UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 14A

(Rule 14a-101)

INFORMATION REQUIRED IN PROXY STATEMENT

SCHEDULE 14A INFORMATION

Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934

Filed by the Registrant \blacksquare

Filed by a Party other than the Registrant \Box

Check the appropriate box:

- Preliminary Proxy Statement
- □ Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- Definitive Proxy Statement
- Definitive Additional Materials
- □ Soliciting Material under §240.14a-12

AMTECH SYSTEMS, INC.

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
 - (1) Title of each class of securities to which transaction applies:
 - (2) Aggregate number of securities to which transaction applies:
 - (3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):
 - (4) Proposed maximum aggregate value of transaction:

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- □ Fee paid previously with preliminary materials.
- Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.
 - (1) Amount Previously Paid:

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- (4) Date Filed:

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As previously disclosed, Amtech Systems, Inc. (the "Company") entered into an Agreement and Plan of Merger (the "Merger Agreement"), dated October 21, 2014, by and among the Company, BTU International, Inc. ("BTU"), and BTU Merger Sub, Inc. ("Merger Sub"), providing for the merger of Merger Sub with and into BTU with BTU surviving as a wholly owned subsidiary of the Company (the "Merger").

In connection with the Merger, the Company and BTU filed a definitive joint proxy statement/prospectus (the "Proxy Statement"), dated December 23, 2014, with the Securities and Exchange Commission (the "SEC"). The special meeting of the Company's stockholders is scheduled to be held on January 29, 2015 at The Tempe Mission Palms Hotel, 60 East 5th Street, Tempe, Arizona.

On January 16, 2015, the Company and BTU, along with the other defendants named therein, entered into a memorandum of understanding (the "MOU") to settle two separate putative stockholder class action lawsuits relating to the transactions contemplated by the Merger Agreement, including the Merger (together, the "Stockholder Actions"), which were previously disclosed in the Proxy Statement under the caption, "The Merger—Litigation Relating to the Merger." Pursuant to the MOU, the parties to the Stockholder Actions agreed to resolve the claims made therein and the Company and BTU agreed to make certain additional disclosures regarding the Merger, as set forth herein. The MOU is expected to be memorialized in a stipulation of settlement, which will be subject to customary terms and conditions, including court approval, and will include an agreement by the plaintiffs in the Stockholder Actions, on behalf of each stockholder class, to provide a release of all claims against the Company and BTU, along with the other defendants named therein, subject to an exception for certain securities law claims. In addition, as part of the settlement, BTU, or its successor, has agreed to be responsible for the payment of certain amounts in plaintiffs' attorneys' fees and expenses in connection with the settlement. The Company and BTU entered into the MOU solely to avoid the costs, risks and uncertainties inherent in litigation and without admitting any liability or wrongdoing. There can be no assurace that the parties will ultimately enter into a stipulation of settlement or that the court will approve such settlement. In such event, the proposed settlement as contemplated by the MOU may be terminated.

The following disclosures are intended to supplement the sections of the Proxy Statement referenced therein and should be read in conjunction with the Proxy Statement. These additional disclosures will not affect the timing of the special meeting of stockholders of the Company to vote upon the proposal to adopt the Merger Agreement and to approve the Merger. Page references in the following disclosures are to the Proxy Statement, and defined terms used, but not otherwise defined, in the following disclosures shall have the meanings set forth in the Proxy Statement.

SUPPLEMENT TO PROXY STATEMENT

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the fourth paragraph on page 100 in its entirety:

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. The discussions did not include consideration of specific members of BTU management or its board who might serve on the board of the potential combined company and report to Mr. Van der Wansem to discuss the possibility that BTU COO Peter Tallian would take on a management role in the potential combined company and report to Mr. Pentinga. No terms or conditions of any such management role were discussed at this time. In addition, Mr. Whang proposed the concept that the potential combined company's strategic plans. Mr. Whang and Mr. van der Wansem also discussed the results of these discussions, as well as the potential benefits of a strategic business combination, with members of their respective senior management teams and boards of directors.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the third paragraph on page 101 in its entirety:

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. Specifically, on or about August 6, 2013, BTU management, with the knowledge of BTU's board members, engaged Shields & Company, Inc. ("Shields & Co.") to assist the company in the preliminary evaluation of any proposed combination. Under the terms of the engagement, BTU agreed to pay Shields & Co. \$30,000 in two installments (\$15,000 upon signing the engagement letter and \$15,000 upon completion of the engagement). Shields & Co.'s engagement concluded in December 2013 at which point BTU paid Shields & Co. the second installment due under the terms of the engagement at an off-site location, 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.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the fourth paragraph on page 101 in its entirety:

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 and pro forma models for a combination, which took into account potential synergies associated with the proposed combination. In early October 2013, Mr. Whang and Mr. van der Wansem continued discussions regarding possible leadership structures for a proposed combined company, including a proposal by Mr. Whang about the possibility of Mr. van der Wansem taking on a key leadership role such as chairman or CEO, which proposal Mr. van der Wansem was not in favor of. Again, no specific terms or conditions of any such leadership role were discussed at this time. 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.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the eighth paragraph on page 101 in its entirety:

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 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. While no specific positions or terms of compensation were addressed, these discussions also included the possibility of continuing executive roles in the combined companies for Mr. van der Wansem and Mr. Tallian, as well as a potential Amtech board seat for Mr. van der Wansem and BTU outside director Mr. Loy. The potential transaction terms discussed were consistent with the broad outlines previously discussed.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the first paragraph on page 102 in its entirety:

During January 2014, Mr. Pentinga and Mr. Anderson met with Mr. van der Wansem and Mr. Tallian in New York on January14, 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. At a meeting between Mr. Whang and Mr. van der Wansem on January 27, 2014, Mr. Whang indicated that based upon the due diligence to that point Amtech was thinking of putting forth a \$35 million valuation of BTU.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the fourth paragraph on page 102 in its entirety:

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 Messrs. Loy and Wrinn, outside directors of BTU, be established to support management by working closely with Messrs. Van der Wansem and Tallian 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.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the sixth paragraph on page 102 in its entirety:

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). Six of these non-disclosure agreements contained standstill provisions which could be interpreted so as to prevent the counterparties from privately requesting a waiver of the standstill obligations. Of these nine parties which executed non-disclosure agreements and received confidential information, 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 with a nominal stated value of \$35 million, assuming BTU's then-reported net cash position, which has since declined, the effect of which would be a lower valuation of Company B's non-binding proposal. Five parties (including Company A) declined to participate in further discussions.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by amending and restating the second paragraph on page 105 in its entirety:

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. In a meeting of executive management of both companies held September 14-16, the specifics of the post-merger roles and compensation of Mr. van der Wansem and Mr. Tallian were addressed in detail, and continued discussions on those subjects thereafter led to definitive agreements with Mr. van der Wansem and Mr. Tallian as described herein. 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.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Background of the Merger" by adding a new eighth paragraph on page 106 as follows:

On January 14, 2015, BTU provided written notice to each of the six counterparties to the above referenced non-disclosure agreements with BTU, including Company B, of BTU's understanding and intent to interpret the agreements with each such party as permitting the counterparties to privately request a waiver of the standstill obligations.

The following disclosure supplements the discussion in the section of the Proxy Statement captioned "The Merger—Opinion of Needham & Company" by adding the following to page 117 immediately after the subsection captioned "Discounted Cash Flow Analysis" in the Proxy Statement:

Financial Projections as of October 15, 2014 underlying the discounted cash flow analysis and selected comparable companies analysis by Needham & Company, LLC

Management Estimates for BTU as a Stand-Alone Company, without Restructuring

As of April 23, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Net Revenue	53.3	67.6	79.8	97.1	125.0
Gross Profit	18.4	26.4	32.3	40.5	53.0
Adjusted EBITDA ^{1, 2}	(1.5)	6.0	8.7	13.8	19.4
Net Income					

As of May 28, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Net Revenue	53.3	67.6	79.8	97.1	125.0
Gross Profit	21.6	26.4	32.3	40.5	53.0
Adjusted EBITDA ¹ , ²	0.8	6.0	8.7	13.8	19.4
Net Income	(2.7)	1.8	3.3	7.5	11.2

As of August 25, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Implied Unlevered Free Cash Flow		3.5	3.3	3.5	8.1

As of October 15, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Net Revenue	58.7				
Gross Profit	22.4				
Adjusted EBITDA ^{1, 2}	0.9				
Net Income	(2.6)				

Management Estimates for BTU as a Restructured Company, with Reflow-Only Operations

As of May 28, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Net Revenue	43.8	42.4	45.2	48.6	51.9
Gross Profit	16.7	17.7	18.8	20.6	22.1
Adjusted EBITDA ¹ , ² , ³	5.0	5.5	6.4	7.4	7.6
Net Income ³	4.0	4.1	4.3	4.7	4.8

As of August 25, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Implied Free Cash Flow		(0.0)	4.3	3.1	5.2

As of October 15, 2014:

(\$ in millions)	CY'14E	CY'15E	CY'16E	CY'17E	CY'18E
Net Revenue	43.8	42.4	45.2	48.6	51.9
Gross Profit	16.7	17.7	18.8	20.6	22.1
Adjusted EBITDA ¹ , 2, 3	5.0	5.5	6.4	7.4	7.6
Net Income ³	4.0	4.1	4.3	4.7	4.8

Management Estimates for BTU with Synergies Assuming Merger with Amtech

As of October 15, 2014:

(\$ in millions)	C'14E	CY'15E	CY'16E	CY'17E	CY'18E	CY'19E
Net Revenue	58.7	62.7	72.8	82.8	95.0	109.0
Gross Profit	22.4	24.4	29.6	34.8	40.6	46.6
Adjusted EBITDA ^{1, 4}	0.9	6.5	11.2	17.7	20.0	22.5
Net Income	(2.6)	(0.2)	6.0	11.6	13.2	15.6

Notes:

1 - Adjusted EBITDA figures are not burdened by the impact of stock compensation expense.

2 - Adjusted EBITDA as presented is burdened by public company expenses.

3 - Figures shown exclude the impact of one-time restructuring expenses.

4 - Adjusted EBITDA as presented reflects achievement of the BTU and Amtech management cost savings estimates for BTU.

The projections set forth above were prepared for internal use and not prepared with a view to public disclosure and are being included in this supplemental disclosure only because the projections were provided to Needham & Company and were relied upon by Needham & Company in performing its financial analysis for BTU's board. The projections were not prepared with a view to compliance with the published guidelines of the SEC or the guidelines established by the American Institute of Certified Public Accountants for preparation and presentation of prospective financial information. The projections do not purport to present operations in accordance with U.S. generally accepted accounting principles,

and BTU's registered public accounting firm has not examined, compiled or otherwise applied procedures to the projections and accordingly assumes no responsibility for them. The projections have been prepared by, and are solely the responsibility of, BTU's management. The inclusion of the projections in this supplemental disclosure should not be regarded as an indication that these projections will be predictive of actual future results, and the forecasts should not be relied upon as such. Neither BTU nor any other person makes any representation to any of its security holders regarding its ultimate performance compared to the information contained in the projections set forth above. Although presented with numerical specificity, the projections are not fact and reflect numerous assumptions and estimates as to future events made by BTU's management that BTU's management believed were reasonable at the time the projections were prepared and other factors such as industry performance and general business, economic, regulatory, market and financial conditions, as well as factors specific to BTU's business, all of which are difficult to predict and many of which are beyond the control of BTU's management. Among those assumptions, management has assumed-only for purposes of the above estimates for BTU as a stand-alone company without any restructuring-that BTU would be able to fully participate in the next cyclical upturn in capital expenditures by the manufacturers of solar cells. While most of the equipment BTU offers the solar market is for in-line processing, which has been adopted by a relatively small portion of the c-silicon manufacturers of solar cells, these projections are based on the assumption that in-line processing will make significant gains in share during the next market upturn. BTU has also assumed that the bankruptcy of one of BTU's largest solar customers will have little effect on BTU's future equipment sales into the solar market. Other persons attempting to project the future results of BTU will make their own assumptions that could result in projections materially different than those above. In addition, the projections do not take into account any circumstances or events occurring after the date that they were prepared and, accordingly, do not give effect to the merger or any changes to BTU's operations or strategy that may be implemented after the consummation of the merger. Further, the projections do not take into account the effect of any failure to occur of the merger and should not be viewed as accurate or continuing in that context. Accordingly, there can be no assurance that the projections will be realized, and actual results may be materially greater or less than those reflected in the projections. BTU does not intend to update or otherwise revise the projections to reflect circumstances existing after the date when made or to reflect the occurrence of future events even in the event that any or all of the assumptions underlying the projections are shown to be in error. The projections are forward-looking statements. These statements involve certain risks and uncertainties that could cause actual results to differ materially from those in the forward-looking statements.

Important Information For Investors and Shareholders

This document may be deemed to be solicitation material in respect of the proposed acquisition of BTU by the Company. This communication does not constitute an offer to sell or the solicitation of an offer to buy any securities or a solicitation of any vote or approval. In connection with the proposed Merger, the Company and BTU filed the Proxy Statement with the SEC on December 23, 2014, and commenced mailing the Proxy Statement to the Company's and BTU's stockholders of record. THE COMPANY AND BTU URGE INVESTORS AND SHAREHOLDERS TO READ THE PROXY STATEMENT (INCLUDING ANY AMENDMENTS, SUPPLEMENTS OR UPDATES THERETO) AND ANY OTHER RELEVANT DOCUMENTS FILED BY THE COMPANY OR BTU WITH THE SEC BECAUSE THEY WILL CONTAIN IMPORTANT INFORMATION ABOUT THE COMPANY, BTU, AND THE PROPOSED MERGER.

Investors and stockholders of the Company and BTU are able to obtain the Proxy Statement and other documents filed with the SEC free of charge at the website maintained by the SEC at www.sec.gov. In addition, documents filed with the SEC by BTU will be available free of charge on the investor relations portion of BTU's website at www.btu.com. Documents filed with the SEC by the

Company will be available free of charge on the investor relations portion of the Company's website at www.amtechsystems.com.

Participants in the Solicitation

This communication is not a solicitation of a proxy from any security holder of the Company. BTU and its directors and executive officers, and the Company and its directors and executive officers may be deemed to be participants in the solicitation of proxies from the holders of BTU and the Company common stock in respect of the proposed Merger and the transactions contemplated thereby. Information about the directors and executive officers of BTU is set forth in the proxy statement for BTU's 2014 annual meeting of stockholders, which was filed with the SEC on April 14, 2014. Information about the directors and executive officers of Amtech is set forth in Amendment No. 1 to the Annual Report on Form 10-K for the Fiscal Year Ended September 30, 2014, which was filed with the SEC on December 9, 2014. Investors and shareholders can obtain more detailed information regarding the direct and indirect interests of BTU's and Amtech's directors and executive officers in the proposed Merger by reading the Proxy Statement and any other relevant documents filed with the SEC.

Cautionary Statement Regarding Forward Looking Statements

Some of the statements contained herein or incorporated by reference in the Proxy Statement are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 giving the Company'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," "continue," "positions," "prospects" or "potential," by future conditional verbs such as "will," "would," "should," "could" or "may," or by variations of such words or by similar expressions. Such forward-looking statements include, but are not limited to, statements about the benefits of the proposed Merger, 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 the Company'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 proposed Merger, including the requisite approvals by the stockholders of the Company and BTU; delay in closing the Merger; difficulties and delays in integrating the businesses of the Company and BTU or fully realizing cost savings and other benefits; business institutives; 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 the Company's stock price before closing the proposed Merger, including as a result of the financial performance of BTU prior to closing; the reaction to the proposed Merger by the customers, employees and cou

For any forward-looking statements made herein, in the Proxy Statement or in any documents incorporated by reference into the Proxy Statement, the Company 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 such statements, which speak only as of the date such statement was made or the date of the applicable document incorporated by reference in the Proxy Statement. The Company and BTU do not undertake to update forward-looking statements to reflect facts, circumstances, assumptions or events that occur after the date such forward-looking statements are made. All subsequent written and oral forward-looking statements concerning the Merger or other matters addressed in the Proxy Statement and attributable to the Company, BTU or any person acting on their behalf are expressly qualified in their entirety by the cautionary statements contained or referred to herein and in the Proxy Statement.