve certain golden parachute compensation that its named executive officers will receive from BTU in connection with the merger. The proposal gives BTU's stockholders the opportunity to express their views on the merger-related compensation of BTU's named executive officers. Approval requires the affirmative vote of the majority of shares present in person or represented by proxy and entitled to vote on the proposal. Accordingly, BTU is asking its stockholders to approve the following resolution on a non-binding, advisory basis:

RESOLVED, that the compensation that may be paid or become payable to BTU's named executive officers in connection with the merger pursuant to agreements or understandings with BTU, and the agreements and understandings with BTU pursuant to which such compensation may be paid or become payable, as disclosed in the table in this proposal and as further described under the heading The Merger Interests of BTU's Directors and Executive Officers in the Merger Employment and Change of Control Agreements with the BTU Executive Officers are hereby APPROVED.

Approval of this proposal is not a condition to completion of the merger, and the vote with respect to this proposal is advisory only and will not be binding on BTU or Amtech. If the merger is completed, the golden parachute compensation may be paid to BTU's named executive officers even if BTU stockholders fail to approve the golden parachute compensation.

Public Trading Markets

Amtech common stock is listed for trading on NASDAQ under the symbol ASYS, and BTU common stock is listed on NASDAQ under the symbol BTUI. Upon completion of the merger, BTU common stock will no longer be quoted on NASDAQ. Following the merger, shares of Amtech common stock will continue to be traded on NASDAQ.

Under the merger agreement, Amtech will cause the shares of Amtech common stock to be issued in the merger, including with respect to BTU stock options and BTU restricted stock, to be approved for listing on NASDAQ, subject to notice of issuance, and the merger agreement provides that neither Amtech nor BTU will be required to complete the merger if such shares are not authorized for listing on NASDAQ, subject to notice of issuance.

Amtech's Dividend Policy

Amtech has never paid dividends on Amtech common stock. Amtech's present policy is to apply cash to investment in product development, acquisition or expansion; consequently, Amtech does not expect to pay dividends on Amtech

common stock in the foreseeable future.

Dissenters' Rights in the Merger

Under Section 262 of the DGCL, the holders of BTU common stock will not be entitled to appraisal rights or dissenters' rights in connection with the merger if, on the record date for the BTU special meeting, their shares are listed on a national securities exchange. BTU common stock is currently listed on NASDAQ, a national securities exchange, and is expected to continue to be so listed on the record date for the BTU special meeting. Accordingly, holders of BTU common stock are not expected to be entitled to any appraisal rights or dissenters' rights in connection with the merger.

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Delisting and Deregistration of BTU Common Stock

If the merger is completed, BTU common stock will be delisted from NASDAQ and deregistered under the Exchange Act, and BTU will no longer file periodic reports with the SEC.

Litigation Relating to the Merger

Shortly after Amtech and BTU entered into the merger agreement on October 21, 2014, the parties learned that two separate putative stockholder class action complaints were filed in the Court of Chancery of the State of Delaware. The first was filed on November 4, 2014, purportedly on behalf of BTU's public stockholders, against BTU, the members of the BTU board of directors, Amtech and Merger Sub. The complaint generally alleges, among other things, that the members of BTU's board of directors breached their fiduciary duties owed to BTU's public stockholders by causing BTU to enter into the merger agreement and by approving the merger, and that Amtech and Merger Sub aided and abetted such alleged breaches of fiduciary duties. In addition, the complaint alleges that the merger agreement improperly favors Amtech and unduly restricts BTU's ability to negotiate with other potential bidders. The complaint generally seeks, among other things, declaratory and injunctive relief concerning the alleged fiduciary breaches, injunctive relief prohibiting Amtech, Merger Sub, and BTU from consummating the merger, other forms of equitable relief, and compensatory damages. BTU and Amtech believe that the claims are without merit, and each party intends to defend against the litigation vigorously on behalf of itself and on behalf of its board of directors.

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

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THE MERGER AGREEMENT

The following describes certain aspects of the merger, including certain material provisions of the merger agreement. The following description of the merger agreement is subject to, and qualified in its entirety by reference to, the merger agreement, which is attached to this joint proxy statement/prospectus as Annex A and is incorporated by reference into this joint proxy statement/prospectus. We urge you to read the merger agreement carefully and in its entirety, as it is the legal document governing the merger.

Structure of the Merger

Each of Amtech's and BTU's respective boards of directors has approved the merger agreement. The merger agreement provides for the merger of Merger Sub with and into BTU, with BTU surviving as a wholly owned subsidiary of Amtech.

Merger Consideration

Each share of BTU common stock issued and outstanding immediately prior to the completion of the merger, except for specified shares of BTU common stock held by BTU or Amtech, will be converted into the right to receive 0.3291 shares of Amtech common stock. This exchange ratio is fixed and will not be adjusted to reflect changes in the market price of the Amtech common stock. As a result, the value of the merger consideration will fluctuate with the market price of the Amtech common stock until the completion of the merger. Based on the closing price of Amtech's common stock on the NASDAQ STOCK MARKET, or NASDAQ, on October 21, 2014, the last trading day before public announcement of the merger, the 0.3291 exchange ratio represented approximately \$3.33 in value for each share of BTU common stock. We make no assurances as to whether or when the merger will be completed or, if completed, as to the market price of the Amtech's common stock at the time of the merger or any time thereafter. **We urge you to obtain current market quotations for Amtech (trading symbol ASYS) and BTU (trading symbol BTUI).**

If, before the effective time of the merger, the outstanding shares of Amtech common stock or BTU common stock are increased, decreased, changed into or exchanged for a different number of shares or different class of capital stock by reason of any reclassification, recapitalization, stock split (including reverse stock split) or combination, exchange or readjustment of shares, or any stock dividend or distribution paid in stock, the exchange ratio and any other amounts payable pursuant to the merger agreement will be appropriately adjusted to reflect such change.

Fractional Shares

Amtech will not issue any fractional shares of Amtech common stock in the merger. Instead, a BTU stockholder who otherwise would have received a fraction of a share of Amtech common stock will receive a whole share of Amtech common stock.

Governing Documents; Directors and Officers

At the effective time of the merger, the certificate of incorporation and bylaws of BTU shall be amended so as to read in their entirety as the certificate of incorporation and bylaws of the Merger Sub as in effect immediately prior to the effective time, except that references to Merger Sub's name shall be replaced by references to BTU International, Inc., until thereafter amended in accordance with applicable law. Also at the effective time, the number of directors on the board of directors of BTU will be three and will include J.S. Whang (Amtech's Executive Chairman), Fokko Pentinga (Amtech's President and Chief Executive Officer), and Bradley C. Anderson (Amtech's Executive Vice President,

Finance, Chief Financial Officer, Treasurer, and Secretary). Mr. Paul J. van der Wansem, BTU's current President, Chief Executive Officer, and Chairman of the Board of Directors, will also be appointed to the board of directors of Amtech.

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Treatment of BTU Stock Options and Other Equity-Based Awards

Options

At the effective time of the merger, each outstanding option to purchase shares of BTU common stock will be converted into an option to purchase Amtech common stock on the same terms and conditions as were applicable prior to the merger (taking into account any acceleration or vesting by reason of the consummation of the merger and its related transactions), except that (i) the number of shares of Amtech common stock subject to the new option will be equal to the product of the number of shares of BTU common stock subject to the existing option and the exchange ratio (rounding fractional shares down to the nearest whole share), and (ii) the exercise price per share of Amtech common stock under the new option will be equal to the exercise price per share of BTU common stock of the existing option divided by the exchange ratio (rounded up to the nearest whole cent).

Restricted Stock

Immediately before the effective time of the merger, each outstanding restricted stock unit of BTU will be converted into a fully vested and unrestricted share of BTU common stock.

Closing and Effective Time of the Merger

The merger will be completed only if all conditions to the merger discussed in this joint proxy statement/prospectus and set forth in the merger agreement are either satisfied or waived.

The merger will become effective as set forth in the certificate of merger to be filed with the Secretary of State of the State of Delaware. The closing of the transactions contemplated by the merger will occur at 10:00 a.m., Mountain Standard time on a date no later than three business days after the satisfaction or waiver of the last to occur of the conditions set forth in the merger agreement, unless extended by mutual agreement of the parties. It currently is anticipated that the completion of the merger will occur in the first calendar quarter of 2015, subject to other customary closing conditions, but neither BTU nor Amtech can guarantee when or if the merger will be completed.

Conversion of Shares; Exchange of Certificates

The conversion of BTU common stock into the right to receive the merger consideration will occur automatically at the effective time of the merger. After completion of the merger, the exchange agent will exchange certificates representing shares of BTU common stock for the merger consideration to be received pursuant to the terms of the merger agreement.

Letter of Transmittal

As promptly as practicable after the completion of the merger, the exchange agent will mail to each holder of record of BTU common stock immediately prior to the effective time of the merger a letter of transmittal and instructions on how to surrender shares of BTU common stock in exchange for the merger consideration the holder is entitled to receive under the merger agreement.

If a certificate for BTU common stock has been lost, stolen or destroyed, the exchange agent will issue the merger consideration upon receipt of (1) an affidavit of that fact by the claimant and (2) if required by Amtech, the posting of a bond in an amount as Amtech may determine is reasonably necessary as indemnity against any claim that may be made against it with respect to such certificate.

After completion of the merger, there will be no further transfers on the stock transfer books of BTU of shares of BTU common stock that were issued and outstanding immediately prior to the effective time.

Withholding

Amtech and the exchange agent will be entitled to deduct and withhold from any merger consideration payable under the merger agreement to any BTU stockholder the amounts they are required to deduct and withhold under the Code or any provision

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of state, local or foreign tax law. If any such amounts are withheld and paid over to the appropriate governmental authority, these amounts will be treated for all purposes of the merger agreement as having been paid to the stockholders from whom they were withheld.

Dividends and Distributions

No dividends or other distributions declared with respect to Amtech common stock will be paid to the holder of any unsurrendered certificates of BTU common stock until the holder surrenders such certificate in accordance with the merger agreement. After the surrender of a certificate in accordance with the merger agreement, the record holder thereof will be entitled to receive any such dividends or other distributions, without any interest, which had previously become payable with respect to the whole shares of Amtech common stock which the shares of BTU common stock represented by such certificate have been converted into the right to receive under the merger agreement.

Representations and Warranties

The representations, warranties and covenants described below and included in the merger agreement were made only for purposes of the merger agreement and as of specific dates, are solely for the benefit of Amtech, Merger Sub and BTU, may be subject to limitations, qualifications or exceptions agreed upon by the parties, including those included in confidential disclosures made for the purposes of, among other things, allocating contractual risk between Amtech and BTU rather than establishing matters as facts, and may be subject to standards of materiality that differ from those standards relevant to investors. You should not rely on the representations, warranties, covenants or any description thereof as characterizations of the actual state of facts or condition of Amtech, BTU or any of their respective subsidiaries or affiliates. Moreover, information concerning the subject matter of the representations, warranties and covenants may change after the date of the merger agreement, which subsequent information may or may not be fully reflected in public disclosures by Amtech or BTU. The representations and warranties and other provisions of the merger agreement should not be read alone, but instead should be read only in conjunction with the information provided elsewhere in this joint proxy statement/prospectus and in the documents incorporated by reference into this joint proxy statement/prospectus. See [Where You Can Find More Information](#).

The merger agreement contains customary representations and warranties of each of Amtech and BTU relating to their respective businesses. The representations and warranties in the merger agreement do not survive the effective time of the merger.

The merger agreement contains representations and warranties made by each of BTU and Amtech relating to a number of matters, including the following:

corporate matters, including due organization and qualification and subsidiaries;

capitalization;

authority relative to execution and delivery of the merger agreement and the absence of conflicts with, or violations of, organizational documents or other obligations as a result of the merger;

required governmental and other regulatory filings and consents and approvals in connection with the merger;

financial statements, internal controls, books and records, and absence of undisclosed liabilities;

broker's fees payable in connection with the merger;

the absence of certain changes or events;

legal proceedings;

tax matters;

employee benefit matters and other labor matters;

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SEC reports;

compliance with applicable laws;

certain material contracts;

absence of agreements with regulatory authorities;

environmental matters;

real property;

intellectual property;

related and interested party transactions;

inapplicability of takeover statutes;

absence of action or circumstance that would prevent the merger from qualifying as a reorganization under Section 368(a) of the Internal Revenue Code;

opinions from financial advisors;

the accuracy of information supplied for inclusion in this joint proxy statement/prospectus and other similar documents; and

insurance matters.

Certain representations and warranties of Amtech and BTU are qualified as to materiality or material adverse effect. For purposes of the merger agreement, a material adverse effect, when used in reference to either BTU or Amtech, means a material adverse effect on the business, results of operations, prospects, assets, or condition (financial or otherwise) of such party and its subsidiaries taken as a whole; provided that a material adverse effect will not be deemed to include the impact of (A) changes generally affecting the economy, financial or securities markets; (B) the announcement of the transactions contemplated by or compliance with the terms of the merger agreement; (C) any outbreak or escalation of war or any act of terrorism; (D) general conditions in the industry in which such party and its subsidiaries operate; (E) any change in laws, rules, or regulations of general applicability or the interpretation thereof or GAAP or the interpretation thereof; or (F) disclosures in such party's exceptions to its respective disclosures;

except, with respect to subclauses (A), (C), (D) or (E), to the extent that the effects of such change are materially disproportionately adverse to such party and its subsidiaries, taken as a whole, as compared to other companies in the industry in which such party and its subsidiaries operate.

Covenants and Agreements

Conduct of Businesses Prior to the Completion of the Merger

Each of BTU and Amtech has agreed that, prior to the effective time of the merger (or earlier termination of the merger agreement), subject to specified exceptions, it will, and will cause each of its subsidiaries to, (a) conduct its business in the ordinary course in all material respects, and (b) use reasonable best efforts to maintain and preserve intact its business organization, employees, advantageous business relationships (including with its customers and suppliers), permits, and to retain the services of its key officers and key employees.

Additionally, prior to the effective time of the merger (or earlier termination of the merger agreement), subject to specified exceptions, neither Amtech nor BTU may, and neither may permit any of their respective subsidiaries to, without the prior written consent of the other party (such consent not to be unreasonably withheld), undertake the following actions:

- (i) other than dividends and distributions by a subsidiary, declare, set aside or pay any dividends on, make any other distributions in respect of, or enter into any agreement with respect to the voting of, any of its capital stock;
- (ii) split, combine or reclassify any of its capital stock or issue or authorize the issuance of any other securities in respect of, in lieu of, or in substitution for, shares of its capital stock, except upon the exercise of stock options or settlement of stock units that are outstanding as of the date of the merger agreement in accordance with their present terms; or
- (iii) purchase, redeem or otherwise acquire any shares of its capital stock or other securities or any of its subsidiaries, or any rights, warrants or

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options to acquire any such shares or other securities (other than the withholding of shares of common stock to satisfy the exercise price or tax withholding upon the exercise of stock options, vesting of restricted shares or settlement of stock units, in each case that are outstanding as of the date of the merger agreement in accordance with their present terms);

amend its articles of incorporation, bylaws or other comparable organizational documents or the organizational documents of any of its subsidiaries;

acquire or agree to acquire by merging or consolidating with, or by purchasing any assets or any equity securities of, or by any other manner, any business, or otherwise acquire or agree to acquire any assets in each case, except for acquisitions of inventory or other assets (other than property, plant and equipment) in the ordinary course of business consistent with past practice; provided, however, that no acquisition otherwise permitted by the foregoing may be made to the extent it may reasonably be expected to prevent, materially delay or materially impede the consummation of the transactions contemplated by the merger agreement;

sell, assign, transfer, lease, license, mortgage or otherwise encumber or subject to any lien (other than permitted liens), or otherwise dispose of any of its properties or assets or create any security interest in such assets or properties that (i) in the case of BTU, have a fair market value in excess of \$150,000 in the aggregate, or (ii) in the case of Amtech, would have or reasonably be expected to have a material adverse effect on Amtech, in each case, other than in the ordinary course of business consistent with past practice;

except for borrowings under its existing credit agreements that are incurred in the ordinary course of business consistent with past practice (or solely with respect to BTU, indebtedness owed by any wholly owned subsidiary), incur, redeem, prepay, repurchase, defease, cancel, or modify the terms of, any indebtedness or assume, guarantee or endorse, or otherwise become responsible for the indebtedness of any person (other than any of its wholly owned subsidiaries);

except as required by agreements or instruments in effect on the date of the merger agreement, alter in any material respect, fail to satisfy or enter into any commitment to alter in any material respect, any material interest in any corporation, association, joint venture, partnership or business entity in which it directly or indirectly holds any equity or ownership interest on the date of the merger agreement;

take any action, or knowingly fail to take any action within its control, which action or failure to act would reasonably be expected to prevent the merger from qualifying as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code;

adopt or enter into a plan of complete or partial liquidation, dissolution, merger, consolidation, restructuring, recapitalization or other reorganization of itself or any of its subsidiaries (other than the merger);

fail to comply in all material respects with the Securities Act, the Exchange Act or the Sarbanes-Oxley Act in respect of all documents filed with or furnished to the SEC; or

commit or agree to take any of the actions contemplated above.

In addition, prior to the effective time of the merger (or earlier termination of the merger agreement), and subject to specified exceptions, BTU may not, and may not permit any of its subsidiaries to, undertake the following actions without the prior written consent of Amtech:

issue, deliver, sell, pledge or otherwise encumber or subject to any lien any shares of its capital stock, any other voting securities, including any restricted shares of its common stock, or any securities convertible into, or any rights, warrants or options to acquire, any such shares, voting securities or convertible securities, including any stock options and unit awards (other than (i) the issuance of its common stock upon the exercise of stock options or vesting of restricted shares, in each case that are outstanding as of the date of the merger agreement in accordance with their present terms; or (ii) the issuance of up to 120,000 stock options (but, for the avoidance of doubt, not restricted stock units) to employees in the ordinary course of business consistent with past practice);

make any loans or advances to any person other than its wholly owned subsidiaries or as a result of ordinary advances and reimbursements to employees;

change in any material respect its accounting methods (or underlying assumptions), principles or practices affecting its assets, liabilities or business, including any reserving, renewal or residual method, practice or policy, in each case, in effect on the date of the merger agreement, except as required by changes in GAAP or regulatory accounting principles;

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make investments in persons (other than in any of its wholly owned subsidiaries or any related entity) in excess of \$150,000 in the aggregate, whether by purchase of stock or securities, contributions to capital, property transfers, or entering into binding agreements with respect to any such investment or acquisition;

make, change or revoke any material tax election, change an annual tax accounting period, adopt or change any material tax accounting method, file any material amended tax return, enter into any closing agreement with respect to a material amount of taxes, settle any material claim or assessment from a taxing authority or surrender any right to claim a refund of a material amount of taxes;

except as expressly permitted, terminate or waive any material provision of any material contract other than normal renewals of such contracts without materially adverse changes, additions or deletions of terms, or enter into or renew any agreement or contract or other binding obligation of such entity or its subsidiaries containing (i) any restriction on the ability of BTU and its subsidiaries, or, after the merger, Amtech and its subsidiaries (including BTU), to conduct their businesses as presently conducted or currently contemplated to be conducted after the merger or (ii) any restriction BTU and its subsidiaries, or, after the merger, Amtech and its subsidiaries (including BTU), in engaging in any type of activity or business;

(i) incur any capital expenditures or (ii) enter into any contract obligating BTU (or any of its subsidiaries) to make capital expenditures, except, in each case, for (x) capital expenditures made in accordance with such party's existing capital plan for 2014 as in effect as of the date of the merger agreement; or (y) to the extent not reflected on such capital plan, capital expenditures not in excess of \$150,000 in the aggregate;

except as required by the terms of BTU benefit plans or BTU employment agreements as in effect on the date of the merger agreement or as required by applicable law, or as in the ordinary course of business consistent with past practice, (i) grant or pay to any current or former director, officer, employee or consultant of BTU or any of its subsidiaries any increase in compensation, except for annual or promotional salary or wage increases in the ordinary course of business consistent with past practice not to exceed, in the aggregate for all such increases, 10% of the aggregate wage and salary expense for the prior year to BTU and its subsidiaries on a consolidated basis; (ii) grant, pay, promise to pay, or enter into any BTU benefit plan or BTU employment agreement to pay, to any current or former director, officer, employee, consultant or service provider of BTU or any of its subsidiaries any severance, retention, change in control or termination pay or any increase in actual or potential severance, retention, change in control or termination pay; (iii) increase the compensation or benefits provided or payable under any BTU benefit plan or BTU employment agreement; (iv) modify the terms of any equity-based award granted under any BTU stock plan; (v) make any discretionary contributions or payments with respect to any BTU benefit plan or BTU employment agreement to any trust or other funding vehicle; (vi) accelerate the payment or vesting of any payment or benefit provided or to be provided to any director, officer, employee or consultant of BTU or any of its subsidiaries or otherwise pay any amounts not due such individual; (vii) enter into any new or amend or modify any existing BTU employment agreement, other than employment agreements for new hires with an annual compensation not exceeding \$150,000 in the aggregate; (viii) establish any new or amend or modify any existing BTU benefit plans; or (ix) establish, adopt or enter into any collective bargaining agreement;

pay, discharge, settle, waive, release or assign or compromise any legal action, litigation, arbitration, suit, investigation or proceeding, other than any such payment, discharge, settlement or compromise (i) that involves solely money damages in an amount not in excess of \$150,000 in the aggregate, and that does not create binding precedent for other pending or potential legal action, litigation, arbitration or proceeding, or (ii) pursuant to the terms of any contract in effect on the date of the merger agreement;

fail to maintain in full force and effect the material insurance policies covering such company and its subsidiaries and their respective properties, assets and business in a form and amount consistent with past practices;

enter into any hedging contracts not in the ordinary course of business consistent with past practice;

purchase or otherwise acquire, directly or indirectly (including by way of providing financing), any equity interests in Amtech or any of Amtech's subsidiaries; or

commit or agree to take any of the actions contemplated above.

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Employee Benefit Matters

The merger agreement requires Amtech to provide, or cause Merger Sub to provide, each BTU employee with compensation and benefits that are the same or substantially comparable in the aggregate to those provided to such employee immediately prior to the effective time of the merger.

The merger agreement also requires Amtech (or Merger Sub) to do the following with respect to the continuing employees of BTU and its respective subsidiaries:

to recognize all service of such employees for all purposes in any new benefit plan adopted by Amtech or Merger Sub to the same extent that such service was taken into account under the analogous BTU benefit plan prior to the completion of the merger, subject to certain limitations; and

to use commercially reasonable efforts to cause each new or existing Amtech (or Amtech subsidiary) plan into which BTU employees are assumed, to (i) waive any preexisting condition limitations to the extent such conditions are covered under the applicable life, disability, medical, health or dental plans, (ii) honor under such plans any deductible, co-payment and out-of-pocket expenses incurred by such employees and their beneficiaries during the portion of the calendar year prior to such participation and (iii) waive any waiting period limitation or evidence of insurability requirement which would otherwise be applicable to such employee on or after the effective time for the year in which the effective time or participation in such plans, as applicable, occurs

Amtech has agreed to honor benefits vested as of the date of the merger agreement under certain BTU benefit plans and employment and change in control agreements.

Unless Amtech notifies BTU to the contrary, the merger agreement requires BTU to terminate the BTU 401(k) savings and retirement plan immediately prior to the effective time.

Director and Officer Indemnification and Insurance

The merger agreement requires Amtech and BTU to cooperate and use their best efforts to indemnify and defend any covered director or officer of BTU (or any of its subsidiaries) who is, or is threatened to be, made a party to any threatened or actual action, whether civil, criminal, or administrative, based in whole or in part on, or arising or pertaining to (i) the fact that he is or was a director or officer of BTU or any of its subsidiaries, (ii) all acts or omissions by him taken at the request of BTU or any of its subsidiaries at any time prior to the effective time, or (iii) the merger agreement or any of the transactions contemplated thereby, whether asserted or arising before or after the effective time. After the effective time, Amtech is required to indemnify and hold harmless, as and to the fullest extent permitted under applicable law and the BTU organizational documents, such indemnified parties against any losses, claims, damages, liabilities, costs, expenses (including reimbursement for reasonable fees and expenses incurred in advance of the final disposition of any such action), judgments, fines and amounts paid in settlement in connection with any such threatened or actual Action.

For a period of six years after the effective time of the merger, unless required by law, no provision in any of BTU's organizational documents affecting indemnification, advancement of expenses, or exculpation may be amended, modified, or repealed in any manner that would adversely impact the rights or protections of any parties who, at the effective time of the merger, were current or former covered directors, officers, or employees of BTU or any of its subsidiaries.

The merger agreement also requires that BTU purchase and maintain for a period of six years after completion of the merger, a six year prepaid tail policy on terms and conditions (in both amount and scope) providing substantially equivalent benefits as the current policies of directors, officers and employees liability insurance maintained by BTU with respect to acts or omissions occurring prior to the effective time that were committed by such directors, officers and employees in their capacity as such.

Table of Contents*Certain Additional Covenants*

The merger agreement also contains additional covenants, including, among others, covenants relating to the filing of this joint proxy statement/prospectus, obtaining required consents, the listing of the shares of Amtech common stock to be issued in the merger, access to information of the other company, exemption from takeover laws, BTU's obligation to provide further assurances and corrective measures with respect to certain matters (including ERISA matters and matters relating to BTU's operations in the People's Republic of China), and public announcements with respect to the transactions contemplated by the merger agreement.

Stockholder Meetings and Recommendation of BTU's and Amtech's Boards of Directors

Each of BTU and Amtech has agreed to hold a meeting of its stockholders for the purpose of voting upon adoption of the merger agreement as promptly as reasonably practicable. The boards of directors of each of BTU and Amtech has agreed to use their respective reasonable best efforts to obtain from their respective stockholders the vote required to adopt the merger agreement and, solely with respect to Amtech's stockholders, to approve the issuance of Amtech shares as consideration for the merger, including by communicating to its stockholders its recommendation (and including such recommendation in this joint proxy statement/prospectus) that they adopt and approve the merger agreement and the transactions contemplated thereby. Unless the merger agreement is validly terminated in accordance with its terms, both Amtech and BTU are required to submit the matters set forth above to their respective stockholders for approval.

Notwithstanding any change in recommendation by the board of directors of BTU or Amtech, unless the merger agreement has been terminated in accordance with its terms, each party is required to convene a meeting of its stockholders and to submit the merger agreement to a vote of such stockholders. Amtech and BTU must adjourn or postpone such meeting if there are insufficient shares of Amtech common stock or BTU common stock, as the case may be, represented (either in person or by proxy) to constitute a quorum necessary to conduct the business of such meeting, or if on the date of such meeting BTU or Amtech, as applicable, has not received proxies representing a sufficient number of shares necessary for adoption of the merger agreement.

Agreement Not to Solicit Other Offers

BTU has agreed that it will not, and will cause its subsidiaries and its and their officers, directors, agents, advisors and representatives to not, directly or indirectly, solicit, initiate or knowingly take any action to facilitate or encourage the submission of any takeover proposal, or, subject to certain exceptions, (i) conduct or engage in any discussions or negotiations with, disclose any non-public information relating to BTU or any of its subsidiaries to, afford access to the business, properties, assets, books or records of BTU or any of its subsidiaries to, or knowingly assist, participate in, facilitate or encourage any effort by, any third party that is seeking to make, or has made, any takeover proposal, (ii) (a) amend or grant any waiver (other than any waiver, as required by law, of any "don't ask don't waive" provisions of any standstill agreements now in effect) or release under any standstill or similar agreement with respect to any class of equity securities of BTU or any of its subsidiaries or (b) approve any transaction under, or any third party becoming an interested stockholder under, Section 203 of the DGCL, or (iii) enter into any agreement in principle, letter of intent, term sheet, acquisition agreement, merger agreement, option agreement, joint venture agreement, partnership agreement or other Contract relating to any takeover proposal.

For purposes of the merger agreement, a "takeover proposal" means a proposal or offer from, or indication of interest in making a proposal or offer by, any person other than Amtech and its subsidiaries (including Merger Sub) relating to any (i) direct or indirect acquisition of assets of BTU or any of its subsidiaries (including any voting equity interests of subsidiaries, but excluding sales of assets done in the ordinary course of business) equal to 25% or more of the fair

market value of BTU's consolidated assets or to which 25% or more of BTU's net revenues or net income on a consolidated basis are attributable, (ii) direct or indirect acquisition of 25% or more of the voting equity interests of BTU, (iii) tender offer or exchange offer that would result in any person beneficially owning (within the meaning of Section 13(d) of the Exchange Act) 25% or more of the voting equity interests of BTU, (iv) merger, consolidation, other business combination or similar transaction involving BTU or any of its subsidiaries, pursuant to which such person would own 25% or more of the consolidated assets, or net revenues of BTU, taken as a whole, or (v) liquidation or dissolution (or the adoption of a plan of liquidation or dissolution) of BTU or the declaration or payment of an extraordinary dividend (whether in cash or other property) by BTU.

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In the absence of a bona fide, unsolicited takeover proposal, and prior to the receipt of the BTU stockholder approval, BTU is required to recommend the merger to its stockholders and is prohibited from (i) withdrawing, amending, modifying, or materially qualifying, in a manner adverse to Amtech or Merger Sub, the BTU board recommendation, (ii) failing to recommend against any takeover proposal within ten business days after the commencement of such an offer, (iii) recommending a takeover proposal, and (iv) making any public statement inconsistent with the BTU board recommendation. BTU has also agreed to, and to cause its officers, directors, agents, advisors and representatives to, immediately cease and terminate any activities, discussions or negotiations conducted before the date of the merger agreement with any person other than Amtech, with respect to any acquisition proposal. In addition, BTU has agreed to (a) promptly (and in any event, within 24 hours) advise Amtech following receipt of any acquisition proposal or any inquiry which could reasonably be expected to lead to an acquisition proposal, or any request for non-public information relating to BTU or its subsidiaries, and the substance of such proposal (including the terms and conditions of and the identity of the person making such inquiry or acquisition proposal), and to keep the other party apprised of any related developments, discussions and negotiations on a current basis, including any amendments to or revisions of the terms of such inquiry or acquisition proposal, and (b) provide Amtech with at least 48 hours prior notice of any meeting of BTU's board of directors at which the board is reasonably expected to consider any takeover proposal.

However, if, prior to obtaining the BTU stockholder approval, BTU receives an unsolicited bona fide written acquisition proposal, it may (subject to giving notice and information to Amtech as described in the preceding paragraph), participate in negotiations or discussions with the third party making the unsolicited takeover proposal if the BTU board believes, in good faith and after consulting with its outside legal counsel and its financial advisor, such proposal constitutes or would reasonably be expected to result in a proposal that is a superior proposal. For purposes of the merger agreement, a superior proposal means one more favorable from a financial point of view to the BTU stockholders than the transactions contemplated by the merger agreement with Amtech. Once this determination is properly made, BTU may furnish nonpublic information relating to BTU or its subsidiaries pursuant to an executed confidentiality agreement, and may change its recommendation in favor of the merger agreement with Amtech to a recommendation against the merger agreement with Amtech and in favor of the superior proposal. For the avoidance of doubt, BTU can engage in these activities only if BTU's board of directors determines in good faith, after consultation with outside legal counsel, that failing to take any of the actions described above would reasonably be expected to cause the BTU board to be in breach of its fiduciary duties under applicable law.

Termination Fee

BTU will pay Amtech a termination fee if the merger agreement is terminated in the following circumstances:

If the merger agreement is terminated by Amtech because BTU or the board of directors of BTU (A) (1) fails to recommend in this joint proxy statement/prospectus that the stockholders of BTU adopt the merger agreement, or withdraws, amends, modifies or materially qualifies such recommendation in a manner adverse to Amtech or Merger Sub, (2) recommends or endorses a takeover proposal, (3) fails to recommend against acceptance of any tender offer or exchange offer for the shares of BTU common stock constituting a takeover proposal within ten business days after the commencement of such offer, (4) makes any public statement inconsistent with the BTU board recommendation in favor of the merger; or (5) resolves or agrees to take any of the foregoing actions; (B) permits BTU to enter into, or publicly announces its intention to enter into, any agreement or any contract relating to any takeover proposal; (C) fails to reaffirm (publicly, if requested by Amtech) its recommendation in favor of the merger within ten business days after the date any takeover proposal (or material modification thereto) is first publicly disclosed; (D) receives a tender offer or exchange offer for outstanding BTU common stock by a person unaffiliated with Amtech and does not send to its stockholders, within ten business days after

such tender or exchange offer is first disclosed, a statement reaffirming the BTU board recommendation in favor of the merger with Amtech and recommending that BTU stockholders reject such tender or exchange offer; or (E) publicly announces its intentions to do any of the preceding acts;

If the merger agreement is terminated by BTU because, prior to the receipt of the BTU stockholder approval, the BTU board of directors authorizes BTU to enter into any agreement or contract relating to a superior proposal; or

If the merger agreement is terminated (A) by Amtech because BTU has breached any representation, warranty, covenant, or agreement such that the conditions to closing the merger would not be satisfied, and such breach is incapable of being cured by the outside date (i.e., 120 days following the date this joint proxy statement/prospectus is filed with the SEC) and the BTU stockholder approval has not been obtained at the BTU stockholders meeting (or any adjournment or postponement

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thereof); provided, that Amtech gives BTU at least 30 days written notice prior to terminating the merger agreement, and provided, further, that Amtech cannot terminate the merger agreement if Amtech is then in material breach of any of its representations, warranties, covenants, or agreements; (B) by Amtech or BTU if (1) the merger has not been consummated on or before the outside date; provided, that Amtech hasn't materially breached any of its obligations in any manner that proximately causes or results in the failure of the merger to have been consummated by the outside date, and the BTU stockholder approval has not been obtained at the BTU stockholders meeting (or any adjournment or postponement thereof); or (2) by Amtech if the Amtech merger proposal is not approved by the Amtech stockholders because the BTU stockholder approval has not been obtained at the BTU stockholders meeting (or any adjournment or postponement thereof) and, in the case of termination pursuant to (A) or (B) immediately above, (i) prior to such termination (in the case of termination pursuant to clause (A) or (B)(1)), or prior to the BTU stockholders meeting (in the case of termination pursuant to clause (B)(2)), a takeover proposal shall (x) in the case of a termination pursuant to clauses (B)(1) or (B)(2) above, have been publicly disclosed and not withdrawn, or (y) in the case of a termination pursuant to clause (A) above, have been publicly disclosed or otherwise made or communicated to BTU or the BTU board of directors and not withdrawn, and (ii) within 12 months following the date of such termination of the merger agreement, BTU enters into a definitive agreement with respect to any takeover proposal, or any takeover proposal is consummated (it being understood that, for purposes of the foregoing as applied to a BTU takeover proposal, all references in the definition of takeover proposal to 25% will instead refer to more than 50%).

Amtech will pay BTU a termination fee if the merger agreement is terminated in the following circumstances (which are analogous to those described above):

If the merger agreement is terminated by BTU because Amtech fails to recommend in this joint proxy statement/prospectus that the stockholders of Amtech adopt the merger agreement, or withdraws, amends, modifies or materially qualifies such recommendation in a manner adverse to BTU, or makes any public statement inconsistent with the Amtech board recommendation in favor of the merger; or

If the merger agreement is terminated (A) by BTU because Amtech has breached any representation, warranty, covenant, or agreement such that the conditions to closing the merger would not be satisfied, and such breach is incapable of being cured by the outside date and the Amtech stockholder approval has not been obtained at the Amtech stockholders meeting (or any adjournment or postponement thereof); provided, that BTU gives Amtech at least 30 days written notice prior to terminating the merger agreement, and provided, further, that BTU cannot terminate the merger agreement if BTU is then in material breach of any of its representations, warranties, covenants, or agreements; (B) by BTU or Amtech if (1) the merger has not been consummated on or before the outside date; provided, that BTU hasn't materially breached any of its obligations in any manner that proximately causes or results in the failure of the merger to have been consummated by the outside date, and the Amtech stockholder approval has not been obtained at the Amtech stockholders meeting (or any adjournment or postponement thereof); or (2) by BTU if the BTU merger proposal is not approved by the BTU stockholders because the Amtech stockholder approval has not been obtained at the Amtech stockholders meeting (or any adjournment or postponement thereof) and, in the case of termination pursuant to (A) or (B) immediately above, (i) prior to such termination (in the case of termination pursuant to clause (A) or (B)(1)), or prior to the Amtech stockholders meeting (in the case of termination pursuant to clause (B)(2)), a takeover proposal shall (x) in the case of a termination pursuant to clauses (B)(1) or (B)(2) above, have been publicly disclosed and not withdrawn, or (y) in the case of a termination pursuant to clause (A) above, have been publicly disclosed or otherwise made or communicated to Amtech or the Amtech board of directors and not withdrawn, and Amtech enters into a definitive agreement with respect to any takeover proposal, or any takeover proposal is consummated (it being

understood that, for purposes of the foregoing as applied to an Amtech takeover proposal, all references in the definition of takeover proposal to 25% will instead refer to 50%). In this case, payment of the termination fee from Amtech to BTU is required to be a condition to closing the transaction resulting from the Amtech takeover proposal that causes termination of the merger agreement with BTU.

For purposes of the merger agreement, the termination fee is an amount equal to \$1,320,000, payable by wire transfer of immediately available funds within two business days after termination. In addition, in the event that the merger agreement is terminated by either party because the other party's requisite stockholder approval is not obtained at the applicable stockholder meeting, then the party that failed to obtain the requisite stockholder vote shall pay to the other party an expense reimbursement fee, up to \$1,000,000. Such expense reimbursement shall also be by wire transfer of immediately available funds, within two business days after such termination.

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Expenses and Fees

Except as otherwise summarized above, all costs and expenses incurred in connection with the merger agreement and the transactions contemplated thereby will be paid by the party incurring such expenses.

Amendment, Waiver and Extension of the Merger Agreement

Subject to compliance with applicable law, the merger agreement may be amended by the parties at any time before or after approval of the matters presented in connection with merger by the stockholders of Amtech and BTU, except that after adoption of the merger agreement by the respective stockholders of Amtech or BTU, there may not be, without further approval of such stockholders, any amendment of the merger agreement that requires further approval under applicable law.

At any time prior to the completion of the merger, the parties may, to the extent legally allowed, extend the time for the performance of any of the obligations or other acts of the other party, waive any inaccuracies in the representations and warranties contained in the merger agreement or in any document delivered pursuant to the merger agreement, and waive compliance with any of the agreements or satisfaction of any conditions contained in the merger agreement, except that after adoption of the merger agreement by the respective stockholders of Amtech or BTU, there may not be, without further approval of such stockholders, any extension or waiver of the merger agreement or any portion thereof that requires further approval under applicable law.

Voting and Support Agreements

Simultaneous with the execution of the merger agreement, (i) Paul J. van der Wansem and certain persons and trusts affiliated with him, who in the aggregate own approximately 13.76% of the outstanding BTU common stock, entered into a voting and support agreement with Amtech pursuant to which Mr. van der Wansem and his affiliates who are a party thereto have agreed, among other things, to vote all of their BTU common stock in favor of the BTU merger proposal and the transactions contemplated thereby; and (ii) J.S. Whang, who owns in the aggregate approximately 1.00% of the outstanding Amtech common stock, entered into a voting and support agreement with BTU, pursuant to which such Mr. Whang agreed, among other things, to vote all of his Amtech common stock in favor of the Amtech merger proposal and the transactions contemplated thereby. Details of the voting and support agreements are provided in the summary below.

The following summary of the voting and support agreement between Amtech and Paul J. van der Wansem is subject to, and qualified in its entirety by reference to, the full text of the voting and support agreement executed by the parties. While the below summary details the material terms of the Amtech voting and support agreement with Mr. van der Wansem, the voting and support agreement between BTU and Mr. Whang contains materially and substantially similar terms to those summarized below and therefore are not summarized separately.

Pursuant to the voting and support agreement between Amtech and Paul J. van der Wansem, in his capacity as a stockholder of BTU, Mr. van der Wansem agreed to vote his shares of BTU common stock:

in favor of the approval of the merger agreement;

in favor of any other matter that is required to facilitate the consummation of the merger and the other transactions contemplated by the merger agreement, including without limitation any proposal to adjourn or postpone the BTU stockholder meeting, as applicable, to a later date if there are not sufficient votes to approve the merger agreement; and

against any takeover proposal, any proposal made in opposition to or in competition with the merger, or would result in a breach of the merger agreement, or any other action involving BTU or any subsidiary of BTU that would reasonably be expected to have the effect of impeding, materially interfering with, materially delaying, materially postponing, or otherwise impairing the ability of BTU to consummate the merger.

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The voting and support agreement provides that Mr. van der Wansem will not, subject to certain exceptions, with respect to any shares of BTU common stock owned by him, take or agree or commit to do any of the following:

sell, transfer, pledge, encumber, assign or otherwise dispose of, or enter into any contract, option or other arrangement or understanding with respect to the sale, transfer, pledge, encumbrance, assignment or other disposition of, or limitation on the voting rights of, any of his BTU shares;

deposit any of his BTU shares into a voting trust or enter into a separate voting agreement with respect to such shares; or

take any action, either directly or indirectly, that would cause any representation or warranty contained in his voting and support agreement to become untrue or incorrect, in each case, in any material respect, or would reasonably be expected to have the effect of preventing or disabling him from performing his obligations under the voting and support agreement.

The voting and support agreements will terminate upon the earlier of (i) the effective time of the merger, (ii) the valid termination of the merger agreement in accordance with its terms, (iii) the occurrence of an adverse recommendation change by either Amtech or BTU, and (iv) at the option of the applicable stockholder, the execution or granting of any amendment, modification, change or waiver with respect to the merger agreement subsequent to the date of the voting and support agreement that either results in any material decrease in, or material change in the form of, or imposes any material restrictions or additional material constraints on the payment of, the merger consideration.

Employment and Services Agreements

Simultaneous with the execution of the merger agreement, Amtech entered into an employment agreement with Paul J. van der Wansem, BTU's current President and Chief Executive Officer, and an amendment to an agreement regarding employment terms with Peter Tallian. These agreements set forth the terms and conditions of each such individual's employment or other relationship with Amtech and BTU, as applicable, following the effective time of the merger and will be effective upon and subject to the completion of the merger.

The principal terms of these agreements or amendments are summarized above in "The Merger" Interests of BTU's Directors and Executive Officers in the Merger" beginning on page 126.

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ACCOUNTING TREATMENT

The accounting principles applicable to this transaction as described in FASB ASC 805-10-05-01 provide transactions that represent business combinations are to be accounted for under the acquisition method. The acquisition method requires all of the following steps: a) identifying the acquirer; b) determining the acquisition date; c) recognizing and measuring the identifiable assets acquired, the liabilities assumed, and any noncontrolling interest in the acquiree; and d) recognizing and measuring goodwill or a gain from a bargain purchase.

The appropriate accounting treatment for this transaction is as a business combination under the acquisition method. On the acquisition date, as defined by ASC 805, Amtech (the acquirer) will record at fair value the identifiable assets acquired and liabilities assumed, any noncontrolling interest, and goodwill (or a gain from a bargain purchase). The results of operations for the combined company will be reported prospectively subsequent to the acquisition date.

Table of Contents**MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES OF THE MERGER**

The following general discussion set forth the anticipated material United States federal income tax consequences of the merger to U.S. holders (as defined below) of BTU common stock that exchange such stock for shares of Amtech common stock. This discussion does not address any tax consequences arising under the laws of any state, local or foreign jurisdiction, or under any United States federal laws other than those pertaining to income tax. This discussion is based upon the Internal Revenue Code of 1986, as amended (which we refer to as the Code), the U.S. Treasury regulations promulgated thereunder and judicial and administrative authorities, rulings and decisions, all as in effect as of the date of this joint proxy statement/prospectus. These authorities may change, possibly with retroactive effect, and any such change could affect the accuracy of the statements and conclusions set forth in this discussion.

The following discussion applies only to U.S. holders (as defined below) of shares of BTU common stock who hold such shares as a capital asset within the meaning of Section 1221 of the Code (generally, property held for investment). Further, this discussion does not purport to consider all aspects of U.S. federal income taxation that might be relevant to U.S. holders in light of their particular circumstances and does not apply to U.S. holders subject to special treatment under the U.S. federal income tax laws (such as, for example, dealers or brokers in securities, commodities or foreign currencies, traders in securities that elect to apply a mark-to-market method of accounting, banks and certain other financial institutions, insurance companies, mutual funds, tax-exempt organizations, holders subject to the alternative minimum tax provisions of the Code, partnerships, S corporations or other pass-through entities or investors in partnerships, regulated investment companies, real estate investment trusts, controlled foreign corporations, passive foreign investment companies, former citizens or residents of the United States, U.S. expatriates, holders whose functional currency is not the U.S. dollar, holders who hold shares of BTU common stock as part of a hedge, straddle, constructive sale or conversion transaction or other integrated investment, holders who acquired BTU common stock pursuant to the exercise of employee stock options, through a tax qualified retirement plan or otherwise as compensation, holders who exercise appraisal rights, or holders who actually or constructively own more than 5% of BTU common stock).

In addition, the discussion does not address any alternative minimum tax or any state, local or foreign tax consequences of the merger, nor does it address any tax consequences arising under the unearned income Medicare contribution tax pursuant to the Health Care and Education Reconciliation Act of 2010.

For purposes of this discussion, the term U.S. holder means a beneficial owner of BTU common stock that is for U.S. federal income tax purposes (1) an individual citizen or resident of the United States, (2) a corporation, or entity treated as a corporation for U.S. federal income tax purposes, organized in or under the laws of the United States or any state thereof or the District of Columbia, (3) a trust if (a) a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust or (b) such trust has made a valid election to be treated as a U.S. person for U.S. federal income tax purposes or (4) an estate, the income of which is includible in gross income for U.S. federal income tax purposes, regardless of its source.

If an entity or arrangement treated as a partnership for U.S. federal income tax purposes holds BTU common stock, the tax treatment of a partner in such partnership generally will depend on the status of the partner and the activities of the partnership. Any entity treated as a partnership for U.S. federal income tax purposes that holds BTU common stock, and any partners in such partnership, should consult their own independent tax advisors regarding the tax consequences of the merger to their specific circumstances.

Determining the actual tax consequences of the merger to you may be complex and will depend on your specific situation and on factors that are not within our control. You should consult your own independent tax advisor

as to the specific tax consequences of the merger in your particular circumstances, including the applicability and effect of the alternative minimum tax and any state, local, foreign and other tax laws and of changes in those laws.

Tax Consequences of the Merger Generally

The parties intend for the merger to qualify as a reorganization within the meaning of Sections 368(a)(1)(A) and 368(a)(2)(E) of the Code. It is a condition to the obligations of Amtech and BTU to complete the merger that Amtech and BTU

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receive an opinion from Squire Patton Boggs (US) LLP and Pierce Atwood LLP, respectively, dated the closing date of the merger, to the effect that the merger will qualify as a reorganization within the meaning of Section 368(a) of the Code. These opinions will be based on facts, representations, warranties and covenants contained in representation letters provided by Amtech and BTU and on customary factual assumptions. Neither of the opinions described above will be binding on the Internal Revenue Service (which we refer to as the IRS) or any court. Amtech and BTU have not sought and will not seek any ruling from the IRS regarding any matters relating to the merger, and as a result, there can be no assurance that the IRS will not assert, or that a court would not sustain, a position contrary to any of the conclusions set forth below. In addition, if any of the representations or assumptions upon which those opinions are based are inconsistent with the actual facts, the U.S. federal income tax consequences of the merger could be adversely affected.

Provided the merger qualifies as a reorganization within the meaning of Sections 368(a)(1)(A) and 368(a)(2)(E) of the Code, upon exchanging your BTU common stock for Amtech common stock, you generally will not recognize gain or loss. The aggregate tax basis of the Amtech common stock that you receive in the merger will equal your aggregate adjusted tax basis in the shares of BTU common stock you surrender in the merger. Your holding period for the shares of Amtech common stock that you receive in the merger will include your holding period of the shares of BTU common stock that you surrender in the merger. If you acquired different blocks of BTU common stock at different times or at different prices, the Amtech common stock you receive will be allocated pro rata to each block of BTU common stock, and the basis and holding period of each block of Amtech common stock you receive will be determined on a block-for-block basis depending on the basis and holding period of the blocks of BTU common stock exchanged for such block of Amtech common stock.

This discussion of certain material U.S. federal income tax consequences is not intended to be, and should not be construed as, tax advice. Holders of BTU common stock are urged to consult their independent tax advisors with respect to the application of U.S. federal income tax laws to their particular situations as well as any tax consequences arising under the U.S. federal estate or gift tax rules, or under the laws of any state, local, foreign or other taxing jurisdiction or under any applicable tax treaty.

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DESCRIPTION OF CAPITAL STOCK OF AMTECH

As a result of the merger, BTU stockholders who receive shares of Amtech common stock in the merger will become stockholders of Amtech. Your rights as stockholder of Amtech will be governed by Arizona law and the amended and restated Articles of incorporation of Amtech (which we refer to as the Amtech articles) and the amended and restated bylaws of Amtech (which we refer to as the (Amtech bylaws). The following briefly summarizes the material terms of Amtech common stock. We urge you to read the applicable provisions of the Arizona Business Corporation Act (which we refer to as the Arizona business act) and Amtech s amended and restated articles of incorporation and Amtech s amended and restated bylaws. Copies of Amtech s and BTU s governing documents have been filed with the SEC. To find out where copies of these documents can be obtained, see Where You Can Find More Information beginning on page 163.

Authorized Capital Stock

Amtech s authorized capital stock consists of 100,000,000 shares of common stock, par value \$0.01 per share and 100,000,000 shares of preferred stock, par value 0.01 per share. As of the record date, there were 9,869,916 shares of common stock issued and outstanding and no shares of Amtech preferred stock outstanding.

Common Stock

Listing

Amtech common stock is listed on NASDAQ and traded under the symbol ASYS . Following the merger, shares of Amtech common stock will continue to be traded on NASDAQ under the same symbol.

Dividend Rights

Payment of dividends is subject to the authorization, determination and declaration by the Amtech board of directors. Historically, Amtech has never paid dividends on Amtech common stock. Amtech s current dividend policy is to apply cash to investment in product development, acquisition or expansion.

Voting Rights

Each share of Amtech common stock is entitled to one vote in each matter submitted to a vote at a meeting of stockholders, except with respect to the election of directors, for which stockholders are entitled to cumulative voting. Amtech stockholders may vote either in person or by proxy.

Preemptive and Other Rights

Other than as provided in the Amended and Restated Rights Agreement with Computershare Trust Company, N.A. (which we refer to as the Rights Agreement), the holders of Amtech common stock have no preemptive rights and have no other rights to subscribe for additional securities of Amtech under Arizona law, nor does Amtech common stock have any conversion rights or rights of redemption. Under the Rights Agreement, each right entitles the registered holder to purchase from Amtech one one-thousandth of a share of Series A Preferred attached to the then-outstanding common shares at an exercise price of \$51.60, subject to adjustment. The plan is set to expire on December 14, 2018. Upon liquidation, all holders of Amtech common stock are entitled to participate pro rata in Amtech s assets available for distribution, subject to the rights of any other class of capital stock then outstanding.

For more information regarding the rights of holders of Amtech common stock, see Comparison of Stockholders Rights beginning on page 151.

Preferred Stock

Amtech's amended and restated articles of incorporation authorizes Amtech's board of directors, without further stockholder action, to issue up to 100,000,000 shares of preferred stock, which are issuable in series and on terms to be determined the

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Amtech's board of directors. Accordingly, Amtech's board of directors is authorized, without action by the stockholders, to issue preferred stock with such dividend, liquidation, conversion, voting and other rights, restrictions and limitations as it may determine. Amtech may amend from time to time the Amtech articles to increase the number of authorized shares of preferred stock. Any such amendment would require the approval of the holders of a majority of the common stock entitled to vote, without a vote of the holders of preferred stock, unless a vote of any such holders is required pursuant to the terms of any preferred stock designation. Amtech's board of directors has designated 540,000 shares as Series A Convertible Preferred Stock, but no shares of the Series A Convertible Preferred Stock are currently outstanding. As of the date of this joint proxy statement/prospectus, there are no shares of Amtech preferred stock outstanding.

Table of Contents**COMPARISON OF STOCKHOLDERS RIGHTS**

If the merger is completed, holders of BTU common stock will receive shares of Amtech common stock in exchange for their shares of BTU common stock. Amtech is organized under the laws of the State of Arizona and BTU is organized under the laws of the State of Delaware. The following is a summary of the material differences between (1) the current rights of BTU stockholders under the DGCL and BTU's amended and restated certificate of incorporation and amended and restated bylaws and (2) the current rights of Amtech stockholders under the Arizona business act and Amtech's amended and restated articles of incorporation and Amtech's amended and restated bylaws.

*Amtech and BTU believe that this summary describes the material differences between the rights of holders of Amtech common stock as of the date of this joint proxy statement/prospectus and the rights of holders of BTU common stock as of the date of this joint proxy statement/prospectus; however, it does not purport to be a complete description of those differences. Copies of Amtech's and BTU's governing documents have been filed with the SEC. To find out where copies of these documents can be obtained, see *Where You Can Find More Information* beginning on page 163.*

AMTECH**BTU****AUTHORIZED CAPITAL STOCK**

Amtech's amended and restated articles of incorporation authorizes it to issue up to 100,000,000 shares of common stock, par value \$0.01 per share, and 100,000,000 shares of preferred stock. As of the record date for the Amtech special meeting, there were 9,869,916 shares of Amtech common stock outstanding and no shares of Amtech preferred stock outstanding.

BTU's amended and restated certificate of incorporation authorizes it to issue up to 25,000,000 shares of common stock, par value \$0.01 per share, and 5,000,000 shares of preferred stock, par value \$1.00 per share. As of the record date for the BTU special meeting, there were 9,591,671 shares of BTU common stock outstanding and no shares of BTU preferred stock outstanding.

VOTING LIMITATIONS

Amtech's shareholders are not subject to a voting limitation. BTU's stockholders are not subject to a voting limitation.

SIZE OF BOARD OF DIRECTORS

Amtech's amended and restated bylaws currently provide that the size of Amtech's board of directors shall be 6, but that such number may be changed from time to time exclusively by a decision of the board of directors pursuant to a majority vote at a duly held meeting or a unanimous written consent of the Amtech board of directors. Amtech's board of directors currently has 6 directors.

BTU's amended and restated bylaws currently provide that the size of BTU's board of directors shall be one or more directors as determined by the board of directors. BTU's board of directors currently has 5 directors.

CLASSES OF DIRECTORS

Amtech's board of directors is not classified; all directors are elected annually. BTU's board of directors is not classified; all directors are elected annually.

REMOVAL OF DIRECTORS

Amtech's stockholders may remove one or more directors at any time by a majority vote, with or without cause, but only at a duly held meeting for which such meeting's notice shall state that the Under the DGCL, unless the certificate of incorporation states otherwise, directors may be removed with or without cause by a majority of the shares then entitled to vote in the election

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purpose or one of the purposes of the meeting is removal of the director. However, if less than the entire board is to be removed, a director shall not be removed if the number of votes sufficient to elect the director under cumulative voting is voted against the director's removal.

FILLING VACANCIES ON THE BOARD OF DIRECTORS

Vacancies, including newly created directorships that result in an increase in the size of authorized directors, may be filled by an affirmative vote of the majority of the remaining directors then in office, though not less than a quorum, or by a sole remaining director. The term of any director elected to fill a vacancy shall expire at the next annual election and until their successors are duly elected and qualified, unless sooner displaced.

SPECIAL MEETINGS OF STOCKHOLDERS

Special meetings of the stockholders of Amtech may be called at any time by the chairman of the board, the president or the board of directors, or by the written demand of at least fifty percent of all issued and outstanding shares of Amtech common stock entitled to vote at any meeting. Any written demand by shareholders shall state the purpose or purposes of the meeting, and business to be transacted at such meeting shall be confined to the purposes stated in such notice and to such additional matters as the chairman of the meeting may rule to be germane to the purposes stated in the notice.

QUORUM

Under Amtech's amended and restated bylaws, the presence in person or by proxy of the majority of the shares of a corporation issued, outstanding and entitled to vote at the meeting will constitute a quorum for all purposes. In the absence of a quorum, any meeting may be adjourned from time to time by its chairman, without notice other than by announcement at the meeting, until a quorum is formed. If an adjournment is for more than 30 days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each shareholder of record entitled to vote at the meeting.

BTU

of such director. BTU's amended and restated certificate of incorporation does not state otherwise.

Under BTU's amended and restated bylaws, vacancies and any newly created directorships resulting from any increase in the number of directors may be filled by vote of the stockholders at a meeting called for the purpose, or by a majority of the directors then in office, although less than a quorum, or by a sole remaining director. When one or more directors shall resign from the board, effective at a future date, a majority of the directors then in office, including those who have resigned, shall have power to fill such vacancy or vacancies, the vote or action by writing thereon to take effect when such resignation or resignations shall become effective.

Under BTU's amended and restated bylaws, special meetings of the stockholders of BTU may be called at any time by the president or by the board of directors.

Under BTU's amended and restated bylaws, at any meeting of the stockholders, whether an original or an adjourned session, a quorum shall consist of a majority in interest of all stock issued and outstanding and entitled to vote at the meeting, except in any case where a larger quorum is required by law, by the certificate of incorporation or by the bylaws. Any meeting may be adjourned from time to time by a majority of the votes properly cast upon the question, whether or not a quorum is present.

NOTICE OF STOCKHOLDER MEETINGS

Amtech's amended and restated bylaws provide that written notice of the place, date, time and general purposes of all meetings of stockholders. Under BTU's amended and restated bylaws, a written notice of each meeting of stockholders stating the place, if any, day

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meetings of the stockholders must be given, not less than 10 and not more than 50 days (inclusive of the date of the meeting) before the date on which the meeting is to be held, to each stockholder of record entitled to vote at such meeting.

BTU

and hour thereof and, in the case of a special meeting, the purposes for which the meeting is called, and the means of remote communication, if any, by which stockholders or proxyholders may be deemed to be present and vote at such meeting, shall be given not less than ten nor more than sixty days before the meeting, to each stockholder entitled to vote thereat, and to each stockholder who, by law, by the certificate of incorporation or by the bylaws, is entitled to notice. Such notice shall be given by the secretary or by an officer or person designated by the board of directors.

ADVANCE NOTICE OF STOCKHOLDER PROPOSALS

At any meeting of stockholders, proposals and persons nominated for election as directors by stockholders will be considered only if (1) advance written notice thereof has been timely given and (2) such proposals or nominations are otherwise proper for consideration under applicable law and the amended and restated articles of incorporation and amended and restated bylaws of Amtech.

Under BTU's amended and restated bylaws, at any annual meeting of the stockholders, only such business shall be conducted as shall have been properly brought before the meeting. In addition to any other applicable requirements and the other requirements of BTU's amended and restated bylaws and amended and restated certificate of incorporation, for business to be brought properly before an annual meeting by a stockholder, whether through inclusion in BTU's proxy materials or through the stockholder's independent proxy solicitation, the stockholder must have given timely notice thereof in writing to the chairman of the board, if any, the president or the secretary. To be timely, a stockholder's notice regarding the nomination of a person for election as a director or any other proposal shall be delivered to or mailed and received at the principal executive offices of BTU by the close of business on the Advance Notice Date. For the purposes of the bylaws, the Advance Notice Date shall be one of the following:

Written notice of any proposal to be presented by any stockholder, or of the name of any person to be nominated by any stockholder for election as a director of Amtech at an annual meeting, must be delivered to Amtech's principal executive office not less than 120 calendar days prior to the date of the company's proxy statement released to shareholders in connection with the previous year's annual meeting; provided, however, that if Amtech did not hold an annual meeting the previous year, or if the date of this year's annual meeting has been changed more than 30 days from the date of the previous year's meeting, then the deadline is a reasonable time before the company begins to print and send its proxy materials. Such a notice must be accompanied by certain specified information, as set forth by applicable law. Written notice for a meeting other than a regularly scheduled annual meeting requires notice to be submitted a reasonable time before the Amtech begins to print and send its proxy materials.

(a) the date not less than 45 or more than 75 days before the anniversary date of the prior year's annual meeting, if (i) there was an annual meeting in the prior year and (ii) the date of the current year's annual meeting is not more than 30 days before or after the anniversary date of the prior year's annual meeting; or

(b) if clause (a) does not apply, the date 90 days prior to the date of the current year's annual meeting or the

10th day following the day on which public announcement of the date of the current year's annual meeting is given or made.

ANTI-TAKEOVER PROVISIONS AND OTHER STOCKHOLDER PROTECTIONS

Under Section 10-2741 of the Arizona business act, Amtech is prohibited from engaging in a business combination with any interested stockholder of Amtech for a period of three years after the date the interested stockholder becomes interested, unless a

Under the DGCL, a corporation can elect not to be governed by Section 203 of the DGCL, which generally protects publicly held Delaware corporations from unfair transactions and tactics by persons who acquire large blocks of stock

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AMTECH

disinterested committee of Amtech directors approves the business combination or a disinterested committee of Amtech directors approved the acquisition of shares that made the interested stockholder interested.

Under Section 10-2742 of the Arizona business act, Amtech is prohibited from engaging in a business combination with any interested stockholder following the three year anniversary of the interested stockholder becoming an interested stockholder of Amtech, other than in a business combination meeting one of the following requirements: (1) the consummation of the business combination is three years after the date the interested stockholder became interested, it is approved prior to the interested stockholder becoming interested, or the Amtech board of directors approved the acquisition of shares that made the interested stockholder interested prior to the acquisition date; (2) the stockholders, not including the interested stockholder, approve, by majority vote, the business combination at meeting called for that purpose no earlier than three years after the interested stockholder becomes interested; or (3) a business combination that meets certain other fair price requirements pursuant to the Arizona business act.

Under Section 10-2704 of the Arizona business act, Amtech is prohibited from purchasing, or agreeing to purchase, any shares from a beneficial owner of more than five percent of the voting power of Amtech for more than the average market price of the shares if the shares have been beneficially owned for less than three years, unless: (1) the stockholders, other than the beneficial owner, approve the purchase or (2) Amtech makes an equal offer to all holders of shares of such class and to all holders of any class into which the shares may be converted.

LIMITATION OF PERSONAL LIABILITY OF OFFICERS AND DIRECTORS

Amtech's amended and restated articles of incorporation provide that no director shall be personally liable to the corporation or its stockholders for monetary damages for breach of his or her fiduciary duty except for: (i) breaches of a director's duty of loyalty to the corporation; (ii) acts or omissions not in good faith or involving intentional misconduct or a knowing violation of law; (iii) acts arising from unlawful payments of dividends or unlawful stock purchase or redemption; or (iv) transactions from which a

BTU

without prior board approval. BTU's amended and restated certificate of incorporation does not provide for any election in connection with Section 203 and, therefore, BTU is subject to the restrictions of Section 203 of the DGCL.

In general, Section 203 prohibits a publicly held Delaware corporation such as BTU from engaging in a business combination with an interested stockholder for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination or the transaction by which the person became an interested stockholder is approved in a prescribed manner. A business combination includes certain mergers, asset sales and other transactions resulting in a financial benefit to the interested stockholder. Subject to exceptions, an interested stockholder is a person who, alone or together with his affiliates and associates, owns 15 percent or more of the corporation's voting stock.

BTU's amended and restated certificate of incorporation provides that no director shall be liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except to the extent that exculpation from liability is not permitted under the DGCL as in effect at the time such liability is determined.

director derives an improper personal benefit.

INDEMNIFICATION OF DIRECTORS AND OFFICERS AND INSURANCE

Amtech's amended and restated articles of incorporation provide that Amtech shall indemnify any and all of its existing and former directors, officers, employees, and agents against all

BTU's amended and restated bylaws provide that BTU shall indemnify each person who is or was a director or officer of BTU (including persons who serve at its request as directors,

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expenses incurred by them and each of them, including, but not limited to legal fees, judgments, penalties, and amounts paid in settlement or compromise, which may arise or be incurred, rendered, or levied in any legal action brought or threatened against any of them for or on account of any action or omission alleged to have been committed while acting within the scope of employment as director, officer, employee or agent of Amtech, whether or not any action is or has been filed against them and whether or not any settlement or compromise is approved by a court, indemnification shall be made by the corporation whether the legal action brought or threatened is by or in the right of Amtech or by any other person.

Whenever any existing or former director, officer, employee, or agent shall report to the president of the Amtech or the chairman of the board of directors that he or she has incurred or may incur expenses, including, but not limited to, legal fees, judgments, penalties, and amounts paid in settlement or compromise in a legal action brought or threatened against him or her for or on account of any action or omission alleged to have been committed by him or her while acting within the scope of his or her employment as a director, officer, employee or agent of the corporation, the board of directors shall, at its next regular or at a special meeting held within a reasonable time thereafter, determine in good faith, whether in regard to the matter involved in the action or contemplated action, such person acted, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent. If the board of directors determines, in good faith, that such person did not act, fail to act, or refuse to act willfully or with gross negligence or with fraudulent or criminal intent in regard to the matter involved in the action or contemplated action, such person acted, failed to act, or refused to act willfully or with gross negligence or with fraudulent or criminal intent, indemnification shall be mandatory and shall be automatically extended as specified herein; provided, that Amtech shall have the right to refuse indemnification in any instance in which the person to whom indemnification would otherwise have been applicable shall have unreasonably refused to permit Amtech, at its own expense and through counsel of its own choosing, to defend him or her in the action.

BTU

officers, trustees, employees or agents of another organization) against expenses (including attorney's fees), judgments, fines and amounts paid in settlement to the maximum extent permitted from time to time under the DGCL. Such indemnification shall not be exclusive of other indemnification rights arising under any bylaw, agreement, vote of directors or stockholders or otherwise and shall inure to the benefit of the heirs and legal representatives of such person. BTU shall to the fullest extent not prohibited by applicable law pay the expenses (including attorneys' fees) incurred by a director in defending any proceeding in advance of the final disposition, provided, however, that to the extent required by law the payment of expenses in advance shall be made only upon receipt of an undertaking by the director to repay all amounts advanced if it should be ultimately determined that the director is not entitled to be indemnified under the bylaws or otherwise.

BTU has agreed to provide, for a period of six years after the effective date of the merger, insurance providing substantially equivalent benefits as the current policies of directors, officers and employees liability insurance maintained by BTU with respect to acts or omissions occurring prior to the effective time of the merger.

Sections 10-851 and 10-856 of the Arizona business act provide indemnification to directors and officers so long as the individual acted in good faith and reasonably believed his or her action was in the best interests of Amtech. Amtech cannot, however, indemnify a director who is liable to Amtech or is involved in a proceeding regarding improper financial benefit. Further, pursuant to Section 10-852 of the Arizona business act, a corporation must indemnify a director who was the prevailing party in the defense of any proceeding to which the director was a party because the director is or was a director of the corporation against reasonable expenses incurred by the director

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AMTECH

BTU

in connection with the proceeding. Further, a corporation shall indemnify an outside director against liability, and shall pay expenses prior to a final disposition if the director furnishes the corporation a written affirmation that the director has acted in good faith and reasonably believed in the best interests of the corporation.

Under Section 10-857 of the Arizona business act, Amtech is permitted to purchase director and officer insurance. Amtech currently maintains director and officer insurance.

AMENDMENTS TO ARTICLES OF INCORPORATION AND BYLAWS

Under Section 10-1001 of the Arizona business act, Amtech may amend its articles of incorporation by a majority vote of those shareholders entitled to vote on such proposal.

Amtech's amended and restated bylaws provides that the bylaws may be altered, amended, supplemented, repealed or temporarily or permanently suspended, in whole or in part, or new bylaws may be adopted, at a duly held meeting of the board of directors or by unanimous written consent. This is consistent with Section 10-1020 of the Arizona business act.

BTU's amended and restated certificate of incorporation may be amended in any manner permitted by law, with the exception that any amendment to paragraph D thereof (relating to the approval of certain business transactions, including mergers) requires the affirmative vote of the holders of at least two thirds of the outstanding shares of common stock. In addition, any amendment or repeal of Section 7 (relating to personal liability of directors for monetary damages) shall not apply to or have any effect on the liability of any director for or with respect to. acts or omissions of such director occurring prior to such amendment or repeal.

BTU's amended and restated bylaws may be adopted, amended or repealed by vote of a majority of the directors in office or by vote of a majority of the stock outstanding and entitled to vote

ACTION BY WRITTEN CONSENT OF THE STOCKHOLDERS

Under Amtech's amended and restated bylaws, the stockholders may take any action permitted to be taken at a duly held meeting with the unanimous written consent of all of the shareholders entitled to vote with respect to the subject matter, in writing, setting forth the action so forth taken, and signed by all the shareholders entitled to vote.

Under BTU's amended and restated bylaws, at any time during which the common stock of the corporation is registered under Section 12 of the Exchange Act, any action by the holders of the common stock must be taken at an annual or special meeting and may not be taken by written consent.

STOCKHOLDER RIGHTS PLAN

On December 15, 2008, Amtech entered into The Rights Agreement with Computershare Trust Company, N.A., as rights agent, which amended and restated the terms governing the previously authorized shareholder rights to purchase fractional shares of Amtech's series A participating preferred stock currently attached to each of the outstanding common shares of Amtech. As amended, each right entitles the registered holder to purchase from Amtech one one-thousandth of a share of series A preferred at an exercise price of \$51.60, subject to adjustment. The plan is currently set to expire on December 14, 2018. Not applicable.

Table of Contents**COMPARATIVE MARKET PRICES AND DIVIDENDS**

Amtech common stock is listed on the NASDAQ under the symbol **ASYS**, and BTU common stock is listed on NASDAQ under the symbol **BTUI**. The following table sets forth the high and low reported closing sale prices per share of Amtech common stock and BTU common stock, and the cash dividends declared per share for the periods indicated.

Quarter Ended:	Amtech Common Stock			BTU Common Stock		
	High	Low	Dividend	High	Low	Dividend
March 31, 2012	\$ 11.60	\$ 7.90	(1)	\$ 3.69	\$ 2.53	(1)
June 30, 2012	8.40	3.75		3.21	2.64	
September 30, 2012	4.43	3.27		2.78	2.10	
December 31, 2012	3.42	2.90		2.36	1.89	
March 31, 2013	4.85	3.24		3.45	1.96	
June 30, 2013	7.93	3.21		2.63	2.15	
September 30, 2013	7.70	5.44		3.40	2.42	
December 31, 2013	9.21	6.19		4.26	2.30	
March 31, 2014	13.74	6.87		4.11	2.52	
June 30, 2014	13.00	7.58		3.62	2.33	
September 30, 2014	12.37	8.47		4.00	2.77	
October 1, 2014 (through December 15, 2014)	11.00	7.69		3.45	2.48	

(1) No dividends paid.

On October 21, 2014, the last full trading day before the public announcement of the merger agreement, the closing sale price of shares of Amtech common stock as reported on NASDAQ was \$10.13. On December 15, 2014, the last practicable trading day before the date of this joint proxy statement/prospectus, the closing sale price of shares of Amtech common stock as reported on NASDAQ was \$7.71.

On October 21, 2014, the last full trading day before the public announcement of the merger agreement, the closing sale price of shares of BTU common stock as reported on NASDAQ was \$3.20. On December 15, 2014, the last practicable trading day before the date of this joint proxy statement/prospectus, the closing sale price of shares of BTU common stock as reported on NASDAQ was \$2.48.

As of December 15, 2014, the last date prior to printing this joint proxy statement/prospectus for which it was practicable to obtain this information for Amtech and BTU, respectively, there were approximately 427 registered holders of Amtech common stock and approximately 396 registered holders of BTU common stock.

The following table shows the closing sale prices of Amtech common stock and BTU common stock as reported on NASDAQ on October 21, 2014, the last full trading day before the public announcement of the merger agreement, and on December 15, 2014, the last practicable trading day before the date of this joint proxy statement/prospectus. The table also shows the implied value of the merger consideration payable for each share of BTU common stock, which was calculated by multiplying the closing price of Amtech common stock on those dates by the exchange ratio of 0.3291.

	Amtech Common Stock	BTU Common Stock	Implied Value of One Share of BTU Common Stock
At October 21, 2014	\$ 10.13	\$ 3.20	\$ 3.33
At December 15, 2014	\$ 7.71	\$ 2.48	\$ 2.54

Each of Amtech and BTU stockholders is advised to obtain current market quotations for Amtech common stock and BTU common stock. The market price of Amtech common stock and BTU common stock will fluctuate between the date of this joint proxy statement/prospectus and the date of completion of the merger. No assurance can be given concerning the market price of Amtech common stock or BTU common stock before or after the effective date of the merger. Changes in the market price of Amtech common stock prior to the completion of the merger will affect the market value of the merger consideration that BTU stockholders will receive upon completion of the merger.

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LEGAL MATTERS

The validity of the Amtech common stock to be issued in connection with the merger will be passed upon for Amtech by Squire Patton Boggs (US) LLP (Phoenix, Arizona). Certain U.S. federal income tax consequences relating to the merger will also be passed upon for Amtech by Squire Patton Boggs (US) LLP (Phoenix, Arizona) and for BTU by Pierce Atwood LLP (Boston, Massachusetts).

EXPERTS

Amtech

The financial statements incorporated in this Registration Statement by reference to the Annual Report on Form 10-K for the year ended September 30, 2014 have been so incorporated in reliance on the report of Mayer Hoffman McCann P.C. an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

BTU

The consolidated financial statements of BTU International, Inc., as of December 31, 2013 and 2012, and for each of the years in the three-year period ended December 31, 2013, have been included herein and in the registration statement in reliance upon the reports of KPMG LLP, independent registered public accounting firm, appearing elsewhere herein, and upon the authority of said firm as experts in accounting and auditing.

DEADLINES FOR SUBMITTING STOCKHOLDER PROPOSALS

Amtech

Amtech anticipates holding its 2015 Annual Meeting of Stockholders on March 5, 2015. Any stockholder who wishes to present any proposal for stockholder action at the 2015 Annual Meeting of Stockholders must, in addition to complying with any other applicable requirements, including, without limitation, those set forth in Rule 14a-8 of the Securities Exchange Act of 1934, as amended, have submitted notice of such proposal to Amtech's Secretary, at Amtech's offices, not later than September 25, 2014, in order to be included in Amtech's proxy statement and form of proxy for that meeting. Such proposals should be addressed to the Corporate Secretary, Amtech Systems, Inc., 131 South Clark Drive, Tempe, Arizona 85281. If a stockholder proposal is introduced at the 2015 Annual Meeting of Stockholders without any discussion of the proposal in Amtech's proxy statement, and the stockholder does not notify Amtech on or before December 9, 2014, as required by SEC Rule 14(a)-4(c)(1), of the intent to raise such proposal at the 2015 Annual Meeting of Stockholders, then proxies received by Amtech for the 2015 Annual Meeting of Stockholders will be voted by the persons named in such proxies in their discretion with respect to such proposal. Notice of such proposal is to be sent to the above address.

BTU

If the merger occurs in the expected timeframe, there will be no BTU annual meeting of stockholders in 2015. In that case, stockholder proposals must be submitted to Amtech's Corporate Secretary in accordance with the procedures described above. In case the merger is not completed, any stockholder who may desire to submit a proposal under the SEC's stockholder proposal rule (Rule 14a-8) for inclusion in BTU's proxy and proxy statement for the 2015 annual meeting of BTU stockholders, must present such proposal in writing to BTU at 23 Esquire Road, North Billerica, Massachusetts 01862, Attention: Corporate Secretary, by December 15, 2014. Under BTU's bylaws, any stockholder

who desires to submit a proposal outside of the process provided by the SEC's stockholder proposal rule (Rule 14a-8) or desires to nominate a director at the 2015 annual meeting of BTU stockholders must provide timely notice thereof in the manner and form required by BTU's amended and restated bylaws by April 1, 2015 (but not before March 2, 2015). If the date of the annual meeting of BTU stockholders should change, such deadlines under BTU's bylaws would also change.

Table of Contents**VOTING AND MANAGEMENT INFORMATION****Information if Proxies, Consents, or Authorizations Are to Be Solicited**

Pursuant to the terms of the merger agreement, at and after the effective time of the merger, Paul J. van der Wansem will serve as a director and executive officer of Amtech.

Business Experiences and**Name****Current Directorships**

Paul J. van der Wansem (Age: 75; Director of BTU Since 1979) President, Chief Executive Officer (1979-2002) of BTU; returned to position in October 2004. Chairman of the Board of Directors of BTU (1979-present).

Prior to joining BTU, Mr. van der Wansem served as Vice President of Holec, N.V., a Dutch electronics company, President of Holec, USA, as a Management Consultant for the Boston Consulting Group, and as Adjunct Director of First National City Bank Amsterdam/New York.

We believe Mr. van der Wansem's qualifications to serve on BTU's Board of Directors and as its Chairman include his many years of operational and strategic management experience in a global business environment, including his 34 years as BTU's Chief Executive Officer. His experience and perspective are a valuable asset to lead BTU's worldwide business with a predominantly multinational customer base and manufacturing facilities in both the United States and China.

Executive Compensation

The following table sets forth information with respect to compensation paid to or accrued on behalf of Paul J. van der Wansem as of December 31, 2013 for services to BTU for the years ended December 31, 2013 and December 31, 2012.

SUMMARY COMPENSATION TABLE

Name and Principal Position	Year	Salary (\$)	Stock Awards (\$)	Option Awards (\$)(1)	Non-Equity Incentive		Total (\$)
					Plan Compensation (\$)(2)	All Other Compensation (\$)	
Paul J. van der Wansem	2013	\$ 373,131	\$	\$ 44,893	\$ 13,984	\$ 21,732	\$ 453,740
President, Chairman and Chief	2012	\$ 391,787	\$	\$ 64,813	\$ 14,093	\$ 22,218	\$ 492,911

Executive Officer

- (1) See Note 8 to the consolidated financial statements included in BTU's Form 10-K for the fiscal year ended December 31, 2013, for a discussion of the assumptions used under FASB ASC Topic 718 to value equity based compensation.
- (2) All 2013 and 2012 Non-Equity Incentive Plan Compensation was paid in the first quarter of fiscal 2014 and 2013, respectively, per the terms of the agreements. Cash incentive bonuses, which are contingent in nature, are awarded under BTU's annual Key Executive Incentive Compensation Plan. The Compensation Committee awards bonuses based on the achievement of specified levels of BTU's consolidated operating income and certain other business goals.

Table of Contents**Outstanding Equity Awards at 2013 Year-End**

The table below sets forth information about outstanding equity awards held by Paul J. van der Wansem as of December 31, 2013.

Name	Award Grant Date	Option Awards			Stock Awards(2)		
		Number of Securities Underlying Unexercised Options (#)	Number of Securities Underlying Unexercised Options (#)(1)	Option Exercise Price (\$)	Option Expiration Date	Number of Shares of Stock That Have Not Vested	Market Value of Shares of Stock That Have Not Vested
Paul J. van der Wansem	05/18/2007	60,000	0	\$ 11.93	05/18/2014		
	05/16/2008	66,000	0	\$ 10.05	05/16/2015		
	10/31/2008	33,000	0	\$ 5.01	10/31/2015		
	05/15/2009	33,000	0	\$ 4.06	05/15/2016		
	10/26/2009	50,000	0	\$ 5.79	10/26/2016		
	05/21/2010	26,250	8,750	\$ 5.38	05/21/2017		
	11/01/2010	26,250	8,750	\$ 6.99	11/01/2017		
	05/20/2011	10,500	10,500	\$ 9.04	05/20/2018		
	11/03/2011	10,500	10,500	\$ 3.56	11/03/2018		
	06/04/2012	12,500	12,500	\$ 3.03	06/04/2019		
	11/05/2012	12,500	12,500	\$ 2.00	11/05/2019		
	06/03/2013	0	12,500	\$ 2.35	06/03/2020		
	11/04/2013	0	18,000	\$ 3.27	11/04/2020		

(1) The option awards listed above vest with respect to one-fourth of the shares on each of the first, second, third, and fourth anniversaries of the date of grant, except for the options expiring on 5/15/2016 granted under the 2009 Stock Option Exchange Program which vest in thirds on each of the first, second and third anniversaries of the date of grant, and the options expiring on 6/04/2019, 11/05/2019, 06/03/2020 and 11/04/2020 which vest one-half of the shares on each of the first and second anniversaries of the date of grant.

(2) Mr. van der Wansem did not hold any stock awards as of December 31, 2013.

All of the option awards listed above were granted under the 2003 Equity Incentive Plan (the "2003 Plan"). The 2003 Plan allows for the award of stock options to employees, directors and consultants.

Employment Contracts

For a description of Mr. van der Wansem's agreements and arrangements with BTU, see "The Merger - Interests of BTU's Directors and Executive Officers in the Merger" beginning on page 126.

Beneficial Ownership of Shares

The following table sets forth certain information regarding beneficial ownership as of December 15, 2014, of BTU's Common Stock (i) by each person known by BTU to own beneficially more than 5% of BTU's Common Stock, (ii) by each of BTU's directors, (iii) by each Named Executive Officer of BTU listed in the Summary Compensation Table in its definitive

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proxy statement for 2014 and (iv) by all directors and executive officers of BTU as a group. Unless otherwise noted below, the address of each person is 23 Esquire Road, North Billerica, Massachusetts 01862.

	Common Stock Beneficially Owned(1)	
	Number of Shares	Percent of Class
Directors and Executive Officers		
Paul J. van der Wansem(2)	2,001,744	20.14%
Joseph F. Wrinn(3)	48,153	*
G. Mead Wyman(3)	41,693	*
J. Samuel Parkhill(3)	36,421	*
Bertrand Loy(3)	23,262	*
Peter J. Tallian(3)	47,857	*
John J. McCaffrey(3)	100,700	1.04%
All directors and executive officers as a group (8 persons)(4)	2,377,530	24.03%
5% Beneficial Owners		
Austin W. Marxe & David M. Greenhouse(5) 527 Madison Avenue, Suite 2600 New York, New York 10022	1,341,437	13.99%
Royce & Associates, LLC(6) 745 Fifth Avenue New York, NY 10151	968,749	10.10%
Laurence W. Lytton(7) 467 CPW New York, NY 10025	762,549	7.95%
Ameriprise Financial, Inc.(8) 145 Ameriprise Financial Center Minneapolis, MN 55474	642,381	6.70%
T. Rowe Price Associates, Inc.(9) 100 E. Pratt Street Baltimore, MD 21202	634,990	6.62%

* Less than one percent

(1) Except as otherwise noted, each person or entity named in the table has sole voting and investment power with respect to all shares of Common Stock shown as beneficially owned by him or it.

- (2) Includes: (i) 90,344 shares of Common Stock held by trusts, of which Mr. van der Wansem is a trustee, for the benefit of certain members of Mr. van der Wansem's family (Mr. van der Wansem disclaims beneficial ownership in the shares held in these trusts); (ii) 365,000 shares held in a family limited partnership, in which Mr. van der Wansem is a general partner and a limited partner; (iii) 115,000 shares held by Mrs. van der Wansem, of which Mr. van der Wansem disclaims beneficial ownership; (iv) 60,250 shares held by a charitable foundation, of which Mr. van der Wansem is a trustee and in which he shares voting and investment power, of which Mr. van der Wansem disclaims beneficial ownership; and (v) 348,750 shares represented by options exercisable by Mr. van der Wansem within 60 days of December 15, 2014.
- (3) Includes 29,518 shares for Mr. Wrinn, 29,518 shares for Mr. Wyman, 23,998 shares for Mr. Parkhill, 23,262 shares for Mr. Loy, 39,400 shares for Mr. Tallian, and 94,700 shares for Mr. McCaffrey represented by options exercisable within 60 days of December 15, 2014.
- (4) Includes 656,346 shares represented by options exercisable within 60 days of December 15, 2014.
- (5) Information as to share ownership is as of December 11, 2014, and is based on a Form 4 filed with the SEC on December 12, 2014. Austin W. Marx and David M. Greenhouse are the controlling principals of AWM Investment Company, Inc., (AWM), the general partner of MGP Advisers Limited Partnership (MGP), the general partner of Special Situations

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- Fund III QP, L.P., (SSFQP) and Special Situations Cayman Fund, L.P. (Cayman). AWM serves as the investment adviser to SSFQP and Cayman. The principal business of the fund is to invest in equity and equity-related securities and other securities of any kind or nature. Messrs. Marx and Greenhouse together with Adam C. Stettner, beneficially own a total of 1,341,437 shares of Common Stock. This amount includes 1,235,451 shares of Common Stock owned by SSFQP and 105,986 shares of Common Stock owned by Cayman. Messrs. Marx and Greenhouse have shared voting power covering 1,341,437 shares of BTU s Common Stock and shared dispositive power covering 1,341,437 shares of BTU s Common Stock.
- (6) Information as to share ownership is as of October 31, 2014, and is based on a Schedule 13G/A filed with the SEC on November 6, 2014. Royce & Associates, LLC has sole voting power and sole dispositive power over 968,749 shares of BTU s Common Stock.
- (7) Information as to share ownership is as of December 31, 2013, and is based on a Schedule 13G/A filed with the SEC on February 10, 2014. Mr. Laurence W. Lytton has sole voting power and sole dispositive power over 712,549 shares of BTU s Common Stock and has shared voting power and shared dispositive power over 50,000 shares of BTU s Common Stock.
- (8) Information as to share ownership is as of December 31, 2013, and is based on a Schedule 13G/A filed with the SEC on February 13, 2014. Ameriprise Financial, Inc. has shared voting power covering 406,027 shares of BTU s Common Stock, and shared dispositive power covering 642,381 shares of BTU s Common Stock. Within Ameriprise Financial, Inc., voting power is allocated to the following entities: Ameriprise Financial, Inc. has shared voting power covering 406,027 shares of BTU s Common Stock and shared dispositive power covering 642,381 shares of BTU s Common Stock. Columbia Management Investment Advisors, LLC has shared voting power covering 406,027 shares of BTU s Common Stock, and shared dispositive power covering 642,381 shares of BTU s Common Stock.
- (9) Information as to share ownership is as of December 31, 2013, and is based on a Schedule 13G/A filed with the SEC on February 10, 2014. T. Rowe Price Associates, Inc. has sole voting power covering 34,590 shares of BTU s Common Stock and sole dispositive power covering 634,990 shares of BTU s Common Stock. T. Rowe Price Small-Cap Value Fund, Inc. has sole voting power covering 596,370 shares of BTU s Common Stock.

Table of Contents**WHERE YOU CAN FIND MORE INFORMATION**

Amtech has filed with the SEC a registration statement under the Securities Act of 1933, as amended, that registers the issuance of the shares of Amtech common stock which may possibly be issued in connection with the merger. This joint proxy statement/prospectus is a part of that registration statement and constitutes the prospectus of Amtech in addition to being a proxy statement for Amtech and BTU stockholders. The registration statement, including this joint proxy statement/prospectus and the attached exhibits, and annexes contains additional relevant information about Amtech and Amtech common stock.

Amtech and BTU also file reports, proxy statements and other information with the SEC under the Exchange Act. You may read and copy this information at the Public Reference Room of the SEC at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You may obtain information on the operation of the SEC's Public Reference Room by calling the SEC at 1-800-SEC-0330. You may also obtain copies of this information by mail from the Public Reference Section of the SEC, 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates, or from commercial document retrieval services.

The SEC also maintains an Internet website that contains reports, proxy statements and other information about issuers, such as Amtech and BTU, who file electronically with the SEC. The address of the site is <http://www.sec.gov>. The reports and other information filed by Amtech with the SEC are also available at Amtech's website at www.amtechsystems.com under the tab "Investors", and then under the heading "SEC Filings". The reports and other information filed by BTU with the SEC are available at BTU's website at www.btu.com under the tab "Investors", and then under the heading "Financial Information" and then under the subheading "SEC Filings". The web addresses of the SEC, Amtech and BTU are included as inactive textual references only. Except as specifically incorporated by reference into this joint proxy statement/prospectus, information on those web sites is not part of this joint proxy statement/prospectus.

The SEC allows Amtech to incorporate by reference information in this joint proxy statement/prospectus. This means that Amtech can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is considered to be a part of this joint proxy statement/prospectus, except for any information that is superseded by information that is included directly in this joint proxy statement/prospectus.

This joint proxy statement/prospectus incorporates by reference the documents listed below that Amtech previously filed with the SEC. They contain important information about Amtech and its financial condition.

Amtech SEC Filings (SEC File No. 0-11412)

Annual Report on Form 10-K or 10-K/A

Current Reports on Form 8-K or 8-K/A

Period or Date Filed

Year ended September 30, 2014 (including the amendment filed December 9, 2014)

Filed on October 23, 2014 and November 21, 2014 (other than those portions of the documents deemed to be furnished and not filed)

In addition, Amtech also incorporates by reference additional documents filed with the SEC under Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act between the date of this joint proxy statement/prospectus and the date of the Amtech special meeting provided that Amtech is not incorporating by reference any information furnished to, but not filed with, the SEC.

Except where the context otherwise indicates, Amtech has supplied all information contained or incorporated by reference in this joint proxy statement/prospectus relating to Amtech, and BTU has supplied all information contained in this joint proxy statement/prospectus relating to BTU.

Documents incorporated by reference are available from Amtech without charge, excluding any exhibits to those documents unless the exhibit is specifically incorporated by reference as an exhibit in this joint proxy statement/prospectus. You can obtain documents incorporated by reference in this joint proxy statement/prospectus by requesting them in writing or by telephone from the Amtech at the following address and phone number:

Amtech Systems, Inc.

131 South Clark Drive

Tempe, Arizona 85281

Attention: Corporate Secretary

Telephone: (480) 967-5146

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Amtech stockholders requesting documents must do so by January 22, 2015 to receive them before the Amtech special meeting. You will not be charged for any of these documents that you request. If you request any incorporated documents from Amtech, Amtech will mail them to you by first class mail, or another equally prompt means, within one business day after receiving your request.

Certain documents referenced herein related to BTU are available from BTU without charge. You can obtain any such documents by requesting them in writing or by telephone from BTU at the following address and phone number:

BTU International, Inc.

23 Esquire Road

North Billerica, MA 01862

Attention: Investor Relations

Telephone: (978) 667-4111

BTU stockholders requesting documents must do so by January 22, 2015 to receive them before the BTU special meeting. You will not be charged for any of these documents that you request. If you request any documents from BTU, BTU will mail them to you by first class mail, or another equally prompt means, within one business day after receiving your request.

Neither Amtech nor BTU has authorized anyone to give any information or make any representation about the merger or the companies that is different from, or in addition to, that contained in this joint proxy statement/prospectus or in any of the materials that have been incorporated in this joint proxy statement/prospectus. Therefore, if anyone does give you information of this sort, you should not rely on it. If you are in a jurisdiction where offers to exchange or sell, or solicitations of offers to exchange or purchase, the securities offered by this joint proxy statement/prospectus or the solicitation of proxies is unlawful, or if you are a person to whom it is unlawful to direct these types of activities, then the offer presented in this joint proxy statement/prospectus does not extend to you. The information contained in this joint proxy statement/prospectus speaks only as of the date of this joint proxy statement/prospectus unless the information specifically indicates that another date applies.

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ANNEX A

EXECUTION VERSION

AGREEMENT AND PLAN OF MERGER

BY AND AMONG

AMTECH SYSTEMS, INC.,

BTU MERGER SUB, INC.,

AND

BTU INTERNATIONAL, INC.

Dated as of October 21, 2014

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