

Thermon Group Holdings, Inc.
Form 424B5
September 18, 2012

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[TABLE OF CONTENTS](#)

[Table of Contents](#)

Filed Pursuant to Rule 424(b)(5)
Registration No. 333-181821

The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement is not an offer to sell these securities, and neither we nor the selling stockholders are soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to Completion, dated September 18, 2012

Prospectus Supplement
(To Prospectus dated June 21, 2012)

8,000,000 Shares

Thermon Group Holdings, Inc.

Common Stock

The selling stockholders named in this prospectus supplement are offering 8,000,000 shares of our common stock. We will not receive any proceeds from the sale of our common stock by the selling stockholders.

Our common stock is traded on the New York Stock Exchange under the symbol "THR." On September 17, 2012, the last reported sale price of our common stock on the New York Stock Exchange was \$25.83 per share.

Investing in our common stock involves risks. See "Risk Factors" beginning on page S-14 of this prospectus supplement and page 4 of the accompanying prospectus. You should also consider the risk factors described in the documents we incorporate by reference into this prospectus supplement and the accompanying prospectus.

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| | Per Share | Total |
|--|------------------|--------------|
| Price to the public | \$ | \$ |
| Underwriting discounts and commissions | \$ | \$ |
| Proceeds to the selling stockholders (before expenses) | \$ | \$ |

The underwriters have an option to purchase up to an additional 1,200,000 shares from the selling stockholders, at the public offering price, less the underwriting discounts and commissions, within 30 days from the date of this prospectus supplement, to cover over-allotments, if any.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares on or about September , 2012.

Joint Book-Running Managers

Barclays

Jefferies

Co-Managers

William Blair

BMO Capital Markets

KeyBanc Capital Markets

Prospectus Supplement dated September , 2012

Table of Contents

TABLE OF CONTENTS

Prospectus Supplement

| | Page |
|--|-------------|
| <u>About This Prospectus Supplement</u> | <u>ii</u> |
| <u>Market and Industry Data</u> | <u>ii</u> |
| <u>Cautionary Statement Regarding Forward-Looking Statements</u> | <u>iii</u> |
| <u>Prospectus Supplement Summary</u> | <u>S-1</u> |
| <u>Risk Factors</u> | <u>S-14</u> |
| <u>Use of Proceeds</u> | <u>S-28</u> |
| <u>Capitalization</u> | <u>S-28</u> |
| <u>Price Range of Our Common Stock and Dividend Policy</u> | <u>S-29</u> |
| <u>Selling Stockholders</u> | <u>S-30</u> |
| <u>Material U.S. Federal Income Tax Considerations for Non-U.S. Stockholders</u> | <u>S-32</u> |
| <u>Underwriting</u> | <u>S-35</u> |
| <u>Legal Matters</u> | <u>S-41</u> |
| <u>Experts</u> | <u>S-41</u> |
| <u>Incorporation of Certain Documents by Reference</u> | <u>S-41</u> |
| <u>Where You Can Find More Information</u> | <u>S-42</u> |

Prospectus

| | Page |
|---|-------------|
| <u>About this Prospectus</u> | <u>1</u> |
| <u>Market and Industry Data</u> | <u>2</u> |
| <u>Cautionary Statement Regarding Forward-Looking Statements</u> | <u>3</u> |
| <u>Our Company</u> | <u>4</u> |
| <u>Risk Factors</u> | <u>4</u> |
| <u>Use of Proceeds</u> | <u>4</u> |
| <u>Ratios of Earnings to Fixed Charges</u> | <u>5</u> |
| <u>Selling Stockholders</u> | <u>6</u> |
| <u>Description of Capital Stock</u> | <u>9</u> |
| <u>Description of Debt Securities</u> | <u>12</u> |
| <u>Description of Warrants</u> | <u>14</u> |
| <u>Description of Stock Purchase Contracts and Stock Purchase Units</u> | <u>15</u> |
| <u>Plan of Distribution</u> | <u>15</u> |
| <u>Legal Matters</u> | <u>17</u> |
| <u>Experts</u> | <u>17</u> |
| <u>Incorporation of Certain Documents by Reference</u> | <u>17</u> |
| <u>Where You Can Find More Information</u> | <u>18</u> |

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering of common stock. The second part, the accompanying prospectus and the documents incorporated by reference therein, gives more general information about our common stock and other securities that we or the selling stockholders may offer from time to time, some of which may not apply to this offering. This prospectus supplement adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference therein. Generally, when we refer to the "prospectus" in this prospectus supplement we are referring to both parts combined. This prospectus incorporates by reference important business and financial information about us that is not included in or delivered with this prospectus.

You should rely only on the information incorporated or deemed to be incorporated by reference or provided in this prospectus supplement, in the accompanying prospectus or in any free writing prospectus filed by us with the Securities and Exchange Commission, or the SEC. If information in this prospectus supplement is inconsistent with the information in the accompanying prospectus or any documents incorporated by reference therein that were filed before the date of this prospectus supplement, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference therein, and you should rely on this prospectus supplement. Neither we, the selling stockholders nor the underwriters have authorized any person to provide you with any information or to make any representation that is different from, or in addition to, the information and representations contained in or incorporated or deemed to be incorporated by reference into this prospectus supplement, the accompanying prospectus or any free writing prospectus filed by us with the SEC. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus and any free writing prospectus filed by us with the SEC is accurate as of the date of each such document only, unless the information specifically indicates that another date applies. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus supplement does not constitute an offer to sell or a solicitation of an offer to buy by anyone in any jurisdiction in which such offer or solicitation is not authorized, or in which the person is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation.

Unless otherwise specified or the context otherwise requires, references to "\$" or "dollars" in this prospectus supplement are to United States dollars, and the terms "Thermon," "we," "our," "us" and the "Company," as used in this prospectus supplement, refer to Thermon Group Holdings, Inc. and its directly and indirectly owned subsidiaries as a combined entity. Our fiscal year ends March 31, so references to a particular fiscal year are to the twelve months ended on March 31 of the given calendar year (*e.g.*, "fiscal 2012" and "fiscal 2011" mean our fiscal years ended March 31, 2012 and March 31, 2011, respectively).

MARKET AND INDUSTRY DATA

In this prospectus supplement, we rely on and refer to information regarding our industry from Alvarez & Marsal Private Equity Performance Improvement Group, LLC, or A&M; the U.S. Energy Information Administration, or the EIA; Wood Mackenzie Limited, or Wood Mackenzie, and the American Institute of Chemical Engineers. These organizations are not affiliated with us. We commissioned a report from A&M concerning the global heat tracing market, and the information attributed to A&M in this prospectus supplement appears in that report. A&M has consented to being named in this prospectus supplement and to all references to A&M and its report and the data contained therein appearing herein. The information attributed to EIA, Wood Mackenzie and the American Institute of Chemical Engineers cited in this prospectus supplement is publicly available; accordingly, we have not sought or received from such organizations consents to being named in this

Table of Contents

prospectus supplement. We believe this information is reliable, but we have not independently verified it. Unless otherwise indicated, all other information contained in this prospectus supplement concerning the industry in general, including information regarding our market position and market share within our industry and expectations regarding future growth of sales in our industry, is based on management's experience in the industry and our own evaluation of market conditions, as well as estimates using internal data and data from industry related publications and other externally obtained data. Market and industry data involve risks and uncertainties and are subject to change based on various factors, including those discussed under the headings "Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements" in this prospectus supplement.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement includes forward-looking statements within the meaning of the U.S. federal securities laws in addition to historical information. These forward-looking statements are included throughout this prospectus supplement and the accompanying prospectus, including in the sections of this prospectus supplement entitled "Prospectus Supplement Summary" and "Risk Factors," and in the sections of the accompanying prospectus entitled "Market and Industry Data" and "Risk Factors," and include, without limitation, statements regarding our industry, business strategy, plans, goals and expectations concerning our market position, future operations, margins, profitability, capital expenditures, liquidity and capital resources and other financial and operating information. When used in this discussion, the words "anticipate," "assume," "believe," "budget," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "will," "future" and similar terms and phrases are intended to identify forward-looking statements in this prospectus supplement.

Forward-looking statements reflect our current expectations regarding future events, results or outcomes. These expectations may or may not be realized. Some of these expectations may be based upon assumptions, data or judgments that prove to be incorrect. In addition, our business and operations involve numerous risks and uncertainties, many of which are beyond our control, which could result in our expectations not being realized or otherwise materially affect our financial condition, results of operations and cash flows. These forward-looking statements include but are not limited to statements regarding: (i) our plans to strategically pursue emerging growth opportunities in diverse regions and across industry sectors; (ii) our plans to secure more new facility, or Greenfield, project bids; (iii) our ability to generate more facility maintenance, repair and operations or upgrades or expansions, or MRO/UE, revenue from our existing and future installed base; (iv) our ability to timely deliver backlog; (v) our ability to respond to new market developments and technological advances; (vi) our expectations regarding energy consumption and demand in the future and its impact on our future results of operations; (vii) our plans to develop strategic alliances with major customers and suppliers; (viii) our expectations that our revenues will continue to increase; (ix) our belief in the sufficiency of our cash flows to meet our needs for the next year; and (x) our anticipated benefits from the recently completed expansion of our principal manufacturing facility in San Marcos, Texas.

Actual events, results and outcomes may differ materially from our expectations due to a variety of factors. Although it is not possible to identify all of these factors, they include, among others, (i) general economic conditions and cyclicity in the markets we serve; (ii) future growth of energy and chemical processing capital investments; (iii) changes in relevant currency exchange rates; (iv) our ability to comply with the complex and dynamic system of laws and regulations applicable to international operations; (v) a material disruption at any of our manufacturing facilities; (vi) our dependence on subcontractors and suppliers; (vii) our ability to obtain standby letters of credit, bank guarantees or performance bonds required to bid on or secure certain customer contracts; (viii) competition from various other sources providing similar heat tracing products and services, or other alternative technologies, to customers; (ix) our ability to attract and retain qualified management

Table of Contents

and employees, particularly in our overseas markets; (x) our ability to continue to generate sufficient cash flow to satisfy our liquidity needs; and (xi) the extent to which federal, state, local and foreign governmental regulation of energy, chemical processing and power generation products and services limits or prohibits the operation of our business. Any one of these factors or a combination of these factors could materially affect our future results of operations and could influence whether any forward-looking statements contained in this prospectus supplement ultimately prove to be accurate. See also "Risk Factors" included elsewhere in this prospectus supplement for information regarding the additional factors that have impacted or may impact our business and operations.

Our forward-looking statements are not guarantees of future performance, and actual results and future performance may differ materially from those suggested in any forward-looking statements. We do not intend to update these statements unless we are required to do so under applicable securities laws.

Table of Contents

PROSPECTUS SUPPLEMENT SUMMARY

The following summary highlights selected information from this prospectus supplement, the accompanying prospectus or the documents incorporated by reference herein or therein and may not contain all the information that may be important to you. This prospectus supplement and the accompanying prospectus include or incorporate by reference information about this offering, our business and our financial and operating data. You should read this entire prospectus supplement and the accompanying prospectus, including the sections entitled "Risk Factors," beginning on page S-14 of this prospectus supplement and page 4 of the accompanying prospectus, as well as the information incorporated by reference therein, including our financial statements and the related notes, before making an investment decision.

Our Business

We are one of the largest providers of highly engineered thermal solutions for process industries. For almost 60 years, we have served a diverse base of thousands of customers around the world in attractive and growing markets, including energy, chemical processing and power generation. We are a global leader and one of the few thermal solutions providers with a global footprint and a full suite of products (heating cables, tubing bundles and control systems) and services (design optimization, engineering, installation and maintenance services) required to deliver comprehensive solutions to complex projects. We serve our customers locally through a global network of sales and service professionals and distributors in more than 30 countries and through our four manufacturing facilities on three continents. These capabilities and longstanding relationships with some of the largest multinational energy, chemical processing, power and engineering, procurement and construction, or EPC, companies in the world have enabled us to diversify our revenue streams and opportunistically access high growth markets worldwide. For fiscal 2012, approximately 66% of our revenues were generated outside of the United States.

Our thermal solutions, also referred to as heat tracing, provide an external heat source to pipes, vessels and instruments for the purposes of freeze protection, temperature and flow maintenance, environmental monitoring, and surface snow and ice melting. Customers typically purchase our products when constructing a new facility, which we refer to as Greenfield projects, or when performing maintenance, repair and operations on a facility's existing heat-traced pipes or upgrading or expanding a current facility, which we refer to collectively as MRO/UE. A large processing facility may require our thermal solutions for a majority of its pipes, with the largest facilities containing hundreds of thousands of feet of heat-tracing cable and thousands of control points. Our products are low in cost relative to the total cost of a typical processing facility, but critical to the safe and profitable operation of the facility. These facilities are often complex, with numerous classified areas that are inherently hazardous and where product safety concerns are paramount. We believe that our strong brand and established reputation for safety, reliability and customer service are critical contributors to our customers' purchasing decisions.

Our customers' need for MRO/UE solutions provides us with an attractive recurring revenue stream. Customers typically use the incumbent heat tracing provider for MRO/UE projects to avoid complications and compatibility problems associated with switching providers. We typically begin to realize meaningful MRO/UE revenue from new Greenfield installations one to three years after completion of the project as customers begin to remove and replace our products during routine and preventative maintenance on in-line mechanical equipment, such as pipes and valves. As a result, our growth has been driven by new facility construction, as well as by servicing our continually growing base of solutions installed around the world, which we refer to as our installed base. Approximately 61% of our revenues for fiscal 2012 were derived from MRO/UE activities.

Table of Contents

Our revenues have grown in 18 of the past 22 fiscal years, and our gross margins have averaged 44% over that period. In addition, we have generated significant growth in both revenue and profitability in recent years. Our revenue grew by 46% to \$270.5 million for fiscal 2012 from \$185.8 million for fiscal 2008, and gross profit grew by 74.5% to \$132.1 million from \$75.7 million over the same period. For fiscal 2012, we achieved net income of \$12.0 million and Adjusted EBITDA of \$71.4 million. See note 8 to the " Summary Historical Consolidated Financial and Operating Data" table. Our backlog grew by 51% to \$117.3 million at June 30, 2012 from \$77.5 million at March 31, 2008.

The following chart summarizes our sales, gross margins and median gross margins and provides the compound annual growth rate, or CAGR, for our revenues during the period from fiscal 1990 to fiscal 2012.

Note:

Results for fiscal years ended March 31. Gross margin results for fiscal 2008 and fiscal 2011 exclude non-cash purchase accounting adjustments of \$7.1 million and \$7.6 million related to the Audax and CHS Transactions, respectively.

Our Industry

A&M estimates that the market for industrial electric heat tracing is approximately \$1.2 billion in annual revenues and estimates that it is growing its share of the overall heat tracing market as end users appear to continue to favor electric heat tracing solutions over steam heat tracing solutions for new installations. When revenues for steam heat tracing parts are included, A&M estimates the overall addressable market for heat tracing to be approximately \$2.6 billion in annual revenues. The industrial electric heat tracing industry is fragmented and consists of approximately 40 companies that typically only serve discrete local markets with manufactured products and provide a limited service offering. Heat tracing providers differentiate themselves through the quality and reputation of their products, the length and quality of their customer relationships and their ability to provide comprehensive solutions. Large multinational companies drive the majority of spending for the types of major industrial facilities that require heat tracing, and we believe that they prefer providers who have a global footprint and a comprehensive suite of products and services. We believe we are one of only a few companies that meet these criteria.

Table of Contents

The major end markets that drive demand for heat tracing include energy, petrochemical and power generation. We believe that there are attractive near- to medium-term trends in each of these end markets.

Energy. Heat tracing is used to facilitate the processing, transportation and freeze protection of energy products in both upstream and downstream oil and gas applications. In order to meet growing demand and offset natural declines in existing oil and gas production, a significant increase in capital expenditures in upstream infrastructure will be required, with a particular focus on reservoirs that are in harsher climates, are deeper or have other complex characteristics that magnify the need for heat tracing. A&M estimates that the oil and gas end market accounted for approximately 61% of the total market for electric heat tracing in 2011. Wood Mackenzie, a leading independent energy research and consulting firm, as of September 2011, expected global upstream development expenditures to increase 15.5% to approximately \$477 billion in 2013 from approximately \$413 billion in 2010. An increase in upstream production coupled with increased demand for refined products will require a corresponding increase in downstream refining capacity.

Chemical Processing. Heat tracing is required for temperature maintenance and freeze protection in a variety of chemical processing applications. Factors that may impact heat tracing demand in chemicals end markets include the rapid industrialization of the developing world, a shift in base chemical processing operations to low-cost feedstock regions, a transition of Western chemical processing activities from commodity products to specialty products and environmental compliance. A&M estimates that the chemicals end market accounted for approximately 10% of the total market for electric heat tracing in 2011. According to the American Institute of Chemical Engineers, global capital spending by the chemicals industry is expected to increase to \$803.2 billion in 2016, representing a compound annual growth rate of 9.6% from 2010 to 2016.

Power Generation. Heat tracing is required in high-temperature processes, freeze protection and environmental regulation compliance in coal and gas facilities and for safety injection systems in nuclear facilities. An important driver of demand for heat tracing solutions for power generation is increasing demand for electricity worldwide. A&M estimates that the power generation end market accounted for approximately 23% of the total market for electric heat tracing in 2011. The U.S. Energy Information Administration, or EIA, projects that global net electricity generation will increase 87% between 2007 and 2035. We believe capital spending on new and existing power generation infrastructure will be required to meet this demand.

Continuing selection of electric-based heat tracing solutions over steam-based solutions. Beginning in the 1960s, electric heat tracing products entered the market as an alternative to steam heat tracing products. While steam-based products are still used today for heavy oil, chemical and processing applications, electric-based products generally offer greater cost savings and operating efficiencies. As a consequence, Greenfield projects commissioned in recent years are increasingly designed to incorporate electric heat tracing.

Our Competitive Strengths

We believe that the following strengths differentiate us from our competitors.

We have access to attractive high growth sectors of our global addressable market. We have a network of sales and service professionals and distributors in more than 30 countries and a manufacturing footprint that includes four facilities on three continents. This footprint allows us to diversify our revenue streams and opportunistically access the most attractive regions and sub-sectors of our markets. For example, growing demand for energy is pushing the search for resources to increasingly harsh cold weather countries, including Canada and Russia, where demand for our products is magnified, and strong petrochemical demand in China and India has led to a shift in

Table of Contents

chemical production to the Asia-Pacific region. We have a strong, established local presence in each of these markets.

We are a global market leader. We believe that we are the second largest industrial electric heat tracing company in the world, significantly larger than our next largest competitor and one of only a few solutions providers with a comprehensive suite of products and services, global capabilities and local on-site presence. Over our 57-year history, we have developed an installed base operated by thousands of customers and long-standing relationships with some of the largest companies in the world that drive the spending decisions for the major facilities that require our products. We believe these multinational companies prefer providers with our scale, global presence and comprehensive product and service offering.

Our highly engineered solutions are mission critical to our customers. Reliable thermal solutions are critical to the safe and profitable operation of our customers' facilities. These facilities are often complex, with numerous classified areas that are inherently hazardous and where product safety concerns are paramount. Therefore, we believe that our customers consider safety, reliability and customer service to be the most important purchase criteria for our products. We are a leader in the national and international standards setting process for the heat tracing industry and hold leadership positions on numerous industry standards development organizations.

Our favorable business model positions us to achieve attractive financial results. The following features of our business model contribute to our attractive financial results:

Existing installed base generates significant recurring revenue. On average, annual MRO/UE expenditures generated from an installed heat tracing system are approximately 5% to 10% of the initial cost of the system and expansions may require approximately 10% to 20% of the initial cost of the system. We estimate that MRO/UE sales generated approximately 61% of our revenues in fiscal 2012. We believe that we have the second largest installed base in the industrial electric heat tracing industry and, as we continue to complete new Greenfield installations, we believe that, subject to customers' continuing capital and maintenance expenditures, our growing global installed base of heat tracing solutions will drive increased MRO/UE business.

Diversified, global customer base and end markets. Over the past five decades, we have sold our solutions to thousands of customers in more than 90 countries, serving a broad range of end market applications. The diversity of our customer base and end markets limits our exposure to any individual industry sector or geographic region and provides us with an opportunity to access the most attractive high growth sectors of our end markets.

Strong revenue visibility. We believe that we have strong visibility into our future revenue as a result of recurring demand that we expect will be generated from our global installed base, a growing backlog of signed purchase orders and a robust pipeline of planned projects. Our visibility into the timing of our recognition of revenue out of backlog is not always certain, particularly with larger projects; however, our solutions are ordered and installed toward the end of Greenfield project construction, and therefore, historically, purchase orders have rarely been cancelled.

Consistent gross margins and cash flow generation. We have a long history of stable gross margins and positive operating cash flow through a variety of economic cycles. We have consistently had positive income from operations, and gross margins have averaged 44% over the past 22 fiscal years, which we believe reflect our customers' recognition of the value and reliability of our heat tracing solutions, our highly variable cost structure and the limited capital expenditures required to maintain our business.

Table of Contents

Our management team has a proven track record. Our senior management team averages approximately 23 years of experience with us and is responsible for growing Thermon through a variety of business cycles, building our global platform and developing our reputation for quality and reliability in the heat tracing industry. Our senior management and key employees will continue to have a significant equity stake in Thermon following this offering.

Our Growth Strategy

Our business strategy is designed to capitalize on our competitive strengths and includes the following key elements.

Capitalize on our leading market position to continue pursuing organic growth opportunities. Our primary growth engine has traditionally been organic expansion. We will continue to focus on strategically building the necessary global sales infrastructure to expand our footprint in high growth markets. We believe that this footprint and our local presence are attractive to our customers and differentiate us from other industry participants. We expect to continue to pursue growth opportunities in emerging markets and across industry sectors in the future.

Leverage our installed base to expand our recurring revenue stream. Once the MRO/UE cycle begins, we typically realize MRO/UE revenues, which are typically higher margin than Greenfield revenues, over the life of each installation. As we continue to grow our large, global installed base with new Greenfield projects, we expect to generate incremental MRO/UE revenues related to these new projects. Since the beginning of fiscal 2008 through June 30, 2012, we estimate that we have realized approximately \$440 million in revenues from Greenfield projects, which represents a meaningful opportunity for us to create MRO/UE revenues in the future.

Drive growth through alliances with major customers and suppliers. We have developed strategic alliances with other industry participants in order to enhance our growth opportunities, and we are a "pre-qualified" heat tracing provider for several of our key customers. These relationships provide us with an advantage in identifying and bidding for new Greenfield and MRO/UE projects, and we intend to target additional opportunities with suppliers of complementary products that will allow us to take mutual advantage of our customer relationships and enhance our cross-selling opportunities.

Continue to offer solutions that support evolving environmental applications. A portion of our recent growth has been driven by the use of our products in alternative energy initiatives, including carbon capture, thermal solar and coal gasification facilities. In addition, our products help our customers monitor their facilities' environmental or other regulatory compliance. We intend to continue to focus on driving growth by providing solutions that address our customers' evolving environmental application needs.

Selectively pursue value-added acquisitions. Given the fragmented nature of the heat tracing and related industries, we believe that there will be opportunities to pursue value-added acquisitions at attractive valuations in the future, including to augment our geographic footprint, broaden our product offerings, expand our technological capabilities and capitalize on potential operating synergies.

Table of Contents

Risk Factors

There are a number of risks related to our business, this offering and our common stock that you should consider before you decide to participate in this offering. You should carefully consider all the information presented in the sections entitled "Risk Factors" in this prospectus supplement and the accompanying prospectus. Some of the principal risks related to our business include the following:

The markets we serve are subject to general economic conditions and cyclical demand, which could harm our business and lead to significant shifts in our results of operations from quarter to quarter that make it difficult to project long-term performance.

A sustained downturn in the energy industry, due to oil and gas prices decreasing or otherwise, could decrease demand for some of our products and services, which could materially and adversely affect our business, financial condition and results of operations.

As a global business, we are exposed to economic, political and other risks in a number of countries, which could materially reduce our revenues, profitability or cash flows or materially increase our liabilities. If we are unable to continue operating successfully in one or more foreign countries, it may have a material adverse effect on our business and financial condition.

A failure to deliver our backlog on time could affect our future sales and profitability and our relationships with our customers, and if we were to experience a material amount of modifications or cancellations of orders, our sales could be negatively impacted.

Our future revenue depends in part on our ability to bid and win new contracts. Our failure to effectively obtain future contracts could adversely affect our profitability.

We may be unable to compete successfully in the highly competitive markets in which we operate.

Volatility in currency exchange rates may adversely affect our financial condition, results of operations or cash flows.

Our business strategy includes acquiring smaller, value-added companies and making investments that complement our existing business. These acquisitions and investments could be unsuccessful or consume significant resources, which could adversely affect our operating results.

Our current or future indebtedness could impair our financial condition and reduce the funds available to us for other purposes. Our debt agreements impose certain operating and financial restrictions, with which failure to comply could result in an event of default that could adversely affect our results of operations.

These and other risks are more fully described in the sections entitled "Risk Factors" beginning on page S-14 of this prospectus supplement and beginning on page 4 of the accompanying prospectus. If any of these risks actually occur, they could materially harm our business, prospects, financial condition and results of operations. In this event, you could lose part or all of your investment in our common stock offered hereby.

Our Principal Stockholder

Our principal stockholder is CHS Capital LLC, or CHS. CHS is a Chicago-based private equity firm with 24 years of experience investing in the middle market. CHS partners with talented management teams to focus on accelerating growth and driving value creation through human capital enhancements, performance improvement actions and strategic growth initiatives. As of the date of this prospectus supplement, CHS has

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completed 76 platform investments and 307 add-on investments and has raised \$2.9 billion of capital.

S-6

Table of Contents

CHS acquired its interest in us in April 2010 in connection with the acquisition of a majority stake in us by an investor group led by entities affiliated with CHS and two other private equity firms, which we refer to collectively as our private equity sponsors. As of September 17, 2012, entities affiliated with CHS beneficially owned 30.7% of our outstanding shares of common stock and, after this offering, will beneficially own 14.9% of our outstanding shares of common stock (which would be decreased to 12.6% if the underwriters fully exercise their over-allotment option).

Our Corporate Information

We are incorporated in Delaware and our corporate offices are located at 100 Thermon Drive, San Marcos, TX 78666. Our telephone number is (512) 396-5801. Our website address is *www.thermon.com*. None of the information on our website or any other website identified herein is part of this prospectus supplement or the accompanying prospectus and should not be considered part of this prospectus supplement or the accompanying prospectus.

S-7

Table of Contents

The Offering

| | |
|---|---|
| Common stock offered by selling stockholders | 8,000,000 shares |
| Common stock to be outstanding after this offering | 30,866,765 shares(1) |
| Over-allotment option | The underwriters have an option to purchase up to an additional 1,200,000 shares from the selling stockholders, at the public offering price, less the underwriting discounts and commissions, within 30 days from the date of date of this prospectus supplement, to cover over-allotments, if any. |
| Use of proceeds | We will not receive any proceeds from the sale of the shares of common stock by the selling stockholders but we will be required to pay certain expenses related to this offering. See "Use of Proceeds." |
| Dividend Policy | We do not intend to pay dividends on our common stock in the foreseeable future. See "Price Range of Our Common Stock and Dividend Policy." |
| Risk factors | You should carefully review the information set forth in the sections entitled "Risk Factors" beginning on page S-14 of this prospectus supplement, beginning on page 4 of the accompanying prospectus and any documents incorporated by reference herein. See "Incorporation of Certain Documents by Reference." |
| New York Stock Exchange symbol | THR |

- (1) The number of shares of our common stock to be outstanding following this offering is based on 30,866,765 shares of our common stock outstanding as of September 17, 2012 and excludes (i) 1,582,273 shares of our common stock issuable upon exercise of outstanding options as of September 17, 2012, (ii) 71,923 shares of our common stock issuable upon the vesting of outstanding restricted stock units as of September 17, 2012, (iii) 2,618,604 shares of our common stock reserved for issuance under our long-term incentive plan and (iv) up to 88,982 shares of our common stock issuable upon vesting of outstanding performance units as of September 17, 2012 (assuming that the associated performance targets will be met at the maximum achievement level).

Table of Contents

Summary Historical Consolidated Financial and Operating Data

The following tables set forth certain summary historical consolidated financial and operating data for the fiscal years ended March 31, 2010, March 31, 2011 and March 31, 2012 and the three months ended June 30, 2011 and 2012, and as of June 30, 2012. The data set forth below should be read in conjunction with the sections entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our consolidated financial statements and the notes thereto contained in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012 and our Quarterly Report on Form 10-Q for the three months ended June 30, 2012, each of which is incorporated by reference into this prospectus supplement. See "Incorporation of Certain Documents by Reference."

In this prospectus supplement, we have included summary historical financial and operating data of Thermon Group Holdings, Inc. as of June 30, 2012 and for the fiscal year ended March 31, 2012 and the period from May 1, 2010 through March 31, 2011 ("successor") and summary historical financial and operating data of Thermon Holdings, LLC for the fiscal year ended March 31, 2010 and for the period from April 1, 2010 through April 30, 2010 ("predecessor"). Concurrent with the consummation of the CHS Transactions on April 30, 2010, Thermon Holdings, LLC no longer owned any interest in us, and from May 1, 2010 we report the consolidated financial statements of Thermon Group Holdings, Inc. We do not anticipate that there would have been any material difference in our consolidated financial statements and notes thereto for the fiscal year ended March 31, 2010 and for the period from April 1, 2010 through April 30, 2010 had such statements been prepared for Thermon Group Holdings, Inc., except as it relates to purchase accounting in connection with the CHS Transactions.

The presentation of fiscal 2011 includes the combined results of the predecessor and successor owners for fiscal 2011. We have presented the combination of these periods because it provides an easier-to-read discussion of the results of operations and provides the investor with information from which to analyze our financial results in a manner that is consistent with the way management reviews and analyzes our results of operations. In addition, the combined results provide investors with the most meaningful comparison between our results for prior and future periods. Please refer to note 2 to Item 6, "Selected Financial Data" and our historical consolidated financial statements and notes thereto for the year ended March 31, 2011 each contained in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012, which is incorporated by reference into this prospectus supplement, for a separate presentation of the consolidated statement of operations data for the predecessor and successor periods.

In June 2011, the Financial Accounting Standards Board, or FASB, updated FASB ASC 220, Comprehensive Income (FASB ASC 220) that gives an entity the option to present total comprehensive income, the components of net income and the components of other comprehensive income either in a single continuous statement of comprehensive income or in two separate but consecutive statements. In either case, an entity is required to present each component of net income along with total net income, each component of other comprehensive income along with a total for other comprehensive income, and a total amount for comprehensive income. We have adopted ASC 220 effective April 1, 2012 and, in connection with adopting ASC 220, we have chosen to present the components of comprehensive income within a single statement of comprehensive income or loss. ASC 220 affects presentation and disclosure only and, therefore, our adoption of ASC 220 did not affect our results of operations as reported in our consolidated financial statements. The following table displays the retrospective application of these standards to periods presented in the financial statements included in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012, which is incorporated by reference herein.

In this prospectus supplement, the CHS Transactions refer collectively to the April 2010 equity investment in us by CHS, our other private equity sponsors and certain members of our management

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Table of Contents

team, the entry into our revolving credit facility, the repayment of amounts owed under, and the termination of, certain then-existing revolving credit and term loan facilities, the issuance of our senior secured notes and the application of the gross proceeds from the offering of our senior secured notes and the equity investment to complete the CHS Transactions and to pay related fees and expenses of these transactions.

| | Predecessor/ Successor Combined (Non-GAAP)(1) | | | Successor | |
|--|--|--|------------|---|------------|
| | Predecessor 2010 | Fiscal Year Ended March 31, 2011 2012 | | Three Months Ended June 30, 2011 2012 (unaudited) (unaudited) | |
| (in thousands, except share and per share data) | | | | | |
| Consolidated Statement of Operations Data: | | | | | |
| Sales | \$ 192,713 | \$ 238,808 | \$ 270,515 | \$ 64,618 | \$ 67,213 |
| Cost of sales | 101,401 | 129,093 | 138,400 | 32,629 | 33,874 |
| Purchase accounting adjustments(2) | | 7,614 | | | |
| Gross profit | \$ 91,312 | \$ 102,101 | 132,115 | 31,989 | 33,339 |
| Operating expenses: | | | | | |
| Marketing, general and administrative and engineering expenses | 46,482 | 56,890 | 68,175 | 21,511 | 16,015 |
| Management fees | 862 | 2,003 | 8,105 | 8,105 | |
| Amortization of intangible assets | 2,426 | 18,245 | 11,379 | 2,885 | 2,794 |
| Income from operations | \$ 41,542 | \$ 24,963 | \$ 44,456 | \$ (512) | \$ 14,530 |
| Interest expense, net(3) | (7,351) | (29,581) | (23,287) | (7,329) | (4,340) |
| Miscellaneous income (expense)(4) | (1,285) | (21,863) | (1,671) | (14) | 44 |
| Income (loss) from continuing operations before taxes | \$ 32,906 | \$ (26,481) | \$ 19,498 | \$ (7,855) | \$ 10,234 |
| Income tax expense (benefit) | 13,966 | (11,274) | 7,468 | (2,889) | 3,634 |
| Net income (loss)(5) | \$ 18,940 | (15,207) | 12,030 | (4,966) | 6,600 |
| Comprehensive income (loss): | | | | | |
| Net income (loss) | \$ 18,940 | \$ (15,207) | \$ 12,030 | \$ (4,966) | \$ 6,600 |
| Foreign currency translation adjustment | 6,520 | 9,455 | (6,517) | 1,395 | (5,448) |
| Other | | | (152) | | |
| Comprehensive income (loss) | \$ 25,460 | \$ (5,752) | \$ 5,361 | \$ (3,571) | \$ 1,152 |
| Net income per common share | | | | | |
| Basic | n/m(5) | n/m(5) | \$ 0.41 | \$ (0.18) | \$ 0.22 |
| Diluted | n/m(5) | n/m(5) | \$ 0.40 | \$ (0.18)(6) | \$ 0.21 |
| Weighted average shares used in computing net income per common share: | | | | | |
| Basic | n/m(5) | n/m(5) | 29,083,478 | 27,738,534 | 30,341,021 |
| Diluted | n/m(5) | n/m(5) | 30,454,255 | 27,738,534(6) | 31,410,145 |
| Other Financial Data: | | | | | |
| Adjusted EPS(7) | | | \$ 0.85 | \$ 0.20 | \$ 0.23 |
| Adjusted EBITDA(8) | \$ 46,555 | \$ 57,666 | \$ 71,375 | \$ 17,866 | \$ 18,322 |
| Capital expenditures | 1,587 | 1,799 | 8,883 | 2,379 | 1,268 |
| Operating Data: | | | | | |
| Backlog at end of period(9) | \$ 82,459 | \$ 76,298 | \$ 117,748 | \$ 81,974 | \$ 117,311 |

Table of Contents

As of June 30 2012
(unaudited)
(dollars in thousands)

| Balance Sheet Data: | |
|---------------------------------------|-----------|
| Cash and cash equivalents | \$ 13,630 |
| Accounts receivable, net | 53,770 |
| Inventories, net | 36,300 |
| Total assets | 411,460 |
| Total debt, including current portion | 130,914 |
| Total shareholders' equity | 196,846 |

- (1) The closing of the CHS Transactions on April 30, 2010 established a new basis of accounting that primarily affected inventory, intangible assets, goodwill, taxes, debt and equity. This resulted in additional amortization expense, interest expense and tax expense for the period from May 1, 2010 through March 31, 2011 ("successor") as compared to the period from April 1, 2010 through April 30, 2010 ("predecessor"). Except for purchase accounting adjustments, the results for the two combined periods are comparable. Therefore, we believe that combining the two periods into a single period for comparative purposes gives the most clarity for the users of this financial information. Please refer to note 2 to Item 6, "Selected Financial Data" contained in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012, which is incorporated by reference into this prospectus supplement, for a separate presentation of the consolidated statement of operations data for the predecessor and successor periods in accordance with U.S. generally accepted account principles, or GAAP.
- (2) In fiscal 2011, there was a non-cash negative impact of \$7.6 million to cost of sales and, consequently, gross profit due to a purchase accounting adjustment related to the CHS Transactions.
- (3) Interest expense for fiscal 2011 of \$29.6 million reflected our increased borrowings of the senior secured notes from the CHS Transaction. In addition, we recorded \$4.9 million in acceleration of amortization of loan costs of the predecessor as well as \$0.6 million of losses related to redemptions on the senior secured notes. Interest expense for fiscal 2012 included \$3.1 million of accelerated amortization of loan costs and \$3.8 million of losses related to losses on redemptions of the senior secured notes.
- (4) Miscellaneous expense for fiscal 2011 of \$21.9 million included \$22.7 million of non-recurring expenses related to the CHS Transactions, and partially offset by \$0.6 million of income related to the reversal of our compliance reserve. Miscellaneous expense for fiscal 2012 of \$1.7 million consisted primarily of foreign currency transaction losses of \$1.6 million.
- (5) We have not presented GAAP net income (loss) per share amounts for fiscal 2010 and fiscal 2011, as the capital structures of the predecessor and successor are substantially different, and the net income (loss) per share amounts are therefore not comparable or meaningful.
- (6) Due to our net loss position for the three months ended June 30, 2011, outstanding common stock equivalents were excluded from the calculation of diluted loss per common share since they would have had a dilutive effect.
- (7) Adjusted fully-diluted earnings per common share, or Adjusted EPS, represents net income before certain transaction expenses and expenses related to debt redemptions, per fully-diluted common share. Disclosure in this prospectus supplement of Adjusted EPS, which is a "non-GAAP financial measure," as defined under the rules of the SEC, is intended as a supplemental measure of our performance that is not required by, or presented in accordance with, GAAP. Adjusted EPS should not be considered as an alternative to net income, income from continuing operations or any other performance measure derived in accordance with GAAP. Our presentation of Adjusted EPS should not be construed to imply that our future results will be unaffected by unusual or non-recurring items. We believe this measure is meaningful to our investors to enhance their understanding of our financial performance. Adjusted EPS should be considered in addition to, not as a substitute for, net income (loss) per share and other measures of financial performance reported in accordance with GAAP. Our calculation of Adjusted EPS may not be comparable to similarly titled measures

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Table of Contents

reported by other companies. The following table reconciles net income (loss) to Adjusted EPS for the periods presented in this table and elsewhere in this prospectus supplement.

| | Fiscal Year Ended March 31, 2012 | Three Months Ended June 30, | |
|---|-------------------------------------|--------------------------------|----------|
| | | 2011 | 2012 |
| (in thousands, except per share data) | | | |
| Net income (loss) | \$ 12,030 | \$ (4,966) | \$ 6,600 |
| Purchase accounting adjustment | | | |
| Acceleration of stock compensation in connection with IPO | 6,341 | 6,341 | |
| Management fees | 8,105 | 8,105 | |
| Premiums paid on partial redemptions of senior secured notes | 3,825 | 630 | |
| Expenses related to this prospectus | | | 273 |
| Acceleration of unamortized debt costs due to partial redemptions of senior secured notes | 3,096 | 1,871 | 871 |
| Tax effect of financial adjustments | (7,500) | (5,982) | (401) |
| Adjusted net income | \$ 25,897 | \$ 5,999 | \$ 7,343 |
| | | | |
| Weighted average fully-diluted common shares | 30,454 | 29,285(a) | 31,410 |
| | | | |
| Adjusted EPS | \$ 0.85 | \$ 0.20(a) | \$ 0.23 |

(a) In accordance with GAAP, due to our net loss position for the three months ended June 30, 2011, outstanding common stock equivalents were excluded from the calculation of GAAP diluted loss per common share since they would have had a dilutive effect. On a non-GAAP adjusted basis, our net loss was adjusted to net income for the three months ended June 30, 2011. Accordingly, we have used the weighted average fully-diluted common shares in calculating Adjusted EPS for this period.

(8) Adjusted EBITDA represents net income (loss) from continuing operations before interest expense, income tax expense, depreciation and amortization of intangibles, stock-based compensation expense and before transaction expenses, including those incurred in connection with the Acquisition, non-recurring employee bonuses, and management fees paid to the private equity sponsors. Disclosure in this prospectus supplement of Adjusted EBITDA, which is a "non-GAAP financial measure," as defined under the rules of the SEC, is intended as a supplemental measure of our performance that is not required by, or presented in accordance with, GAAP. Adjusted EBITDA should not be considered as an alternative to net income, income from continuing operations or any other performance measure derived in accordance with GAAP. Our presentation of Adjusted EBITDA should not be construed to imply that our future results will be unaffected by unusual or non-recurring items. We believe this measure is meaningful to our investors to enhance their understanding of our financial performance. Although Adjusted EBITDA is not necessarily a measure of our ability to fund our cash needs, we understand that it is frequently used by securities analysts, investors and other interested parties as a measure of financial performance and to compare our performance with the performance of other companies that report Adjusted EBITDA. Adjusted EBITDA should be considered in addition to, not as a substitute for, income from operations, net income (loss) and other measures of financial performance reported in accordance with GAAP. Our calculation of Adjusted EBITDA may not be comparable to similarly

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Table of Contents

titled measures reported by other companies. The following table reconciles net income (loss) to Adjusted EBITDA for the periods presented in this table and elsewhere in this prospectus supplement.

| | Predecessor/ Successor Combined (Non-GAAP) | | | Successor Three Months Ended June 30, | | |
|---------------------------------------|---|------------------|------------------|--|------------------|--|
| | Predecessor | | | | | |
| | Fiscal Year Ended March 31, | | | Ended June 30, | | |
| | 2010 | 2011 | 2012 | 2011 | 2012 | |
| | (dollars in thousands) | | | | | |
| Net income (loss) | \$ 18,940 | \$ (15,207) | \$ 12,030 | \$ (4,966) | \$ 6,600 | |
| Interest expense, net | 7,351 | 29,581 | 23,287 | 7,329 | 4,340 | |
| Income tax expense | 13,966 | (11,274) | 7,468 | (2,889) | 3,634 | |
| Depreciation and amortization expense | 4,424 | 27,930 | 13,971 | 3,946 | 3,417 | |
| Stock-based compensation expense | | 1,939 | 6,514 | 6,341 | 58 | |
| CHS Transactions expenses(a) | 309 | 22,694 | | | | |
| Other transaction expenses(b) | 703 | | | | 273 | |
| Management fees(c) | 862 | 2,003 | 8,105 | 8,105 | | |
| Adjusted EBITDA | \$ 46,555 | \$ 57,666 | \$ 71,375 | \$ 17,866 | \$ 18,322 | |

-
- (a) Represents expenses related to the sale process that culminated with the successful completion of the Acquisition, which were incurred during fiscal 2010 and fiscal 2011.
- (b) Represents legal, financial and other advisory and consulting fees and expenses incurred during fiscal 2010 when affiliates of the Audax Group, which we refer to as Audax, commenced an auction process to sell their majority interest in us. The auction process was abandoned by Audax in fiscal 2010. For the three months ended June 30, 2012, we incurred legal, financial and accounting fees and expenses in connection with our shelf registration statement.
- (c) Represents management fees that terminated in connection with our May 2011 initial public offering, or IPO. See Item 13, "Certain Relationships and Related Transactions, and Director Independence Related Party Transactions Transaction Fee and Management Fee" in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012, which is incorporated by reference herein, for more information about the management fees previously paid to our private equity sponsors.
- (9) Represents the future revenue attributable to signed, but unperformed, purchase orders that set forth specific revenue amounts at the end of the applicable period.

Table of Contents

RISK FACTORS

Investing in our common stock involves substantial risks. In addition to the other information in this prospectus supplement, you should consider carefully the following risk factors before investing in our common stock. Additional risks and uncertainties that are not yet identified, or that we think are immaterial, may also materially harm our business, financial condition, results of operation or prospects and could result in a complete loss of your investment. We cannot assure you that any of the events discussed in the risk factors below, or other risks, will not occur. If they do, our business, financial condition and results of operations could be materially adversely affected. In such case, the trading price of our common stock could decline, and you may lose all or part of your investment. Certain statements in "Risk Factors" are forward-looking statements. See "Cautionary Statement Regarding Forward-Looking Statements" elsewhere in this prospectus supplement.

Risks Related to Our Business and Industry

The markets we serve are subject to general economic conditions and cyclical demand, which could harm our business and lead to significant shifts in our results of operations from quarter to quarter that make it difficult to project long-term performance.

Our operating results have been and may in the future be adversely affected by general economic conditions and the cyclical pattern of certain industries in which our customers and end users operate. Demand for our products and services depends in large part upon the level of capital and maintenance expenditures by many of our customers and end users, in particular those in the energy, chemical processing and power generation industries, and firms that design and construct facilities for these industries. These customers' expenditures historically have been cyclical in nature and vulnerable to economic downturns. Prolonged periods of little or no economic growth could decrease demand for oil and gas which, in turn, could result in lower demand for our products and a negative impact on our results of operations and cash flows. In addition, this historically cyclical demand may lead to significant shifts in our results of operations from quarter to quarter, which limits our ability to make accurate long-term predictions about our future performance.

A sustained downturn in the energy industry, due to oil and gas prices decreasing or otherwise, could decrease demand for some of our products and services, which could materially and adversely affect our business, financial condition and results of operations.

A significant portion of our revenue historically has been generated by end-users in the upstream oil and gas markets. The businesses of most of our customers in the energy industry are, to varying degrees, cyclical and historically have experienced periodic downturns. Profitability in the energy industry is highly sensitive to supply and demand cycles and commodity prices, which historically have been volatile, and our customers in this industry historically have tended to delay large capital projects, including expensive maintenance and upgrades, during industry downturns. Customer project delays may limit our ability to realize value from our backlog as expected and cause fluctuations in the timing or the amount of revenue earned and the profitability of our business in a particular period. In addition, such delays may lead to significant fluctuations in results of operations from quarter to quarter, making it difficult to predict our financial performance on a quarterly basis.

Demand for a significant portion of our products and services depends upon the level of capital expenditure by companies in the energy industry, which depends, in part, on energy prices. Prices of oil and gas have been very volatile over the past four years, with significant increases until achieving historic highs in July 2008, followed immediately by a steep decline through 2009 and moderate increases from 2010 to early 2012. A sustained downturn in the capital expenditures of our customers, whether due to a decrease in the market price of oil and gas or otherwise, may delay projects, decrease demand for our products and services and cause downward pressure on the prices we charge, which, in

Table of Contents

turn, could have a material adverse effect on our business, financial condition and results of operations. Such downturns, including the perception that they might continue, could have a significant negative impact on the market price of our common stock.

As a global business, we are exposed to economic, political and other risks in a number of countries, which could materially reduce our revenues, profitability or cash flows or materially increase our liabilities. If we are unable to continue operating successfully in one or more foreign countries, it may have a material adverse effect on our business and financial condition.

For fiscal 2012, approximately 66% of our revenues were generated outside of the United States, and approximately 35% were generated outside North America. In addition, one of our key growth strategies is to continue to expand our global footprint in emerging and high growth markets around the world, although we may not be successful in expanding our international business.

Conducting business outside the United States is subject to additional risks, including the following:

changes in a specific country's or region's political, social or economic conditions, particularly in emerging markets;

trade relations between the United States and those foreign countries in which our customers and suppliers have operations, including protectionist measures such as tariffs and import or export licensing requirements;

restrictions on our ability to own or operate subsidiaries in, expand in and repatriate cash from, foreign jurisdictions;

exchange controls and currency restrictions;

the burden of complying with multiple and potentially conflicting laws;

potentially negative consequences from changes in U.S. and foreign tax laws;

difficulty in staffing and managing (including ensuring compliance with internal policies and controls) geographically widespread operations;

different regulatory regimes controlling the protection of our intellectual property;

difficulty in the enforcement of contractual obligations in non-U.S. jurisdictions and the collection of accounts receivable from foreign accounts; and

transportation delays or interruptions.

One or more of these factors could prevent us from successfully expanding our presence in international markets, could have a material adverse effect on our revenues, profitability or cash flows or cause an increase in our liabilities. We may not succeed in developing and implementing policies and strategies to counter the foregoing factors effectively in each location where we do business.

A failure to deliver our backlog on time could affect our future sales and profitability and our relationships with our customers, and if we were to experience a material amount of modifications or cancellations of orders, our sales could be negatively impacted.

Our backlog is comprised of the portion of firm signed purchase orders or other written contractual commitments received from customers that we have not recognized as revenue. The dollar amount of backlog as of June 30, 2012 was \$117.3 million. The timing of our recognition of revenue out of our backlog is subject to a variety of factors that may cause delays, many of which, including fluctuations in our customers'

delivery schedules, are beyond our control. Such delays may lead to significant fluctuations in results of operations from quarter to quarter, making it difficult to predict

S-15

Table of Contents

our financial performance on a quarterly basis. For example, a delay in the completion of a large Greenfield project resulted in approximately several million dollars in revenue attributable to such project being realized in the quarter ended September 30, 2010, which was one quarter later than expected. Further, while we have historically experienced few order cancellations and the amount of order cancellations has not been material compared to our total contract volume, if we were to experience a significant amount of cancellations of or reductions in purchase orders, it would reduce our backlog and, consequently, our future sales and results of operations.

Our ability to meet customer delivery schedules for our backlog is dependent on a number of factors including, but not limited to, access to raw materials, an adequate and capable workforce, engineering expertise for certain projects, sufficient manufacturing capacity and, in some cases, our reliance on subcontractors. The availability of these factors may in some cases be subject to conditions outside of our control. A failure to deliver in accordance with our performance obligations may result in financial penalties and damage to existing customer relationships, our reputation and a loss of future bidding opportunities, which could cause the loss of future business and could negatively impact our financial performance.

Our future revenue depends in part on our ability to bid and win new contracts. Our failure to effectively obtain future contracts could adversely affect our profitability.

Our future revenue and overall results of operations require us to successfully bid on new contracts and, in particular, contracts for large Greenfield projects, which are frequently subject to competitive bidding processes. Our revenue from major projects depends in part on the level of capital expenditures in our principal end markets, including the energy, chemical processing and power generation industries. The number of such projects we win in any year fluctuates, and is dependent upon the number of projects available and our ability to bid successfully for such projects. Contract proposals and negotiations are complex and frequently involve a lengthy bidding and selection process, which is affected by a number of factors, such as competitive position, market conditions, financing arrangements and required governmental approvals. For example, a client may require us to provide a bond or letter of credit to protect the client should we fail to perform under the terms of the contract. If negative market conditions arise, or if we fail to secure adequate financial arrangements or required governmental approvals, we may not be able to pursue particular projects, which could adversely affect our profitability.

We may be unable to compete successfully in the highly competitive markets in which we operate.

We operate in competitive domestic and international markets and compete with highly competitive domestic and international manufacturers and service providers. The fragmented nature of the industrial electric heat tracing industry, which consists of approximately 40 companies, makes the market for our products and services highly competitive. A number of our direct and indirect competitors are major multinational corporations, some of which have substantially greater technical, financial and marketing resources than us, and additional competitors may enter these markets. Our competitors may develop products that are superior to our products, develop methods of more efficiently and effectively providing products and services, or adapt more quickly than we do to new technologies or evolving customer requirements. Any increase in competition may cause us to lose market share or compel us to reduce prices to remain competitive, which could result in reduced sales and earnings.

Volatility in currency exchange rates may adversely affect our financial condition, results of operations or cash flows.

We may not be able to effectively manage our exchange rate and/or currency transaction risks. Volatility in currency exchange rates may decrease our revenues and profitability, adversely affect our

Table of Contents

liquidity and impair our financial condition. While we have entered into hedging instruments to manage our exchange rate risk as it relates to certain intercompany balances with certain of our foreign subsidiaries, these hedging activities do not eliminate this exchange rate risk, nor do they reduce risk associated with total foreign sales.

Our non-U.S. subsidiaries generally sell their products and services in the local currency, but obtain a significant amount of their products from our facilities located in another country, primarily the United States, Canada or Europe. In particular, significant fluctuations in the Canadian Dollar, the Russian Ruble, the Euro or the Pound Sterling against the U.S. Dollar could adversely affect our results of operations. We also bid for certain foreign projects in U.S. Dollars or Euros. If the U.S. Dollar or Euro strengthens relative to the value of the local currency, we may be less competitive in bidding for those projects. See Item 7A, "Quantitative and Qualitative Disclosures about Market Risk" in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012, which is incorporated by reference herein, for additional information regarding our foreign currency exposure relating to operations.

In order to meet our global cash management needs, we often transfer cash between the United States and foreign operations and sometimes between foreign entities. In addition, our debt service requirements are primarily in U.S. Dollars and a substantial portion of our cash flow is generated in foreign currencies, and we may need to repatriate cash to the United States in order to meet our U.S. debt service obligations, including on our senior secured notes. These transfers of cash expose us to currency exchange rate risks, and significant changes in the value of the foreign currencies relative to the U.S. Dollar could limit our ability to meet our debt obligations, including under our senior secured notes, and impair our financial condition.

Because our consolidated financial results are reported in U.S. Dollars, and we generate a substantial amount of our sales and earnings in other currencies, the translation of those results into U.S. Dollars can result in a significant decrease in the amount of those sales and earnings. In addition, fluctuations in currencies relative to the U.S. Dollar may make it more difficult to perform period-to-period comparisons of our reported results of operations.

Due to the nature of our business, we may be liable for damages based on product liability claims. We are also exposed to potential indemnity claims from customers for losses due to our work or if our employees are injured performing services.

We face a risk of exposure to claims in the event that the failure, use or misuse of our products results, or is alleged to result, in death, bodily injury, property damage or economic loss. Although we maintain quality controls and procedures, we cannot be sure that our products will be free from defects. If any of our products prove to be defective, we may be required to replace the product. In addition, we may be required to recall or redesign such products, which could result in significant unexpected costs. Some of our products contain components manufactured by third parties, which may also have defects. In addition, if we are installing our products, we may be subject to claims that our installation caused damage or loss. Our products are often installed in our customers' or end users' complex and capital intensive facilities in inherently hazardous or dangerous industries, including energy, chemical processing and power generation, where the potential liability from risk of loss could be substantial. Although we currently maintain product liability coverage, which we believe is adequate for the continued operation of our business, we cannot be certain that this insurance coverage will continue to be available to us at a reasonable cost or, if available, will be adequate to cover any potential liabilities. With respect to components manufactured by third-party suppliers, the contractual indemnification that we seek from our third-party suppliers may be insufficient to cover claims made against us. In the event that we do not have adequate insurance or contractual indemnification, product liabilities could have a material adverse effect on our business, financial condition or results of operations.

Table of Contents

Under our customer contracts, we often indemnify our customers from damages and losses they incur due to our work or services performed by us, as well as for losses our customers incur due to any injury or loss of life suffered by any of our employees or our subcontractor's personnel occurring on our customer's property. Many, but not all, of our customer contracts include provisions designed to limit our potential liability by excluding consequential damages and lost profits from our indemnity obligations. However, substantial indemnity claims may exceed the amount of insurance we maintain and could have a material adverse effect on our reputation, business, financial condition or results of operations.

A material disruption at any of our manufacturing facilities could adversely affect our results of operations.

If operations at any of our manufacturing facilities were to be disrupted as a result of significant equipment failures, natural disasters, power outages, fires, explosions, terrorism, adverse weather conditions, labor disputes or other reasons, we may be unable to fill customer orders and otherwise meet customer demand for our products, which could adversely affect our financial performance. For example, our marketing and research & development buildings, located on the same campus as our corporate headquarters and primary manufacturing facility in San Marcos, Texas, were destroyed by a tornado in January 2007.

Interruptions in production, in particular at our manufacturing facilities in San Marcos, Texas, or Calgary, Canada, at which we manufacture the majority of our products, could increase our costs and reduce our sales. Any interruption in production capability could require us to make substantial capital expenditures to fill customer orders, which could negatively affect our profitability and financial condition. We maintain property damage insurance that we believe to be adequate to provide for reconstruction of facilities and equipment, as well as business interruption insurance to mitigate losses resulting from any production interruption or shutdown caused by an insured loss. However, any recovery under our insurance policies may not offset the lost sales or increased costs that may be experienced during the disruption of operations, which could adversely affect our financial performance.

Our international operations and non-U.S. subsidiaries are subject to a variety of complex and continually changing laws and regulations and, in particular, export control regulations.

Due to the international scope of our operations, we are subject to a complex system of laws and regulations, including regulations issued by the U.S. Department of Justice, or the DOJ, the SEC, the Internal Revenue Service, or the IRS, Customs and Border Protection, the Bureau of Industry and Security, or BIS, the Office of Antiterrorism and Foreign Asset Control, or OFAC, and the Office of Foreign Assets Control, or OFAC, as well as the counterparts of these agencies in foreign countries. While we believe we are in material compliance with these regulations and maintain programs intended to achieve compliance, we may currently or may in the future be in violation of these regulations. In 2009, we entered into settlement agreements with BIS and OFAC, and in 2010, we entered into a settlement agreement with OFAC, in each case with respect to matters we voluntarily disclosed to such agencies.

Any alleged or actual violations may subject us to government scrutiny, investigation and civil and criminal penalties and may limit our ability to export our products or provide services outside the United States. Additionally, we cannot predict the nature, scope or effect of future regulatory requirements to which our international operations might be subject or the manner in which existing laws might be administered or interpreted.

In addition, our geographically widespread operations, coupled with our relatively smaller offices in many countries and our reliance on third party subcontractors, suppliers and manufacturers in the completion of our projects, make it more difficult to oversee and ensure that all our offices and

Table of Contents

employees comply with our internal policies and control procedures. We have in the past experienced employee theft, although the amounts involved have not been material, and we cannot assure you that we can ensure compliance with our internal control policies and procedures.

We operate in many different jurisdictions and we could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act and similar foreign anti-corruption laws.

The U.S. Foreign Corrupt Practices Act, which we refer to as the FCPA, and similar foreign anti-corruption laws generally prohibit companies and their intermediaries from making improper payments or providing anything of value to influence foreign government officials for the purpose of obtaining or retaining business or obtaining an unfair advantage. Recent years have seen a substantial increase in the global enforcement of anti-corruption laws, with more frequent voluntary self-disclosures by companies, aggressive investigations and enforcement proceedings by both the DOJ and the SEC resulting in record fines and penalties, increased enforcement activity by non-U.S. regulators, and increases in criminal and civil proceedings brought against companies and individuals. Because many of our customers and end users are involved in infrastructure construction and energy production, they are often subject to increased scrutiny by regulators. Our internal policies mandate compliance with these anti-corruption laws. We operate in many parts of the world that are recognized as having governmental corruption problems to some degree and where strict compliance with anti-corruption laws may conflict with local customs and practices. Our continued operation and expansion outside the United States, including in developing countries, could increase the risk of such violations in the future. Despite our training and compliance programs, we cannot assure you that our internal control policies and procedures always will protect us from unauthorized reckless or criminal acts committed by our employees or agents. In the event that we believe or have reason to believe that our employees or agents have or may have violated applicable anti-corruption laws, including the FCPA, we may be required to investigate or have outside counsel investigate the relevant facts and circumstances, which can be expensive and require significant time and attention from senior management. Violations of these laws may result in severe criminal or civil sanctions, which could disrupt our business and result in a material adverse effect on our reputation, business, results of operations or financial condition.

Our dependence on subcontractors could adversely affect our results of operations.

We often rely on third party subcontractors as well as third party suppliers and manufacturers to complete our projects. To the extent that we cannot engage subcontractors or acquire supplies or materials, our ability to complete a project in a timely fashion or at a profit may be impaired. If the amount we are required to pay for these goods and services exceeds the amount we have estimated in bidding for fixed-price contracts, we could experience losses on these contracts. In addition, if a subcontractor or supplier is unable to deliver its services or materials according to the negotiated contract terms for any reason, including the deterioration of its financial condition or over-commitment of its resources, we may be required to purchase the services or materials from another source at a higher price. This may reduce the profit to be realized or result in a loss on a project for which the services or materials were needed.

We may lose money on fixed-price contracts, and we are exposed to liquidated damages risks in many of our customer contracts.

We often agree to provide products and services under fixed-price contracts, including our turnkey solutions. Under these contracts, we are typically responsible for all cost overruns, other than the amount of any cost overruns resulting from requested changes in order specifications. Our actual costs and any gross profit realized on these fixed-price contracts could vary from the estimated costs on which these contracts were originally based. This may occur for various reasons, including errors in estimates or bidding, changes in availability and cost of labor and raw materials and unforeseen

Table of Contents

technical and logistical challenges, including with managing our geographically widespread operations and use of third party subcontractors, suppliers and manufacturers in many countries. These variations and the risks inherent in our projects may result in reduced profitability or losses on projects. Depending on the size of a project, variations from estimated contract performance could have a material adverse impact on our operating results. In addition, many of our customer contracts, including fixed-price contracts, contain liquidated damages provisions in the event that we fail to perform our obligations thereunder in a timely manner or in accordance with the agreed terms, conditions and standards.

If we lose our senior management or other key employees, our business may be adversely affected.

Our ability to successfully operate and grow our global business and implement our strategies is largely dependent on the efforts, abilities and services of our senior management and other key employees. If we lose the services of our senior management or other key employees and are unable to find qualified replacements with comparable experience in the industry, our business could be negatively affected. Our future success will also depend on, among other factors, our ability to attract and retain qualified personnel, such as engineers and other skilled labor, and in particular management and skilled employees for our foreign operations.

Our business strategy includes acquiring smaller, value-added companies and making investments that complement our existing business. These acquisitions and investments could be unsuccessful or consume significant resources, which could adversely affect our operating results.

Acquisitions and investments may involve cash expenditures, debt incurrence, operating losses and expenses that could have a material adverse effect on our financial condition and operating results. Acquisitions involve numerous other risks, including:

diversion of management time and attention from daily operations;

difficulties integrating acquired businesses, technologies and personnel into our business;

potential loss of key employees, key contractual relationships or key customers of acquired companies or of us; and

assumption of the liabilities and exposure to unforeseen liabilities of acquired companies.

We have limited experience in acquiring or integrating other businesses or making investments or undertaking joint ventures with others. It may be difficult for us to complete transactions quickly and to integrate acquired operations efficiently into our current business operations. Any acquisitions or investments may ultimately harm our business or financial condition, as such acquisitions may not be successful and may ultimately result in impairment charges.

We are subject to numerous environmental and health and safety laws and regulations, as well as potential environmental liabilities, which may require us to make substantial expenditures.

Our operations and properties are subject to a variety of federal, state, local and foreign environmental laws and regulations, including those governing the discharge of pollutants into the air or water, the management and disposal of hazardous substances or wastes, the cleanup of contaminated sites and workplace health and safety. As an owner or operator of real property, or generator of waste, we could become subject to liability for environmental contamination, regardless of whether we caused such contamination. Certain environmental laws, including the Comprehensive Environmental Response, Compensation, and Liability Act, impose joint and several liability for cleanup costs, without regard to fault, on persons who have disposed of or released hazardous substances into the environment. In addition, we could become liable to third parties for damages resulting from the disposal or release of hazardous substances into the environment. Some of our operations require

Table of Contents

environmental permits and controls to prevent and reduce air and water pollution, and these permits are subject to modification, renewal and revocation by issuing authorities. From time to time, we could be subject to requests for information, notices of violation, and/or investigations initiated by environmental regulatory agencies relating to our operations and properties. Violations of environmental and health and safety laws can result in substantial penalties, civil and criminal sanctions, permit revocations, and facility shutdowns. Environmental and health and safety laws may change rapidly and have tended to become more stringent over time. As a result, we could incur costs for past, present, or future failure to comply with all environmental and health and safety laws and regulations. In addition, we could become subject to potential regulations concerning the emission of greenhouse gases, and while the effect of such future regulations cannot be determined at this time, they could require us to incur substantial costs in order to achieve and maintain compliance. In the ordinary course of business, we may be held responsible for any environmental damages we may cause to our customers' premises.

Additional liabilities related to taxes or potential tax adjustments could adversely impact our financial results, financial condition and cash flow.

We are subject to tax and related obligations in the jurisdictions in which we operate or do business, including state, local, federal and foreign taxes. The taxing rules of the various jurisdictions in which we operate or do business often are complex and subject to varying interpretations. Tax authorities may challenge tax positions that we take or historically have taken, and may assess taxes where we have not made tax filings or may audit the tax filings we have made and assess additional taxes, as they have done from time to time in the past. Some of these assessments may be substantial, and also may involve the imposition of substantial penalties and interest. Significant judgment is required in evaluating our tax positions and in establishing appropriate reserves. The resolutions of our tax positions are unpredictable. The payment of substantial additional taxes, penalties or interest resulting from any assessments could materially and adversely impact our results of operations, financial condition and cash flow.

Even though we have increased and may in the future increase our repatriation of cash earned by our non-U.S. subsidiaries to fund one-time redemptions of our outstanding senior secured notes or other extraordinary corporate events in the United States, we will leave a portion of such cash outside the United States as permanently reinvested earnings and profits. Accordingly, our current estimated annual effective tax rate is based on partial, and not full, repatriation of cash earned by our non-U.S. subsidiaries. If we underestimate our need for repatriated cash, or our needs change, significant tax adjustments may result.

The obligations associated with being a public company require significant resources and management attention.

Due to our being a public company with listed equity securities and Thermon Holding Corp., our direct wholly-owned subsidiary, which we refer to as THC, having SEC-registered debt securities, we are required to comply with certain laws, regulations and requirements, including the requirements of the Securities Exchange Act of 1934, as amended, which we refer to as the Exchange Act, certain corporate governance provisions of the Sarbanes-Oxley Act of 2002, which we refer to as the Sarbanes-Oxley Act, related regulations of the SEC and requirements of the NYSE. Complying with these statutes, regulations and requirements occupies a significant amount of time of our board of directors and management and results in significant legal, accounting and other expenses. We maintain, and will continue to maintain, internal controls and procedures for financial reporting and accounting systems to meet our reporting obligations as a public company. However, the measures we take may not be sufficient to satisfy our obligations. In addition, we cannot predict or estimate the amount of additional costs incurred in order to comply with these requirements.

Table of Contents

Section 404 of the Sarbanes-Oxley Act requires annual management assessments and attestation by our independent registered public accounting firm of the effectiveness of our internal control over financial reporting. During fiscal 2012, we completed our required annual management assessment of the effectiveness of our internal control over financial reporting for filing with the SEC. For fiscal 2013, in addition to the management assessment, we will have to file an attestation by our independent registered public accounting firm of the effectiveness of our internal control over financial reporting with the SEC. In connection with the implementation of the necessary procedures and practices related to internal control over financial reporting, we or our independent registered public accounting firm may identify deficiencies that we may not be able to remediate in time to meet the deadline imposed by the Sarbanes-Oxley Act for compliance with the requirements of Section 404. If we fail to comply with Section 404, or if we or our independent registered public accounting firm identify and report a material weakness, it may affect the reliability of our internal control over financial reporting, which could adversely affect the market price of our common stock and subject us to sanctions or investigations by the NYSE, the SEC or other regulatory authorities, which would require additional financial and management resources.

Our current or future indebtedness could impair our financial condition and reduce the funds available to us for other purposes. Our debt agreements impose certain operating and financial restrictions, with which failure to comply could result in an event of default that could adversely affect our results of operations.

We have substantial indebtedness. At June 30, 2012, THC had \$118.1 million outstanding in senior secured notes. Our senior secured notes accrue interest at a fixed rate of 9.500%, payable in cash semi-annually on May 1 and November 1 of each year until May 2017. If our cash flows and capital resources are insufficient to fund the interest payments on our senior secured notes and other debt service obligations and keep us in compliance with the covenants under our debt agreements or to fund our other liquidity needs, we may be forced to reduce or delay capital expenditures, sell assets or operations, seek additional capital or restructure or refinance our indebtedness. We cannot ensure that we would be able to take any of these actions, that these actions would permit us to meet our scheduled debt service obligations or that these actions would be permitted under the terms of our existing or future debt agreements, which may impose significant operating and financial restrictions on us and could adversely affect our ability to finance our future operations or capital needs; obtain standby letters of credit, bank guarantees or performance bonds required to bid on or secure certain customer contracts; make strategic acquisitions or investments or enter into alliances; withstand a future downturn in our business or the economy in general; engage in business activities, including future opportunities, that may be in our interest; and plan for or react to market conditions or otherwise execute our business strategies.

If we cannot make scheduled payments on our debt, or if we breach any of the covenants in debt agreements, we will be in default and, as a result, our debt holders could declare all outstanding principal and interest to be due and payable, the lenders under our revolving credit facility could terminate their commitments to lend us money and foreclose against the assets securing our borrowings, and we could be forced into bankruptcy or liquidation.

In addition, we and certain of our subsidiaries may incur significant additional indebtedness, including additional secured indebtedness. Although the terms of our debt agreements contain restrictions on the incurrence of additional indebtedness, these restrictions are subject to a number of qualifications and exceptions, and additional indebtedness incurred in compliance with these restrictions could be significant. Incurring additional indebtedness could increase the risks associated with our substantial indebtedness, including our ability to service our indebtedness.

Table of Contents

A significant portion of our business is conducted through foreign subsidiaries and our failure to generate sufficient cash flow from these subsidiaries, or otherwise repatriate or receive cash from these subsidiaries, could result in our inability to repay our indebtedness.

Approximately 66% of our fiscal 2012 revenues were generated outside of the United States. While we have been able to meet the regular interest payment obligations on our senior secured notes to date from cash generated through our U.S. operations and expect to be able to continue to do so in the future, we may seek to repatriate cash for other uses, and our ability to withdraw cash from foreign subsidiaries will depend upon the results of operations of these subsidiaries and may be subject to legal, contractual or other restrictions and other business considerations. Our foreign subsidiaries may enter into financing arrangements that limit their ability to make loans or other payments to fund payments of our debt. In particular, to the extent our foreign subsidiaries incur additional indebtedness, the ability of our foreign subsidiaries to provide us with cash may be limited. In addition, dividend and interest payments to us from our foreign subsidiaries may be subject to foreign withholding taxes, which could reduce the amount of funds we receive from our foreign subsidiaries. Dividends and other distributions from our foreign subsidiaries may also be subject to fluctuations in currency exchange rates and legal and other restrictions on repatriation, which could further reduce the amount of funds we receive from our foreign subsidiaries.

In general, when an entity in a foreign jurisdiction repatriates cash to the United States, the amount of such cash is treated as a dividend taxable at current U.S. tax rates. Accordingly, upon the distribution of cash to us from our foreign subsidiaries, we will be subject to U.S. income taxes. Although foreign tax credits may be available to reduce the amount of the additional tax liability, these credits may be limited based on our tax attributes. Therefore, to the extent that we must use cash generated in foreign jurisdictions, there may be a cost associated with repatriating cash to the United States.

We rely heavily on trade secrets to gain a competitive advantage in the market and the unenforceability of our nondisclosure agreements may adversely affect our operations.

The heat tracing industry is highly competitive and subject to the introduction of innovative techniques and services using new technologies. While we have patented some of our products and processes, we historically have not relied upon patents to protect our design or manufacturing processes or products, and our patents are not material to our operations or business. Instead, we rely significantly on maintaining confidential our trade secrets and other information related to our operations. Accordingly, we require all employees to sign a nondisclosure agreement to protect our trade secrets, business strategy and other proprietary information. If the provisions of these agreements are found unenforceable in any jurisdiction within which we operate, the disclosure of our proprietary information may place us at a competitive disadvantage. Even where the provisions are enforceable, the confidentiality clauses may not provide adequate protection of our trade secrets and proprietary information in every jurisdiction.

We may be unable to prevent third parties from using our intellectual property rights, including trade secrets and know-how, without our authorization or from independently developing intellectual property that is the same as or similar to ours, particularly in those countries where the laws do not protect our intellectual property rights as fully as in the United States. The unauthorized use of our trade secrets or know-how by third parties could reduce or eliminate any competitive advantage we have developed, cause us to lose sales or otherwise harm our business or increase our expenses as we attempt to enforce our rights.

Table of Contents

Our intellectual property rights may not be successfully asserted in the future or may be invalidated, circumvented or challenged.

We have obtained and applied for some U.S. and, to a lesser extent, foreign trademark registrations and will continue to evaluate the registration of additional trademarks. We cannot guarantee that any of our pending applications will be approved. Moreover, even if the applications are approved, third parties may seek to oppose or otherwise challenge them. In addition, we rely on a number of significant unregistered trademarks, primarily abroad, but also in the United States, in the day-to-day operation of our business. Without the protections afforded by registration, our ability to protect and use our trademarks may be limited and could negatively affect our business.

In addition, while we have not faced intellectual property infringement claims from others in recent years, in the event successful infringement claims are brought against us, particularly claims (under patents or otherwise) against our product design or manufacturing processes, such claims could have a material adverse effect on our business, financial condition or results of operation.

Risks Related to This Offering and Ownership of Our Common Stock

Our quarterly operating results may vary significantly, which could negatively impact the price of our common stock.

Our quarterly results of operations have fluctuated in the past and will continue to fluctuate in the future. You should not rely on the results of any past quarter or quarters as an indication of future performance in our business operations or the price of our common stock. Factors that might cause our operating results to vary from quarter to quarter include, but are not limited to:

general economic conditions and cyclicalities in the end markets we serve;

future growth of energy and chemical processing capital investments;

a material disruption at any of our manufacturing facilities;

delays in our customers' projects for which our products are a component;

competition from various other sources providing similar heat tracing products and services, or other alternative technologies, to customers; and

the seasonality of demand for MRO/UE orders, which is typically highest during the second and third fiscal quarters.

If our results of operations from quarter to quarter fail to meet the expectations of securities analysts and investors, the price of our common stock could suffer or be negatively impacted.

The market price of our common stock may fluctuate significantly, and this may make it difficult for holders to resell our common stock when they want or at prices that they find attractive.

The price of our common stock on the NYSE, constantly changes. We expect that the market price of our common stock will continue to fluctuate. The market price of our common stock may fluctuate as a result of a variety of factors, many of which are beyond our control. These factors include:

quarterly fluctuations in our operating results;

changes in investors' and analysts' perception of the business risks and conditions of our business or our competitors;

our ability to meet the earnings estimates and other performance expectations of financial analysts or investors;

unfavorable commentary or downgrades of our stock by equity research analysts;

S-24

Table of Contents

the emergence of new sales channels in which we are unable to compete effectively;

disruption to our operations;

fluctuations in the stock prices of our peer companies or in stock markets in general; and

general economic or political conditions.

In addition, in recent years, global equity markets have experienced extreme price and volume fluctuations. This volatility has had a significant effect on the market price of securities issued by many companies for reasons often unrelated to their operating performance. These broad market fluctuations may adversely affect the market price of our common stock, regardless of our operating results.

Future sales or issuances of our common stock may adversely affect our stock price and dilute the ownership interests of stockholders.

If our existing stockholders sell a large number of shares of our common stock in the public market, the market price of our common stock could decline significantly. In addition, the perception in the public market that our existing stockholders might sell shares of common stock could depress the market price of our common stock, regardless of the actual plans of our existing stockholders.

In June 2012, we filed a shelf registration statement on Form S-3 under the Securities Act, which subsequently became effective. This registration statement relates, in part, to the possible offering and sale, from time to time, of up to 18,079,940 shares of our common stock (including the shares that are the subject of this offering) by our private equity sponsors and certain of our current and former executive officers, employees and directors. As a result, those persons can freely trade those shares of our common stock without compliance with Rule 144 under the Securities Act.

In addition to the shares expected to be sold under this prospectus supplement, we may issue additional shares of our common stock, including securities that are convertible into or exchangeable for, or that represent the right to receive, shares of common stock or substantially similar securities, which may result in dilution to our stockholders. In addition, our stockholders may be further diluted by future issuances under our equity incentive plans. The market price of our common stock could decline as a result of sales or issuances of a large number of shares of our common stock or similar securities in the market or the perception that such sales or issuances could occur.

Anti-takeover provisions contained in our amended and restated certificate of incorporation and amended and restated bylaws could impair a takeover attempt that our stockholders may find beneficial.

Our second amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could have the effect of rendering more difficult or discouraging an acquisition deemed undesirable by our board of directors. Our corporate governance documents include provisions:

authorizing our board of directors, without further action by the stockholders, to issue blank check preferred stock;

limiting the ability of our stockholders to call and bring business before special meetings and to take action by written consent in lieu of a meeting;

requiring advance notice of stockholder proposals for business to be conducted at meetings of our stockholders and for nominations of candidates for election to our board of directors;

authorizing our board of directors, without stockholder approval, to amend our amended and restated bylaws;

Table of Contents

limiting the determination of the number of directors on our board of directors and the filling of vacancies or newly created seats on our board of directors to our board of directors then in office; and

subject to certain exceptions, limiting our ability to engage in certain business combinations with an "interested stockholder" for a three-year period following the time that the stockholder became an interested stockholder.

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

Though we have opted out of the Delaware anti-takeover statute, our second amended and restated certificate of incorporation contains provisions that are similar to the Delaware anti-takeover statute, which may impair a takeover attempt that our stockholders may find beneficial. Any provision of our second amended and restated certificate of incorporation or amended and restated bylaws that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

Our private equity sponsors exert significant influence over us, and their interests may not coincide with yours.

After this offering, CHS and its affiliates will beneficially own, in the aggregate, 14.9% of our outstanding common stock, and CHS and its affiliates, together with our other private equity sponsors and their respective affiliates, will beneficially own, in the aggregate, 24.5% of our outstanding common stock. These percentages would decrease to 12.6% and 20.6%, respectively, if the underwriters fully exercise their over-allotment option. As a result, our private equity sponsors, acting individually or together, could exert significant influence over us. In addition, pursuant to the terms of our Securityholder Agreement (as described in the accompanying prospectus in "Selling Stockholders Material Relationships with Selling Stockholders Securityholder Agreement"), CHS will continue to have the ability to designate one member of our board of directors and to require all other parties to the Securityholder Agreement to sell their respective shares of our common stock, on substantially the same terms and conditions as CHS is selling its shares, in the event that CHS approves a sale of us. After this offering, the parties to the Securityholder Agreement, other than CHS, will beneficially own, in the aggregate, 9.6% of our outstanding common stock (this percentage would decrease to 8.0% if the underwriters fully exercise their over-allotment option). The interests of these stockholders may not always coincide with our interests as a company or the interest of other stockholders. In addition, this concentration of ownership may delay or prevent a change in control of our company, even if that change in control would benefit our stockholders. This significant concentration of stock ownership and voting power may adversely affect the trading price of our common stock due to investors' perception that conflicts of interest may exist or arise. See Item 12, "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters" and Item 13, "Certain Relationships and Related Transactions, and Director Independence" in our Annual Report on Form 10-K for the fiscal year ended March 31, 2012 and incorporated by reference herein, and "Selling Stockholders" below for further information about the equity interests held by our private equity sponsors and their respective affiliates.

Moreover, our second amended and restated certificate of incorporation contains a provision renouncing our interest and expectancy in, or in being offered an opportunity to participate in, any business opportunity that may be presented to the private equity sponsors or any of their respective affiliates (other than us and our subsidiaries), subsidiaries, officers, directors, agents, stockholders, members, partners and employees and that may be a business opportunity for such private equity sponsor, even if the opportunity is one that we might reasonably have pursued or had the ability or

Table of Contents

desire to pursue if granted the opportunity to do so. None of the private equity sponsors has any duty to refrain from engaging directly or indirectly in the same or similar business activities or lines of business as us or any of our subsidiaries.

We do not currently intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We do not expect to pay cash dividends on our common stock. Any future dividend payments are within the absolute discretion of our board of directors or a duly authorized committee of the board of directors and will depend on, among other things, our results of operations, working capital requirements, capital expenditure requirements, financial condition, level of indebtedness, contractual restrictions with respect to payment of dividends, business opportunities, anticipated cash needs, provisions of applicable law and other factors that our board of directors may deem relevant. In particular, the indenture governing our senior secured notes and our revolving credit facility limit our ability to pay dividends from cash generated from operations. We may not generate sufficient cash from operations in the future to pay dividends on our common stock. See "Price Range of Our Common Stock and Dividend Policy."

Table of Contents**USE OF PROCEEDS**

We will not receive any proceeds from the sale of the shares of common stock by the selling stockholders. All of the proceeds will go to the selling stockholders. We have agreed to pay certain expenses related to this offering, which we estimate to be approximately \$0.5 million.

CAPITALIZATION

The following table sets forth our total capitalization as of June 30, 2012. The table below should be read in conjunction with and "Summary Historical Consolidated Financial and Operating Data" in this prospectus supplement and Item 2, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and accompanying notes included in our Quarterly Report on Form 10-Q for the three months ended June 30, 2012, incorporated by reference herein.

| | As of June 30, 2012 (unaudited) (in thousands) |
|---|---|
| Total debt: | |
| U.S. commercial and standby letter of credit facility(1) | \$ |
| Revolving credit facility(2) | 12,769 |
| Senior secured notes | 118,145 |
| Total debt | 130,914 |
| Shareholders' equity | |
| Common stock, \$0.001 par value per share; 150,000,000 shares authorized and 30,572,260 shares issued and outstanding | 30 |
| Preferred stock, \$0.001 par value per share; 10,000,000 shares authorized and no shares issued and outstanding | |
| Paid in capital | 195,212 |
| Accumulated comprehensive income | (2,086) |
| Retained earnings | 3,690 |
| Total stockholders' equity | 196,846 |
| Total capitalization | \$ 327,760 |

(1) Our U.S. subsidiaries have an open credit facility with JPMorgan Chase Bank, N.A. that is secured by cash and is used to obtain commercial and standby letters of credit and to support foreign exchange contracts. As of June 30, 2012, there were \$0.8 million in standby letters of credit posted, but not drawn upon, under the facility. In addition, as of June 30, 2012, the U.S. subsidiaries had \$0.9 million in performance bonds outstanding with a surety company.

(2) Consists of a \$40.0 million senior secured revolving credit facility of which up to \$20.0 million is available to our Canadian subsidiary, subject to borrowing base availability. As of June 30, 2012, we had \$26.7 million of capacity available under our revolving credit facility and \$12.8 million of outstanding borrowings thereunder with an interest rate of 5%.

Table of Contents**PRICE RANGE OF OUR COMMON STOCK AND DIVIDEND POLICY**

Our common stock is listed on the NYSE under the symbol "THR." Our initial public offering price on May 5, 2011 was \$12.00. Prior to that date, there was no public market for our common stock. The following table sets forth the reported high and low sales prices for our common stock on the NYSE since our IPO.

| | Thermon Common Stock | | Dividends |
|---|-----------------------------|------------|------------------|
| | High | Low | Paid |
| For the quarterly period ended: | | | |
| June 30, 2011 (from May 5, 2011) | \$ 13.14 | \$ 11.05 | |
| September 30, 2011 | \$ 16.42 | \$ 11.87 | |
| December 31, 2011 | \$ 17.79 | \$ 12.75 | |
| March 31, 2012 | \$ 21.53 | \$ 16.50 | |
| For the quarterly period ended: | | | |
| June 30, 2012 | \$ 23.17 | \$ 19.28 | |
| September 30, 2012 (through September 17, 2012) | \$ 26.14 | \$ 19.94 | |

On September 17, 2012, the closing sale price of our common stock, as reported by the NYSE, was \$25.83. As of September 17, 2012, there were approximately 105 holders of our common stock of record.

Since the completion of the CHS Transactions on April 30, 2010, we have not declared or paid any cash dividends on our capital stock, and we do not currently intend to pay any cash dividends on our common stock. We currently intend to retain earnings to finance the growth and development of our business and for working capital and general corporate purposes. Any payment of dividends will be at the discretion of our board of directors and will depend upon earnings, financial condition, capital requirements, level of indebtedness, contractual restrictions with respect to payment of dividends, restrictions imposed by applicable law and other factors. In particular, the indenture governing our senior secured notes and our revolving credit facility limit our ability to pay dividends from cash generated from operations. See Item 2, "Management's Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources" in our Quarterly Report on Form 10-Q for the three months ended June 30, 2012, which is incorporated by reference herein.

Table of Contents**SELLING STOCKHOLDERS**

The following table sets forth information with respect to the beneficial ownership of our common stock held as of September 17, 2012 by the selling stockholders, the shares the underwriters have agreed to purchase from the selling stockholders and the selling stockholders' shares subject to the underwriters' option to purchase additional shares. The amounts and percentages of common stock beneficially owned are reported on the basis of SEC regulations governing the determination of beneficial ownership of securities. Under the SEC rules, a person is deemed to be a "beneficial owner" of a security if that person has or shares "voting power," which includes the power to vote or to direct the voting of such security, or "investment power," which includes the power to dispose of or to direct the disposition of such security. A person is also deemed to be a beneficial owner of any securities of which that person has the right to acquire beneficial ownership within 60 days. Under these rules, more than one person may be deemed to be a beneficial owner of the same securities and a person may be deemed to be a beneficial owner of securities as to which he or she has no economic interest.

The percentages in the following table reflect the common stock beneficially owned by the selling stockholders as a percentage of the total number of shares of our common stock held and, to the extent applicable, issuable to the selling stockholders upon the exercise or conversion of any of our securities that are exercisable or convertible within 60 days of September 17, 2012. In accordance with the rules of the SEC, beneficial ownership includes voting or investment power with respect to securities.

The information set forth in the table below is based on information provided by or on behalf of the selling stockholders, and shows the beneficial ownership of shares of our common stock immediately preceding and following this offering by each selling stockholder. The percentage of beneficial ownership for the following table is based on 30,866,765 shares of common stock outstanding as of September 17, 2012.

Each selling stockholder is party to the Securityholder Agreement, which sets forth certain significant provisions that will survive the consummation of this offering relating to, among other things, the voting of shares in elections of directors and restrictions on transfers or dispositions of shares in the open market, as described more fully in the accompanying prospectus in "Selling Stockholders Material Relationships with Selling Stockholders Securityholder Agreement."

| Name | Shares Beneficially Owned Prior to the Offering | | Shares Being Sold In Base Offering | Shares Subject to Over-allotment Option | Shares Beneficially Owned After the Offering (Assuming No Exercise of the Over-allotment Option) | | Shares Beneficially Owned After the Offering (Assuming Full Exercise of the Over-allotment Option) | |
|--|---|------------|------------------------------------|---|--|------------|--|------------|
| | Number | Percentage | | | Number | Percentage | Number | Percentage |
| CHS Private Equity V LP(1) | 9,484,335 | 30.7% | 4,873,885 | 731,083 | 4,610,450 | 14.9% | 3,879,367 | 12.6% |
| Thompson Street Capital Partners II, L.P.(2) | 3,316,673 | 10.8% | 1,704,398 | 255,660 | 1,612,275 | 5.2% | 1,356,615 | 4.4% |
| Crown Investment Series LLC Series 4(3) | 2,766,589 | 9.0% | 1,421,717 | 213,257 | 1,344,872 | 4.4% | 1,131,615 | 3.7% |

(1)

CHS Private Equity V LP holds 9,479,559 shares and CHS Associates V, an entity related to CHS, holds 4,776 shares. CHS Private Equity V LP and CHS Associates V will sell 4,871,431 shares and 2,454 shares of our common stock, respectively, in the offering, and will hold 4,608,128 shares and 2,322 shares, respectively, after the offering, assuming no exercise of the underwriters' over-allotment option. If the underwriters exercise the over-allotment option in full, CHS Private Equity V LP and CHS Associates V will sell 5,602,146 shares and 2,822 shares of our common stock, respectively, in the offering, and will hold 3,877,413 shares and 1,954 shares, respectively, after the offering. The Investment Committee of CHS exercises sole voting and dispositive powers with respect to the shares of the Company held by both CHS Private Equity V LP and CHS Associates V. The members of the Investment Committee are Brian P. Simmons, Daniel J. Hennessy,

Table of Contents

Thomas J. Formolo, David O. Hawkins and Richard A. Lobo, whom we collectively refer to as the Investment Committee Members. Each of the Investment Committee Members disclaims beneficial ownership of the shares of our common stock held by CHS Private Equity V LP and CHS Associates V, except to the extent of a pecuniary interest therein. The address of each of the Investment Committee Members is c/o CHS Capital LLC, 10 South Wacker Drive, Suite 3175, Chicago, Illinois 60606. See "Selling Stockholders Material Relationships with Selling Stockholders" in the accompanying prospectus for a discussion of other material relationships between CHS and us.

(2)

Thompson Street Capital II GP, L.P. is the general partner of Thompson Street Capital Partners II, L.P. Thompson Street Capital LLC is the general partner of Thompson Street Capital II GP, L.P. Mr. James A. Cooper is the sole member of Thompson Street Capital LLC. Each of Thompson Street Capital II GP, L.P., Thompson Street Capital LLC, and Mr. Cooper may be deemed to share beneficial ownership of any shares of our common stock beneficially owned by Thompson Street Capital Partners II, L.P., but each disclaims such beneficial ownership except to the extent of a pecuniary interest therein. The address of each of the entities listed in this footnote and Mr. Cooper is c/o Thompson Street Capital LLC, 120 South Central Avenue, Suite 600, Saint Louis, Missouri 63105. See "Selling Stockholders Material Relationships with Selling Stockholders" in the accompanying prospectus for a discussion of other material relationships between Thompson Street Capital Partners and us.

(3)

Longview Asset Management LLC, which we refer to as Longview, is the manager of Crown Investment Series LLC Series 4, which we refer to as Crown, and holds voting power and investment power over the shares of our common stock held by Crown. Mr. James A. Star is the President of Longview. Each of Mr. Star and Longview disclaims beneficial ownership of the shares of our common stock held by Crown, except to the extent of a pecuniary interest therein. The address of each of Mr. Star and Longview is c/o Crown Investment Series LLC, 222 North LaSalle Street, Chicago, Illinois 60601. See "Selling Stockholders Material Relationships with Selling Stockholders" in the accompanying prospectus for a discussion of other material relationships between Crown and us.

Table of Contents

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. STOCKHOLDERS

The following is a general discussion of the material U.S. federal income tax consequences of the purchase, ownership and disposition of shares of our common stock by a Non-U.S. Stockholder. For purposes of this discussion, a Non-U.S. Stockholder is a beneficial owner of our common stock that is treated for U.S. federal tax purposes as:

a non-resident alien individual;

a corporation created or organized under the laws of a jurisdiction other than the United States or any state or political subdivision thereof;

an estate, other than an estate the income of which is subject to U.S. federal income taxation regardless of its source; or

a trust, other than a trust (i) the administration of which is subject to the primary supervision of a court within the United States and which has one or more U.S. persons who have the authority to control all substantial decisions of the trust, or (ii) that has a valid election in effect under applicable U.S. Treasury regulations to be treated as a United States person.

This discussion does not address the tax consequences to partnerships or other pass-through entities or persons investing through such partnerships or entities. If a partnership (or any other entity treated as a partnership for U.S. federal income tax purposes) holds our 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. Such a partner should consult its own tax advisors as to the U.S. federal income tax consequences of being a partner in a partnership that purchases, owns or disposes of our common stock.

This summary assumes that our common stock is held as a capital asset for U.S. federal income tax purposes (generally, property held for investment). This discussion is of a general nature and thus does not address all of the U.S. federal income tax considerations that might be relevant to a Non-U.S. Stockholder in light of its particular circumstances or to a Non-U.S. Stockholder subject to special treatment under U.S. federal tax laws (including financial institutions, insurance companies, real estate investment trusts, regulated investment companies, grantor trusts, dealers or traders in securities or currencies or notional principal contracts, tax-exempt entities, certain former citizens or long-term residents of the United States, persons that will hold shares as part of a "hedging" or "conversion" transaction or as a position in a "straddle" or as part of "synthetic security" or other integrated transaction for U.S. federal income tax purposes, "controlled foreign corporations" and "passive foreign investment companies"). Furthermore, this summary does not discuss any aspects of U.S. federal estate or gift taxation, and does not describe any state, local or non-U.S. taxation. This summary is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, U.S. Treasury regulations, judicial opinions, published positions of the Internal Revenue Service, which refer to as the IRS, and other applicable authorities, all of which are subject to change, possibly with retroactive effect. Each prospective purchaser of our common stock is advised to consult its tax advisor with respect to the U.S. federal, state, local and non-U.S. tax consequences of purchasing, owning and disposing of our common stock. No assurance exists that the IRS will not challenge any of the tax consequences described herein, and we have not obtained, nor do we intend to obtain, an opinion of counsel with respect to the U.S. federal income tax consequences to a Non-U.S. Stockholder of purchasing, owning and disposing of our common stock.

PROSPECTIVE INVESTORS CONSIDERING THE PURCHASE OF OUR COMMON STOCK SHOULD CONSULT THEIR TAX ADVISORS CONCERNING THE APPLICATION OF UNITED STATES FEDERAL TAX LAWS TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY CONSEQUENCES ARISING UNDER THE LAWS OF ANY OTHER TAXING JURISDICTION AND ANY APPLICABLE TAX TREATY.

Table of Contents

Distributions

If we make distributions on our common stock, the distributions will be dividends for U.S. federal income tax purposes to the extent paid from current or accumulated earnings and profits as determined under U.S. federal income tax principles. To the extent distributions exceed our current and accumulated earnings and profits, they will constitute a return of capital that will first reduce your basis, but not below zero, and then will be treated as gain on sale of stock (as discussed further below).

Any dividend paid to a Non-U.S. Stockholder with respect to our common stock generally will be subject to withholding tax at a 30% rate (or such lower rate specified by an applicable income tax treaty). Generally, a Non-U.S. Stockholder must certify as to its eligibility for reduced withholding under an applicable income tax treaty on a properly completed IRS Form W-8BEN in order to obtain the benefits of such treaty. A Non-U.S. Stockholder that does not timely provide us with the required certification, but which qualifies for a reduced treaty rate, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. Stockholders should consult their tax advisors regarding possible entitlement to benefits under a tax treaty.

If, however, the Non-U.S. Stockholder provides a valid IRS Form W-8ECI, certifying that the dividend is effectively connected with the Non-U.S. Stockholder's conduct of a trade or business within the United States, and otherwise complies with applicable certification requirements, the dividend will not be subject to withholding. Instead, such dividend will be subject to U.S. federal income tax in the manner described below under " Effectively Connected Income."

Sale, Exchange or Other Taxable Disposition of Our Common Stock

Except as otherwise discussed below, a Non-U.S. Stockholder generally will not be subject to U.S. federal income tax on any gain realized upon the sale, exchange or other taxable disposition of our common stock unless (i) such gain is effectively connected with the Non-U.S. Stockholder's conduct of a U.S. trade or business (or, if an income tax treaty applies, the gain is attributable to a U.S. permanent establishment or fixed base maintained by such Non-U.S. Stockholder in the United States), (ii) the Non-U.S. Stockholder is an individual who is present in the United States for a period or periods aggregating 183 days or more during the calendar year in which such sale, exchange or other taxable disposition occurs and certain other conditions are met, or (iii) we are or become a "United States real property holding corporation", or USRPHC, for U.S. federal income tax purposes and certain other conditions are met. Generally, a corporation is a USRPHC if the fair market value of its "U.S. real property interests" equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. We do not believe that we are or will become a USRPHC, however, there can be no assurance in that regard.

Gain described in clause (i) immediately above will be subject to U.S. federal income tax in the manner described below under " Effectively Connected Income." During each taxable year, a Non-U.S. Stockholder described in clause (ii) immediately above will be subject to tax at a 30% rate (or such lower rate specified by an applicable income tax treaty) on the net gain derived from the sale, exchange or other taxable disposition, which may be offset by U.S.-source capital losses of the Non-U.S. Stockholder during the taxable year.

Effectively Connected Income

Any dividend with respect to, or gain recognized upon the sale, exchange or other taxable disposition of, our common stock that is effectively connected with a trade or business carried on by a Non-U.S. Stockholder within the United States (or, if an income tax treaty applies, that is attributable to a permanent establishment or fixed base maintained by such Non-U.S. Stockholder in the United States) will be subject to U.S. federal income tax, based on the Non-U.S. Stockholder's net income,

Table of Contents

generally in the same manner as if the Non-U.S. Stockholder were a United States person for U.S. federal income tax purposes. If a dividend or gain is effectively connected with a U.S. trade or business of a Non-U.S. Stockholder that is a corporation for U.S. federal income tax purposes, such corporate Non-U.S. Stockholder may be subject to a "branch profits tax" at a 30% rate (or such lower rate as may be specified by an applicable income tax treaty), subject to certain adjustments. Non-U.S. Stockholders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Annual reporting to the IRS and to each Non-U.S. Stockholder will be required as to the amount of dividends paid to such Non-U.S. Stockholder and the amount, if any, of tax withheld with respect to such dividends, unless the Non-U.S. Stockholder is an exempt recipient or otherwise establishes an exemption from such requirements. This information may also be made available to the tax authorities in the Non-U.S. Stockholder's country of residence. Dividends generally are not subject to "backup withholding" if the Non-U.S. Stockholder properly certifies as to its non-U.S. status (usually by completing an IRS Form W-8BEN or W-8ECI).

The payment of the proceeds of the sale, exchange or other disposition of our common stock to or through the U.S. office of a broker will be subject to both backup withholding and information reporting unless the Non-U.S. Stockholder certifies its non-U.S. status on IRS Form W-8BEN or W-8ECI or otherwise establishes an exemption. Information reporting requirements, but not backup withholding, will also generally apply to payments of the proceeds of a sale, exchange or other disposition of our common stock by non-U.S. offices of U.S. brokers or non-U.S. brokers with certain types of relationships to the United States unless the Non-U.S. Stockholder establishes an exemption.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from payments made to a Non-U.S. Stockholder may be refunded or credited against such Non-U.S. Stockholder's U.S. federal income tax liability, if any, provided that the required information is timely furnished to the IRS.

Withholding on Payments to Foreign Financial Entities and Other Foreign Entities

Recently enacted legislation, commonly referred to as the Foreign Account Tax Compliance Act, or "FATCA," generally will impose a new 30% withholding tax on U.S. source dividends and gross proceeds from the sale or other disposition of stock or property that is capable of producing U.S. source dividends paid to (i) a foreign financial institution (as defined in Section 1471(d)(4) of the Code) unless the foreign financial institution enters into a reporting agreement with the U.S. Treasury Department to collect and disclose certain information regarding its U.S. account holders (including certain account holders that are foreign entities that have U.S. owners) and satisfies certain other requirements, and (ii) certain other non-U.S. entities unless the entity provides the payor with information regarding certain direct and indirect U.S. owners of the entity, or certifies that it has no such U.S. owners, and complies with certain other requirements. The IRS and the U.S. Treasury have proposed regulations and preliminary guidance that provide for the phased implementation of the tax, pursuant to which the tax would apply to dividends paid with respect to our common stock after December 31, 2013, and proceeds from the sale, exchange or other taxable disposition of shares of our common stock occurring after December 31, 2014.

Table of Contents

UNDERWRITING

Barclays Capital Inc. and Jefferies & Company, Inc. are acting as representatives of the underwriters and joint book-running managers of this offering. Under the terms of an underwriting agreement, which will be filed by us as an exhibit to a Current Report on Form 8-K and incorporated by reference into this prospectus supplement and the accompanying prospectus, each of the underwriters named below has severally agreed to purchase from the selling stockholders the respective number of shares of common stock shown opposite its name below.

| Underwriters | Number of Shares |
|---------------------------------|-------------------------|
| Barclays Capital Inc. | |
| Jefferies & Company, Inc. | |
| William Blair & Company, L.L.C. | |
| BMO Capital Markets Corp. | |
| KeyBanc Capital Markets Inc. | |
| Total | 8,000,000 |

The underwriting agreement provides that the underwriters' obligation to purchase shares of common stock depends on the satisfaction of the conditions contained in the underwriting agreement including:

the obligation to purchase all of the shares of common stock offered hereby (other than those shares of common stock covered by their option to purchase additional shares as described below), if any of the shares are purchased;

the representations and warranties made by us and the selling stockholders to the underwriters are true;

there is no material change in our business or the financial markets; and

we deliver customary closing documents to the underwriters.

Commissions and Expenses

The following table summarizes the underwriting discounts and commissions the selling stockholders will pay to the underwriters. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares. The underwriting fee is the difference between the initial price to the public and the amount the underwriters pay to the selling stockholders for the shares.

| | No Exercise | Exercise |
|-----------|--------------------|-----------------|
| Per share | \$ | \$ |
| Total | \$ | \$ |

The representatives of the underwriters have advised us that the underwriters propose to offer the shares of common stock directly to the public at the public offering price on the cover of this prospectus supplement and to selected dealers, which may include the underwriters, at such offering price less a selling concession not in excess of \$ per share. After the offering, the representatives may change the offering price and other selling terms. Sales of shares made outside of the United States may be made by affiliates of the underwriters.

We have agreed to pay expenses incurred by the selling stockholders in connection with the offering, other than the underwriting discounts and commissions, which are estimated to be \$0.5 million.

Table of Contents

Option to Purchase Additional Shares

The selling stockholders have granted the underwriters an option exercisable for 30 days after the date of this prospectus supplement, to purchase, from time to time, in whole or in part, up to an aggregate of 1,200,000 shares at the public offering price less the underwriting discounts and commissions. This option may be exercised if the underwriters sell more than 8,000,000 shares in connection with this offering. To the extent that this option is exercised, each underwriter will be obligated, subject to certain conditions, to purchase its pro rata portion of these additional shares based on the underwriter's underwriting commitment in the offering as indicated in the table at the beginning of this Underwriting section.

Lock-Up Agreements

We, all of our directors and executive officers, and the selling stockholders have agreed that, without the prior written consent of each of Barclays Capital Inc. and Jefferies & Company, Inc., we and they will not directly or indirectly, (1) offer for sale, sell, pledge, or otherwise dispose of (or enter into any transaction or device that is designed to, or could reasonably be expected to, result in the disposition by any person at any time in the future of) any shares of common stock (including, without limitation, shares of common stock that may be deemed to be beneficially owned by us or them in accordance with the rules and regulations of the SEC and shares of common stock that may be issued upon exercise of any options or warrants) or securities convertible into or exercisable or exchangeable for common stock, (2) enter into any swap or other derivative transaction that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock (other than in connection with this offering), (3) make any demand for or exercise any right or file or cause to be filed a registration statement, including any amendments thereto, with respect to the registration of any shares of common stock or securities convertible, exercisable or exchangeable into common stock or any of our other securities, or (4) publicly disclose the intention to do any of the foregoing, for a period of 90 days after the date of this prospectus supplement. The foregoing restrictions do not apply to (i) bona fide gifts and certain transfers to affiliates and family members, (ii) transfers by will or intestacy, (iii) the exercise of outstanding options, (iv) transactions relating to shares of our common stock or other securities of the Company acquired in open market transactions, block purchases or pursuant to a public offering, (v) in the case of each of our executive officers, sales by each executive officer of up to 30,000 shares of our common stock during the period beginning 30 days after the date of this prospectus, or (vi) the sale of shares of our common stock to the underwriters pursuant to the terms of the underwriting agreement, provided that, in the case of each of the foregoing clauses (i) and (ii), the transferee agrees to be subject to the same restrictions.

The 90-day restricted period described in the preceding paragraph will be extended if: (i) during the last 17 days of such 90-day restricted period we issue an earnings release or material news or a material event relating to us occurs; or (ii) prior to the expiration of such 90-day restricted period, we announce that we will release earnings results during the 16-day period beginning on the last day of such 90-day period, in which case the restrictions described in the preceding paragraph will continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the announcement of the material news or occurrence of a material event, unless such extension is waived in writing by Barclays Capital Inc. and Jefferies & Company, Inc.

Barclays Capital Inc. and Jefferies & Company, Inc., in their sole discretion, may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time with or without notice. When determining whether or not to release common stock and other securities from lock-up agreements, Barclays Capital Inc. and Jefferies & Company, Inc. will consider, among other factors, the holder's reasons for requesting the release, the number of shares of common stock and other securities for which the release is being requested and market conditions at the time.

Table of Contents

Indemnification

We and the selling stockholders have agreed to indemnify the underwriters against certain liabilities, and to contribute to payments that the underwriters may be required to make for these liabilities.

Stabilization, Short Positions and Penalty Bids

The representatives may engage in stabilizing transactions, short sales and purchases to cover positions created by short sales, and penalty bids or purchases for the purpose of pegging, fixing or maintaining the price of the common stock, in accordance with Regulation M under the Exchange Act, as follows:

Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum.

A short position involves a sale by the underwriters of shares in excess of the number of shares the underwriters are obligated to purchase in the offering, which creates the syndicate short position. This short position may be either a covered short position or a naked short position. In a covered short position, the number of shares involved in the sales made by the underwriters in excess of the number of shares they are obligated to purchase is not greater than the number of shares that they may purchase by exercising their option to purchase additional shares. In a naked short position, the number of shares involved is greater than the number of shares in their option to purchase additional shares. The underwriters may close out any short position by either exercising their option to purchase additional shares and/or purchasing shares in the open market. In determining the source of shares to close out the short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through their option to purchase additional shares. A naked short position is more likely to be created if the underwriters are concerned that there could be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.

Syndicate covering transactions involve purchases of the common stock in the open market after the distribution has been completed in order to cover syndicate short positions.

Penalty bids permit the representatives to reclaim a selling concession from a syndicate member when the common stock originally sold by the syndicate member is purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of the common stock. As a result, the price of the common stock may be higher than the price that might otherwise exist in the open market. These transactions may be effected on the NYSE or otherwise and, if commenced, may be discontinued at any time.

Neither we nor any of the underwriters makes any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of the common stock. In addition, neither we nor any of the underwriters makes any representation that the underwriters will engage in these stabilizing transactions or that any transaction, once commenced, will not be discontinued without notice.

Electronic Distribution

A prospectus supplement in electronic format may be made available on the Internet sites or through other online services maintained by one or more of the underwriters and/or selling group members participating in this offering, or by their affiliates. In those cases, prospective investors may

Table of Contents

view offering terms online and, depending upon the particular underwriter or selling group member, prospective investors may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares for sale to online brokerage account holders. Any such allocation for online distributions will be made by the representatives on the same basis as other allocations.

Other than the prospectus supplement in electronic format, the information on any underwriter's or selling group member's web site and any information contained in any other web site maintained by an underwriter or selling group member is not part of the prospectus supplement or accompanying prospectus, has not been approved and/or endorsed by us or any underwriter or selling group member in its capacity as underwriter or selling group member and should not be relied upon by investors.

The New York Stock Exchange

Our shares of common stock are listed on the NYSE under the symbol "THR."

Stamp Taxes

If you purchase shares of common stock offered in this prospectus supplement, you may be required to pay stamp taxes and other charges under the laws and practices of the country of purchase, in addition to the offering price listed on the cover page of this prospectus supplement.

Relationships

Certain of the underwriters and their affiliates have engaged, and may in the future engage, in commercial and investment banking transactions with us in the ordinary course of their business. They have received, and expect to receive, customary compensation and expense reimbursement for these commercial and investment banking transactions. In particular, Jefferies & Company, Inc., BMO Capital Markets Corp. and KeyBanc Capital Markets Inc. were initial purchasers in our senior secured notes offering in April 2010. In addition, affiliates of BMO Capital Markets Corp. and KeyBanc Capital Markets Inc. are lenders under our revolving credit facility. Barclays Capital Inc. and Jefferies & Company, Inc. served as the representatives of the underwriters in our IPO and William Blair & Company, L.L.C., BMO Capital Markets Corp. and KeyBanc Capital Markets Inc. served as co-managers of the IPO. Each of these transactions were negotiated on an arm's length basis and contained or contains customary terms pursuant to which those parties received or receive customary fees and reimbursement for out-of-pocket costs.

Selling Restrictions

European Economic Area

This document is not a prospectus for the purposes of the Prospectus Directive (as defined below).

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (as defined below) (each, a "Relevant Member State") with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State (the "Relevant Implementation Date"), an offer to the public of any shares of our common stock which are the subject of the offering contemplated by this prospectus supplement, may not be made in that Relevant Member State other than:

- (a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- (b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive (as defined below), 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the Initial Purchasers for any such offer; or
- (c) in any other circumstances fully within Article 3(2) of the Prospectus Directive,

Table of Contents

provided that no such offer of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and our common stock to be offered so as to enable an investor to decide to purchase or subscribe for our common stock, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State and the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in each Relevant Member State and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

This prospectus supplement is only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive, which we refer to as Qualified Investors, that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, which we refer to as the Order, or (ii) high net worth entities, falling within Article 49(2)(a) to (d) of the Order, and (iii) any other person to whom it may lawfully be communicated pursuant to the Order, all such persons which we refer to together as relevant persons. This prospectus supplement and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. In the United Kingdom, any investment activity to which this prospectus supplement relates will only be available to, and will only be engaged with, relevant persons. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

All applicable provisions of the Financial Services and Markets Act 2000 (as amended) must be complied with in respect to anything done by any person in relation to our common stock in, from or otherwise involving the United Kingdom.

Switzerland

This document, as well as any other material relating to the shares which are the subject of the offering contemplated by this prospectus supplement, do not constitute an issue prospectus pursuant to Article 652a and/or 1156 of the Swiss Code of Obligations. The shares will not be listed on the SIX Swiss Exchange and, therefore, the documents relating to the shares, including, but not limited to, this document, do not claim to comply with the disclosure standards of the listing rules of the SIX Swiss Exchange. The shares are being offered in Switzerland by way of a private placement, i.e., to a small number of selected investors only, without any public offer and only to investors who do not purchase the shares with the intention to distribute them to the public. The investors will be individually approached by the issuer from time to time. This document, as well as any other material relating to the shares, is personal and confidential and do not constitute an offer to any other person. This document may only be used by those investors to whom it has been handed out in connection with the offering described herein and may neither directly nor indirectly be distributed or made available to other persons without express consent of the issuer. It may not be used in connection with any other offer and shall in particular not be copied and/or distributed to the public in (or from) Switzerland.

Hong Kong

The shares of our common stock offered hereby may not be offered or sold in Hong Kong, by means of any document, other than (a) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made under that Ordinance, or

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Table of Contents

(b) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32, Laws of Hong Kong), or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the shares of our common stock offered hereby may be issued or may be in the possession of any person for the purpose of the issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to the shares of our common stock offered hereby which are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) or any rules made under that Ordinance.

Singapore

This prospectus supplement has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares of our common stock offered hereby may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Future Act, Chapter 289 of Singapore, which we refer to as the SFA, (ii) to a "relevant person" as defined in Section 275(2) of the SFA, or any person pursuant to Section 275 (1A), and in accordance with the conditions, specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares of our common stock offered hereby are subscribed and purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor (as defined in Section 4A of the SFA)) whose sole whole purpose is to hold investments and each beneficiary is an accredited investor, shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferable within six months after that corporation or that trust has acquired the shares under Section 275 of the SFA except
 - (i) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA) and in accordance with the conditions, specified in Section 275 of the SFA;
 - (ii) (in the case of a corporation) where the transfer arises from an offer referred to in Section 275(1A) of the SFA, or (in the case of a trust) where the transfer arises from an offer that is made on terms that such rights or interests are acquired at a consideration of not less than \$200,000 (or its equivalent in a foreign currency) for each transaction, whether such amount is to be paid for in cash or by exchange of securities or other assets;
 - (iii) where no consideration is or will be given for the transfer; or
 - (iv) where the transfer is by operation of law.

By accepting this prospectus supplement, the recipient hereof represents and warrants that he is entitled to receive it in accordance with the restrictions set forth above and agrees to be bound by limitations contained herein. Any failure to comply with these limitations may constitute a violation of law.

Table of Contents

LEGAL MATTERS

Certain legal matters in connection with this offering, including the validity of the shares of common stock offered hereby, will be passed upon for us by Sidley Austin LLP, Chicago, Illinois. Certain legal matters in connection with this offering will be passed upon for the underwriters by White & Case LLP, New York, New York.

EXPERTS

The consolidated financial statements of Thermon Group Holdings, Inc. at March 31, 2012 (Successor) and 2011 (Successor), and for the year ended March 31, 2012 (Successor), the period from May 1, 2010 to March 31, 2011(Successor), for the period from April 1, 2010 to April 30, 2010 (Predecessor) and for the year ended March 31, 2010 (Predecessor), incorporated herein by reference to our Annual Report on Form 10-K for the year ended March 31, 2012, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon appearing therein and which, as to the 2010 fiscal year, are based in part on the reports of MNP LLP, Bell Partners and Shanghai Jialiang CPAs, independent registered public accounting firms, with respect to Thermon Canada Inc., Thermon Australia Pty Ltd. and Thermon Heat Tracing & Engineering (Shanghai) Co., Ltd., respectively. The financial statements referred to above for the 2010 fiscal year are included in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

We are incorporating by reference certain documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents. Any information that we reference this way is considered part of this prospectus supplement.

We incorporate by reference into this prospectus supplement the documents listed below and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act other than information furnished pursuant to Item 2.02 or 7.01 (including any financial statements or exhibits relating thereto furnished pursuant to Item 9.01) of any Current Report on Form 8-K, unless expressly stated otherwise in such Current Report on Form 8-K. You should review these filings as they may disclose a change in our business, prospects, financial condition or other affairs after the date of this prospectus.

This prospectus supplement incorporates by reference the documents listed below that we have filed with the SEC but have not included or delivered with this prospectus supplement:

our Annual Report on Form 10-K for the year ended March 31, 2012;

our Quarterly Report on Form 10-Q for the quarter ended June 30, 2012;

our Current Reports on Form 8-K, filed with the SEC on April 2, 2012, May 10, 2012, June 19, 2012, August 6, 2012 and August 21, 2012; and

the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on April 28, 2011 under Section 12(b) of the Exchange Act, including any amendment or report filed for the purposes of updating such description.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed modified or superseded for purposes of this prospectus supplement to the extent that a statement contained herein or in any other subsequently filed document which also is, or is deemed to be, incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus supplement.

Table of Contents

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Exchange Act, and, as a result, are required to file periodic reports, proxy statements and other information with the SEC. You may read and copy any document we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Information on the operation of the Public Reference Room may be obtained by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet site at <http://www.sec.gov>, from which interested persons can electronically access the registration statement, including the exhibits and any schedules thereto. Copies of the registration statement, including the exhibits and schedules thereto, are also available at your request, without charge, from Thermon Group Holdings, Inc., 100 Thermon Drive, San Marcos, TX 78666, Attention: Investor Relations. Our telephone number at that address is (512) 396-5801. We also maintain an Internet site at <http://www.thermon.com>. Our website and the information contained therein or connected thereto shall not be deemed to be incorporated into this prospectus or the registration statement of which it forms a part.

S-42

PROSPECTUS

Thermon Group Holdings, Inc.

**\$250,000,000 Aggregate Offering Price of Common Stock,
Preferred Stock, Debt Securities, Warrants,
Stock Purchase Contracts and Stock Purchase Units Offered by
Thermon Group Holdings, Inc.**

18,079,940 Shares of Common Stock Offered by the Selling Stockholders

We may offer and sell, from time to time, in one or more offerings, common stock, preferred stock, debt securities, warrants, stock purchase contracts and stock purchase units for an aggregate initial offering price up to \$250,000,000 in amounts, at prices and on terms that will be determined at the time of any such offering.

In addition, from time to time, this prospectus may also be used by the selling stockholders identified in this prospectus or in the applicable prospectus supplement to sell up to 18,079,940 shares of our common stock. We will not receive any proceeds from the sales of shares of common stock by the selling stockholders. This prospectus does not necessarily mean that the selling stockholders will offer or sell any shares. We cannot predict when or in what amounts the selling stockholders may sell any of the shares offered by this prospectus or any prospectus supplement. The prices at which the selling stockholders may sell the shares will be determined by the prevailing market price for the shares of our common stock or in negotiated transactions.

Each time we or the selling stockholders offer securities using this prospectus, we will provide specific terms of the offering in a supplement to this prospectus. The prospectus supplement may also add, update or change information contained in this prospectus. Any statement contained in this prospectus is deemed modified or superseded by any inconsistent statement contained in an accompanying prospectus supplement. You should read this prospectus and any prospectus supplement, as well as the documents incorporated by reference in this prospectus, carefully before you invest.

Our common stock is listed on the New York Stock Exchange, or NYSE, under the symbol "THR." On May 31, 2012, the closing price of our common stock was \$20.31. We have not determined whether we will list any of the other securities we may offer on any exchange or over-the-counter market. If we decide to seek the listing of any such securities, the prospectus supplement will identify the exchange or market.

Investing in our securities involves risks. See "Risk Factors" beginning on page 4 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

We or the selling stockholders may sell securities directly or to or through underwriters, dealers or agents. For additional information on the method of sale, you should refer to the section entitled "Plan of Distribution." The names of any underwriters, dealers or agents involved in the sale of any securities and the specific manner in which they may be offered, including any applicable purchase price, fee, commission or discount arrangement between or among them, will be set forth in the prospectus supplement covering the sale of those securities.

TABLE OF CONTENTS

| | Page |
|--|-------------|
| About this Prospectus | 1 |
| Market and Industry Data | 2 |
| Cautionary Statement Regarding Forward-Looking Statements | 3 |
| Our Company | 4 |
| Risk Factors | 4 |
| Use of Proceeds | 4 |
| Ratios of Earnings to Fixed Charges | 5 |
| Selling Stockholders | 6 |
| Description of Capital Stock | 9 |
| Description of Debt Securities | 12 |
| Description of Warrants | 14 |
| Description of Stock Purchase Contracts and Stock Purchase Units | 15 |
| Plan of Distribution | 15 |
| Legal Matters | 17 |
| Experts | 17 |
| Incorporation of Certain Documents by Reference | 17 |
| Where You Can Find More Information | 18 |

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, using a "shelf" registration process. Under the shelf registration process, we may offer and sell, from time to time, in one or more offerings, any combination of the securities described in this prospectus having an aggregate initial offering price of up to \$250,000,000. In addition, the selling stockholders may offer and sell, from time to time, up to 18,079,940 shares of our common stock, in one or more offerings and at prices and on terms that they determine at the time of the offering, as described in this prospectus.

This prospectus provides you with a general description of the securities we may offer and the common stock the selling stockholders may offer. Each time we or the selling stockholders offer securities using this prospectus, we will provide you with a prospectus supplement or other offering materials that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change the information in this prospectus. Please carefully read this prospectus and the applicable prospectus supplement, together with the documents incorporated and deemed to be incorporated by reference in this prospectus and the additional information described below under the heading "Where You Can Find More Information."

As allowed by SEC rules, this prospectus does not contain all the information you can find in the registration statement or the exhibits to the registration statement. For further information, we refer you to the registration statement, including its exhibits. Statements contained in this prospectus about the provisions or contents of any contract, agreement or any other document referred to are not necessarily complete. For each of these contracts, agreements or documents filed as an exhibit to the registration statement, we refer you to the actual exhibit for a more complete description of the matters involved. You should rely only on the information incorporated or deemed to be incorporated by reference or provided in this prospectus and the applicable prospectus supplement. Neither we nor the selling stockholders have authorized any person to provide you with any information or to make any representation that is different from, or in addition to, the information and representations contained in this prospectus and any applicable prospectus supplement or in any of the documents that are incorporated by reference herein or therein. If anyone provides you with different or inconsistent information, you should not rely on it.

You should assume that the information appearing in this prospectus and any applicable prospectus supplement, as well as the information contained in any document incorporated by reference herein or therein, is accurate as of the date of each such document only, unless the information specifically indicates that another date applies. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy by anyone in any jurisdiction in which such offer or solicitation is not authorized, or in which the person is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation.

Unless otherwise specified or the context otherwise requires, references to "\$" or "dollars" in this prospectus or any prospectus supplement are to United States dollars, and the terms "Thermon," "we," "our," "us" and the "Company," as used in this prospectus or any prospectus supplement, refer to Thermon Group Holdings, Inc. and its directly and indirectly owned subsidiaries as a combined entity. Our fiscal year ends on March 31, so references to a particular "fiscal" year are to the twelve months ended on March 31 of the given calendar year.

MARKET AND INDUSTRY DATA

Certain market and industry data included or incorporated by reference in this prospectus has been obtained from third party sources that we believe to be reliable. We have not independently verified such third party information and cannot assure you of its accuracy or completeness. While we are not aware of any misstatements regarding any market, industry or similar data presented herein, such data involves risks and uncertainties and is subject to change based on various factors, including those discussed under the headings "Cautionary Statement Regarding Forward-Looking Statements" and "Risk Factors" in this prospectus.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus includes forward-looking statements within the meaning of the U.S. federal securities laws in addition to historical information. These forward-looking statements are included throughout this prospectus, including in the sections entitled "About this Prospectus," "Market and Industry Data," "Our Company" and "Risk Factors" and include, without limitation, statements regarding our industry, business strategy, plans, goals and expectations concerning our market position, future operations, margins, profitability, capital expenditures, liquidity and capital resources and other financial and operating information. When used in this discussion, the words "anticipate," "assume," "believe," "budget," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "will," "future" and similar terms and phrases are intended to identify forward-looking statements in this prospectus.

Forward-looking statements reflect our current expectations regarding future events, results or outcomes. These expectations may or may not be realized. Some of these expectations may be based upon assumptions, data or judgments that prove to be incorrect. In addition, our business and operations involve numerous risks and uncertainties, many of which are beyond our control, which could result in our expectations not being realized or otherwise materially affect our financial condition, results of operations and cash flows. The statements include but are not limited to statements regarding: (i) our plans to strategically pursue emerging growth opportunities in diverse regions and across industry sectors; (ii) our plans to secure more new facility, or Greenfield, project bids; (iii) our ability to generate facility maintenance, repair and operations, or upgrades or expansions, or MRO/UE, revenue, from our existing and future installed base; (iv) our ability to timely deliver backlog; (v) our ability to respond to new market developments and technological advances; (vi) our expectations regarding energy consumption and demand in the future and its impact on our future results of operations; (vii) our plans to develop strategic alliances with major customers and suppliers; (viii) our expectations that our revenues will continue to increase; (ix) our belief in the sufficiency of our cash flows to meet our needs for the next year; and (x) our expectations regarding anticipated benefits from the recently completed expansion of our principal manufacturing facility in San Marcos, Texas.

Actual events, results and outcomes may differ materially from our expectations due to a variety of factors. Although it is not possible to identify all of these factors, they include, among others, (i) general economic conditions and cyclicalities in the markets we serve; (ii) future growth of energy and chemical processing capital investments; (iii) changes in relevant currency exchange rates; (iv) our ability to comply with the complex and dynamic system of laws and regulations applicable to international operations; (v) a material disruption at any of our manufacturing facilities; (vi) our dependence on subcontractors and suppliers; (vii) our ability to obtain standby letters of credit, bank guarantees or performance bonds required to bid on or secure certain customer contracts; (viii) competition from various other sources providing similar heat tracing products and services, or other alternative technologies, to customers; (ix) our ability to attract and retain qualified management and employees, particularly in our overseas markets; (x) our ability to continue to generate sufficient cash flow to satisfy our liquidity needs; and (xi) the extent to which federal, state, local and foreign governmental regulation of energy, chemical processing and power generation products and services limits or prohibits the operation of our business. Any one of these factors or a combination of these factors could materially affect our future results of operations and could influence whether any forward-looking statements contained in this prospectus ultimately prove to be accurate. See also "Risk Factors" included elsewhere in this prospectus regarding the additional factors that have impacted or may impact our business and operations.

Our forward-looking statements are not guarantees of future performance, and actual results and future performance may differ materially from those suggested in any forward-looking statements. We do not intend to update these statements unless we are required to do so under applicable securities laws.

OUR COMPANY

We are one of the largest providers of highly engineered thermal solutions for process industries. For over 50 years, we have served a diverse base of thousands of customers around the world in attractive and growing markets, including energy, chemical processing and power generation. We are a global leader and one of the few thermal solutions providers with a global footprint and a full suite of products (heating cables, tubing bundles and control systems) and services (design optimization, engineering, installation and maintenance services) required to deliver comprehensive solutions to complex projects. We serve our customers locally through a global network of sales and service professionals and distributors in more than 30 countries and through our four manufacturing facilities on three continents. These capabilities and longstanding relationships with some of the largest multinational energy, chemical processing, power and engineering, procurement and construction, or EPC, companies in the world have enabled us to diversify our revenue streams and opportunistically access high growth markets worldwide.

Our thermal solutions, also referred to as heat tracing, provide an external heat source to pipes, vessels and instruments for the purposes of freeze protection, temperature and flow maintenance and environmental monitoring. Customers typically purchase our products when constructing a new facility, which we refer to as Greenfield projects, or when performing maintenance, repair and operations on a facility's existing heat-traced pipes or upgrading or expanding a current facility, which we refer to collectively as MRO/UE. Our products are low in cost relative to the total cost of a typical processing facility, but critical to the safe and profitable operation of the facility.

The business of the Company was founded as a partnership in October 1954 and later incorporated in Texas in 1960. Thermon Group Holdings, Inc. was incorporated in the State of Delaware in 2010. Our principal executive office is located at 100 Thermon Drive, San Marcos, Texas 78666, and our telephone number is (512) 396-5801. Our website address is www.thermon.com. Information on, or accessible through, our website is not a part of this prospectus or any applicable prospectus supplement and is not incorporated by reference in this prospectus.

RISK FACTORS

An investment in our securities involves a high degree of risk. You should consider carefully the risk factors contained in our most recent Annual Report on Form 10-K, filed with the SEC and incorporated by reference herein. You should also carefully consider the information set forth under "Risk Factors" in any applicable prospectus supplement and in our filings with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, subsequent to our most recent Annual Report on Form 10-K and incorporated by reference herein. You should also consider all other information contained in and incorporated by reference in this prospectus or any applicable prospectus supplement before making an investment decision. Additional risks and uncertainties that are not yet identified or that we think are immaterial may also materially harm our business, financial condition, results of operations and prospects and could result in a complete loss of your investment.

USE OF PROCEEDS

Unless we state otherwise in the applicable prospectus supplement, we expect to use the net proceeds from the sale of the securities for general corporate purposes, including capital expenditures, working capital, repayment or reduction of long-term and short-term debt and the financing of acquisitions. The net proceeds may be invested temporarily in short-term marketable securities or applied to repay short-term debt until they are used for their stated purposes.

We will not receive any proceeds from sales of shares of our common stock by any selling stockholder named in this prospectus or in any prospectus supplement. The proceeds from such an offering would be solely for the account of the selling stockholders. We have agreed, however, to pay certain expenses relating to the registration of the shares of common stock under applicable securities laws.

RATIOS OF EARNINGS TO FIXED CHARGES

Our ratios of earnings to fixed charges for each of the periods indicated are set forth below. The information set forth below should be read together with the financial statements and the accompanying notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations" included in our Annual Report on Form 10-K for the year ended March 31, 2011 and in our Quarterly Report on Form 10-Q for the three and nine months ended December 31, 2011, each of which is incorporated by reference herein.

| | Pre-Predecessor/ Predecessor Combined | | | | Predecessor/ Successor Combined | | |
|--|--|-------------|--------------------|-------------|--|-------------|------------------|
| | Pre-Predecessor(Non-GAAP)(1) | | Predecessor | | (Non-GAAP)(2) | | Successor |
| | Fiscal Year Ended March 31, | | | | | | |
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2010 | 2011 |
| Ratio of earnings to fixed charges(3) | 12.0x | 1.1x | 3.8x | 5.2x | (4) | (4) | 1.6x |

- (1) Derived from the consolidated financial statements of Thermon Industries, Inc. ("Pre-Predecessor") for the period from April 1, 2007 through August 29, 2007 and the consolidated financial statements of Thermon Holdings, LLC ("Predecessor") for the period from August 30, 2007 through March 31, 2008.
- (2) Derived from the consolidated financial statements of Predecessor for the period from April 1, 2010 through April 30, 2010, and the consolidated financial statements of the Company ("Successor") for the period from April 30, 2010 through March 31, 2011.
- (3) For purposes of computing the ratio of earnings to fixed charges, earnings consist of income before income taxes plus fixed charges. Fixed charges consist of interest expense, amortization of deferred financing fees and one-third of rental expense, which amount management believes is representative of the interest component of rental expense.
- (4) Earnings were insufficient to cover fixed charges in fiscal 2011 and the nine months ended December 31, 2010 by \$56.2 million and \$52.2 million, respectively, due to increased interest and amortization expenses, financing fees and other non-recurring expenses related to the acquisition of a controlling interest in us by an investor group led by our private equity sponsors, as described below, which was completed on April 30, 2010.

SELLING STOCKHOLDERS

This prospectus also relates to the possible offering and sale, from time to time, of up to 18,079,940 shares of our common stock by CHS Capital LLC, or CHS; Thompson Street Capital Partners II, L.P., or TSCP; and Crown Investment Series LLC Series 4, or Crown, or affiliates thereof, which we refer to collectively as our private equity sponsors, and certain of our current and former executive officers, employees and directors. Information about our private equity sponsors and current and former officers, employees and directors that may offer shares of common stock pursuant to this prospectus will be set forth in one or more prospectus supplements or in filings that we make with the SEC under the Exchange Act that are incorporated by reference in this prospectus. Each of our private equity sponsors and current and former officers, employees and directors who may offer shares of common stock pursuant to this prospectus acquired the shares in transactions that occurred prior to the date of the filing of the registration statement of which this prospectus forms a part. Our private equity sponsors, led by CHS, acquired their shares as part of the April 2010 acquisition of a controlling interest in the Company. The acquisition was financed in part by an equity investment by our private equity sponsors and certain current and former members of management and key employees, whom we collectively refer to as the management investors. Our private equity sponsors and management investors acquired 24,875,669 shares of our common stock in exchange for an aggregate investment of \$129,252,000. Our private equity sponsors and management investors sold 6,074,902 shares of our common stock as part of our initial public offering, or IPO.

Material Relationships with Selling Stockholders

Securityholder Agreement

The selling stockholders and certain of our other existing equity holders are parties to an amended and restated securityholder agreement, as amended, which we refer to as the Securityholder Agreement, that sets forth certain significant provisions relating to, among other things, our board of directors, open market transfer restrictions, drag-along rights and registration rights.

Board of directors. The Securityholder Agreement provides that each of the parties thereto will vote its shares of our common stock and take all other necessary actions to cause our board of directors to include, so long as CHS owns, in the aggregate, capital stock representing 5% or more of the outstanding shares of our common stock, one director designated by CHS. CHS has the right to remove at any time, and to fill any vacancy arising from time to time with respect to, its respective designated director. In addition, the Securityholder Agreement provides that CHS and TSCP may designate a non-voting observer reasonably acceptable to us to attend any meetings of our board of directors, for so long as each owns, in the aggregate, capital stock representing 5% or more of the outstanding shares of our common stock.

Transfer restrictions. The Securityholder Agreement places certain restrictions on the transfer of our securities in the open market by current and former employee stockholders. Pursuant to the terms of the Securityholder Agreement, the management investors have agreed to certain limitations on their sales of our common stock in the open market. The provisions of the Securityholder Agreement effectively limit the aggregate number of shares of our common stock that may be sold during each calendar quarter by each management investor to 12.5% of the shares of common stock held by that management investor (taking into account any vested options) immediately following the sale of shares pursuant to the partial exercise of the underwriters' over-allotment option in the IPO on May 26, 2011. These limitations will cease to apply when CHS no longer owns 10% or more of the outstanding shares of our common stock.

Drag-along rights. In the event that CHS approves a sale of the Company (whether by merger, sale of shares of common stock, sale of substantially all of the assets of the Company and our

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subsidiaries, or otherwise), all other securityholders party to the Securityholder Agreement must, upon CHS' request, sell in such transaction the same percentage of their respective shares of common stock as CHS proposes to sell.

Registration Rights

Demand registration rights. The holders of at least a majority of the shares of our common stock that were originally issued to or transferred to CHS (other than those shares sold by CHS in the IPO or pursuant to one or more public offerings under the registration statement of which this prospectus forms a part) may, subject to certain exceptions and conditions, demand registration of part or all of such shares under the Securities Act of 1933, as amended, which we refer to as the Securities Act. Such securityholders are entitled to request an unlimited number of demand registrations and to select the managing underwriter for any public offering pursuant to such a demand registration, subject to our reasonable approval; provided, however, that such a registration may not be demanded during the six-month period immediately following the effective date of any long-form registration statement. We may, but not more than once in any 365-day period, defer such a registration for up to six months if we are advised by our counsel that undertaking such registration would accelerate the disclosure of a material development involving us, and we determine in good faith that such disclosure is not in our best interests. The registration statement of which this prospectus forms a part has been filed pursuant to a request made by CHS pursuant to such demand registration rights.

Piggyback registration rights. If, at any time, we determine (or are required as a result of a demand registration) to file a registration statement with the SEC covering any shares of our common stock, other than shares of common stock or other securities that are issuable in an offering to our officers or employees pursuant to an employee benefit plan or in connection with the acquisition of a business, each securityholder party to the Securityholder Agreement will have the right to request that we include their shares of common stock in any such registration statement, subject to specified limitations.

Cutback. In connection with the above demand and piggyback registrations, the managing underwriters may limit, including entirely, the number of shares offered for marketing reasons. In such case, the shares to be included in the registration will be prioritized in accordance with the terms of the Securityholder Agreement.

Expenses. We are required to pay the expenses associated with preparing and filing any registration statement in connection with the above demand and piggyback registrations, other than any underwriting discounts and commissions applicable to the sale of shares.

Manager Equity Agreements

We and CHS have entered into manager equity agreements with each of our management investors, which set forth additional provisions relating to the ownership of our securities. Pursuant to the manager equity agreements, each management investor will maintain the confidentiality of our confidential or proprietary information obtained as a result of such management investor's employment and is subject to non-competition and non-solicitation covenants during employment and for a period of two years thereafter. Upon the termination of a management investor's employment for cause, we will have the option to repurchase any of such management investor's securities at the lower of cost or the fair market value (as determined in good faith by our board of directors) of such securities. Rodney Bingham, George P. Alexander and René van der Salm are among the management investors who are party to manager equity agreements.

Management Fee

In connection with the IPO, we entered into an agreement with our private equity sponsors to terminate the management and consulting services provided under a then existing management services agreement and to eliminate our obligation to pay to them any management fees going forward. Pursuant to the terms of this termination agreement, in May 2011 we paid a one-time cash termination fee in the aggregate amount of \$7,356,757 (of which \$5,032,570 was paid to CHS, \$1,159,936 was paid to TSCP, \$1,107,906 was paid to Crown and \$56,345 was paid to Star Investment Series LLC Series 1, an entity related to Crown). Our obligations with respect to the indemnification of our private equity sponsors or their respective affiliates and reimbursement of their expenses were not affected by this termination. We financed the payment of the termination and advisory fees from available cash on hand.

Agreements with Management

In connection with the IPO, we entered into indemnification agreements with each of our directors and certain officers, including all of our named executive officers. The indemnification agreements and indemnification provisions included in our second amended and restated certificate of incorporation and amended and restated bylaws require us to indemnify our directors and officers to the fullest extent permitted by Delaware law. For further information, see Item 10, "Directors, Executive Officers and Corporate Governance Indemnification of Directors and Officers" in our Annual Report on Form 10-K for the year ended March 31, 2011, which is incorporated by reference herein.

DESCRIPTION OF CAPITAL STOCK

The authorized capital of the Company consists of 150,000,000 shares of common stock, \$0.001 par value per share, of which 30,351,412 shares are issued and outstanding as of May 31, 2012, and 10,000,000 shares of preferred stock, \$0.001 par value per share, of which no shares are issued and outstanding as of the date of this prospectus. The following description of our capital stock is intended as a summary only and is qualified in its entirety by reference to our second amended and restated certificate of incorporation and amended and restated bylaws, and to the applicable provisions of the General Corporation Law of the State of Delaware, which we refer to as the DGCL.

Common Stock

Shares of our common stock have the following rights, preferences and privileges:

Voting Rights. Each outstanding share of common stock entitles its holder to one vote on all matters submitted to a vote of our stockholders, including the election of directors. There are no cumulative voting rights. Generally, all matters to be voted on by stockholders must be approved by a majority of the votes cast by the shares of common stock present in person or represented by proxy and entitled to vote.

Dividends. Subject to the rights of the holders of any preferred stock which may be outstanding from time to time, the holders of common stock are entitled to receive dividends as, when and if dividends are declared by our board of directors out of assets legally available for the payment of dividends. We currently intend to retain earnings to finance the growth and development of our business and for working capital and general corporate purposes. In any event, any determination to pay dividends will be at the discretion of our board of directors and will be dependent upon our results of operations and cash flows, our financial position and capital requirements, general business conditions, and legal, tax, regulatory or contractual restrictions on the payment of dividends, including the restrictions contained in the agreements governing our outstanding indebtedness and any other factors our board of directors deems relevant.

Liquidation. In the event of a liquidation, dissolution or winding up of our affairs, whether voluntary or involuntary, after payment of our liabilities and obligations to creditors and any holders of preferred stock, our remaining assets will be distributed ratably among the holders of shares of common stock on a per share basis.

Rights and Preferences. Our common stock has no preemptive, redemption, conversion or subscription rights. The rights, powers, preferences and privileges of holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Merger. In the event we merge or consolidate with or into another entity, holders of each share of common stock will be entitled to receive the same per share consideration.

Preferred Stock

Our second amended and restated certificate of incorporation provides that the board of directors has the authority, without action by the stockholders, to designate and issue up to 10,000,000 shares of preferred stock in one or more classes or series and to fix for each class or series the powers, rights, preferences and privileges of each series of preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences and the number of shares constituting any class or series, which may be greater than the rights of the holders of the common stock. There are no shares of preferred stock currently outstanding as of the date of this prospectus. Any issuance of shares of preferred stock could adversely affect the voting power of holders of common stock, and the likelihood that the holders will receive dividend payments and payments upon liquidation could have the effect of delaying, deferring or preventing a change in control.

Anti-Takeover Effects of Provisions of Our Second Amended and Restated Certificate of Incorporation, Our Amended and Restated Bylaws and Delaware Law

Some provisions of Delaware law, our second amended and restated certificate of incorporation and our amended and restated bylaws contain provisions that could have the effect of delaying, deterring or preventing another party from acquiring or seeking to acquire control of us. These provisions are intended to discourage certain types of coercive takeover practices and inadequate takeover bids and to encourage anyone seeking to acquire control of us to negotiate first with our board of directors. However, these provisions may also delay, deter or prevent a change in control or other takeover of our company that our stockholders might consider to be in their best interests, including transactions that might result in a premium being paid over the market price of our common stock, and also may limit the price that investors are willing to pay in the future for our common stock. These provisions may also have the effect of preventing changes in our management.

Certificate of Incorporation and Bylaws

Our second amended and restated certificate of incorporation and amended and restated bylaws include anti-takeover provisions that:

authorize our board of directors, without further action by the stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series, and with respect to each series, to fix the number of shares constituting that series and establish the rights and other terms of that series;

require that actions to be taken by our stockholders may be taken only at an annual or special meeting of our stockholders and not by written consent;

specify that special meetings of our stockholders can be called only by our board of directors, the chairman of our board of directors, our chief executive officer or our president;

establish advance notice procedures for stockholders to submit nominations of candidates for election to our board of directors and other proposals to be brought before a stockholders meeting;

provide that our amended and restated bylaws may be amended by our board of directors without stockholder approval;

allow our directors to establish the size of the board of directors by action of the board, subject to a minimum of three members;

provide that vacancies on our board of directors or newly created directorships resulting from an increase in the number of our directors may be filled only by a majority of directors then in office, even though less than a quorum;

do not give the holders of our common stock cumulative voting rights with respect to the election of directors; and

prohibit us from engaging in certain business combinations with any "interested stockholder" (as defined below) unless specified conditions are satisfied as described below under " Business Combinations."

Business Combinations

We have opted out of Section 203 of the DGCL, which regulates corporate takeovers. However, our second amended and restated certificate of incorporation contains provisions that are similar to Section 203 of the DGCL. Specifically, our second amended and restated certificate of incorporation

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provides that we may not engage in certain "business combinations" with any "interested stockholder" for a three-year period following the time that the person became an interested stockholder, unless:

prior to the time that person became an interested stockholder, our board of directors approved either the business combination or the transaction which resulted in the person becoming an interested stockholder;

upon consummation of the transaction which resulted in the person becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding certain shares; or

at or subsequent to the time the person became an interested stockholder, the business combination is approved by the board of directors and by the affirmative vote of at least 66²/₃% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, consolidation, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. Subject to certain exceptions, an interested stockholder is a person who, together with that person's affiliates and associates, owns, or within the previous three years owned, 15% or more of our voting stock. However, in the case of our company, CHS, TSCP and Crown, and any of their respective permitted transferees receiving 15% or more of our voting stock, will not be deemed to be interested stockholders regardless of the percentage of our voting stock owned by them. These provisions could prohibit or delay mergers or other takeover or change in control attempts with respect to us and, accordingly, may discourage attempts to acquire us.

Corporate Opportunity

Our second amended and restated certificate of incorporation provides that we renounce any interest or expectancy in, or in being offered an opportunity to participate in, any business opportunity that may be from time to time presented to our private equity sponsors or any of their respective affiliates (other than us and our subsidiaries), subsidiaries, officers, directors, agents, stockholders, members, partners and employees and that may be a business opportunity for such private equity sponsor, even if the opportunity is one that we or our subsidiaries might reasonably have pursued or had the ability or desire to pursue if granted the opportunity to do so. No such person will be liable to us for breach of any fiduciary or other duty, as a director or officer or otherwise, by reason of the fact that such person, acting in good faith, pursues or acquires any such business opportunity, directs any such business opportunity to another person or fails to present any such business opportunity, or information regarding any such business opportunity, to us unless, in the case of any such person who is our director or officer, any such business opportunity is expressly offered to such director or officer solely in his or her capacity as our director or officer. None of our private equity sponsors has any duty to refrain from engaging directly or indirectly in the same or similar business activities or lines of business as us or any of our subsidiaries.

Limitations on Liability and Indemnification of Officers and Directors

Our second amended and restated certificate of incorporation and amended and restated bylaws limit the liability of our directors to the fullest extent permitted by the DGCL and provide that we will indemnify our officers and directors to the fullest extent permitted by the DGCL. We currently maintain director and officer liability insurance, and intend to continue doing so if such insurance remains available on commercially reasonable terms.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, located at 6201 15th Avenue, Brooklyn, New York 11219.

DESCRIPTION OF DEBT SECURITIES

This section describes the general terms and provisions of the debt securities that we may issue from time to time in the form of one or more series of debt securities. We may offer secured or unsecured debt securities which may be senior or subordinated and which may be convertible. The applicable prospectus supplement and/or other offering materials will describe the specific terms of the debt securities offered through that prospectus supplement as well as any general terms described in this section that will not apply to those debt securities. To the extent the applicable prospectus supplement or other offering materials relating to an offering of debt securities are inconsistent with this prospectus, the terms of that prospectus supplement or other offering materials will supersede the information in this prospectus. In this "Description of Debt Securities," unless otherwise indicated, "we," "our," "the Company" and similar words refer to Thermon Group Holdings, Inc. and not any of its subsidiaries.

The debt securities will be issued under one or more indentures to be entered into between us and one or more trustees. References herein to the "indenture" and the "trustee" refer to the applicable indenture and the applicable trustee pursuant to which any particular series of debt securities is issued. The terms of any series of debt securities will be those specified in or pursuant to the applicable indenture and in the certificates evidencing that series of debt securities and those made part of the indenture by the Trust Indenture Act of 1939, as amended, which we refer to as the Trust Indenture Act. We may issue senior, subordinated and convertible debt securities under the same indenture.

The following summary of selected provisions of the indenture and the debt securities is not complete, and the summary of selected terms of a particular series of debt securities included in the applicable prospectus supplement also will not be complete. You should review the applicable form of indenture and the applicable form of certificate evidencing the debt securities, which forms have been or will be filed as exhibits to the registration statement of which this prospectus is a part or as exhibits to documents which have been or will be incorporated by reference in this prospectus. To obtain a copy of the indenture or the form of certificate for the debt securities, see "Where You Can Find More Information" in this prospectus. The following summary and the summary in any applicable prospectus supplement are qualified in their entirety by reference to all of the provisions of the indenture and the certificates evidencing the debt securities (including any amendments or supplements we may enter into from time to time which are permitted under the debt securities or any indenture), which provisions, including defined terms, are incorporated by reference in this prospectus.

Unless otherwise specified in a prospectus supplement, the debt securities will be direct unsecured obligations of the Company and will rank junior in right of payment to any of our secured indebtedness to the extent of the value of the assets securing such indebtedness, and will be structurally junior to all existing and future indebtedness incurred by our subsidiaries. Any debt securities designated as senior will rank equally with any of our other senior and unsubordinated debt. Any debt securities designated as subordinated will be subordinate and junior in right of payment to any senior indebtedness. There may be subordinated debt securities that are senior or junior to other series of subordinated debt securities.

The applicable prospectus supplement will set forth the terms of the debt securities or any series thereof, including, if applicable:

the title of the debt securities and whether the debt securities will be senior debt securities or subordinated debt securities;

any limit upon the aggregate principal amount of the debt securities;

whether the debt securities will be issued as registered securities, bearer securities or both, and any restrictions on the exchange of one form of debt securities for another and on the offer, sale and delivery of the debt securities in either form;

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the date or dates on which the principal amount of the debt securities will mature;

if the debt securities bear interest, the rate or rates at which the debt securities bear interest, or the method for determining the interest rate, and the date or dates from which interest will accrue;

if the debt securities bear interest, the dates on which interest will be payable, or the method for determining such dates, and the regular record dates for interest payments;

the place or places where the payment of principal, any premium and interest will be made, where the debt securities may be surrendered for transfer or exchange and where notices or demands to or upon us may be served;

any optional redemption provisions, which would allow us to redeem the debt securities in whole or in part;

any sinking fund or other provisions that would obligate us to redeem, repay or purchase the debt securities;

if the currency in which the debt securities will be issuable is United States dollars, the denominations in which any registered securities will be issuable, if other than denominations of \$1,000 and any integral multiple thereof;

if other than the entire principal amount, the portion of the principal amount of debt securities which will be payable upon a declaration of acceleration of the maturity of the debt securities;

the events of default and covenants relevant to the debt securities, including the inapplicability of any event of default or covenant set forth in the indenture relating to the debt securities, or the applicability of any other events of defaults or covenants in addition to the events of default or covenants set forth in the indenture relating to the debt securities;

the name and location of the corporate trust office of the applicable trustee under the indenture for such series of notes;

if other than United States dollars, the currency in which the debt securities will be paid or denominated;

if the debt securities are to be payable, at our election or the election of a holder of the debt securities, in a currency other than that in which the debt securities are denominated or stated to be payable, the terms and conditions upon which that election may be made, and the time and manner of determining the exchange rate between the currency in which the debt securities are denominated or stated to be payable and the currency in which the debt securities are to be so payable;

the designation of the original currency determination agent, if any;

if the debt securities are issuable as indexed securities, the manner in which the amount of payments of principal, any premium and interest will be determined;

if the debt securities do not bear interest, the dates on which we will furnish to the applicable trustee the names and addresses of the holders of the debt securities;

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if other than as set forth in an indenture, provisions for the satisfaction and discharge or defeasance or covenant defeasance of that indenture with respect to the debt securities issued under that indenture;

the date as of which any bearer securities and any global security will be dated if other than the date of original issuance of the first debt security of a particular series to be issued;

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whether and under what circumstances we will pay additional amounts to non-United States holders in respect of any tax assessment or government charge;

whether the debt securities will be issued in whole or in part in the form of a global security or securities and, in that case, any depository and global exchange agent for the global security or securities, whether the global form shall be permanent or temporary and, if applicable, the exchange date;

if debt securities are to be issuable initially in the form of a temporary global security, the circumstances under which the temporary global security can be exchanged for definitive debt securities and whether the definitive debt securities will be registered securities, bearer securities or will be in global form and provisions relating to the payment of interest in respect of any portion of a global security payable in respect of an interest payment date prior to the exchange date;

the extent and manner to which payment on or in respect of debt securities will be subordinated to the prior payment of our other liabilities and obligations;

whether payment of any amount due under the debt securities will be guaranteed by one or more guarantors, including one or more of our subsidiaries;

whether the debt securities will be convertible and the terms of any conversion provisions;

the forms of the debt securities; and

any other terms of the debt securities, which terms shall not be inconsistent with the requirements of the Trust Indenture Act.

This prospectus is part of a registration statement that provides that we may issue debt securities from time to time in one or more series under one or more indentures, in each case with the same or various maturities, at par or at a discount. Unless otherwise indicated in a prospectus supplement, we may issue additional debt securities of a particular series without the consent of the holders of the debt securities of such series outstanding at the time of the issuance. Any such additional debt securities, together with all other outstanding debt securities of that series, will constitute a single series of debt securities under the applicable indenture.

We intend to disclose any restrictive covenants for any issuance or series of debt securities in the applicable prospectus supplement.

DESCRIPTION OF WARRANTS

We may issue warrants to purchase debt securities, shares of common stock or shares of preferred stock. We may issue warrants independently or together with other securities. Warrants sold with other securities may be attached to or separate from the other securities. We will issue warrants under one or more warrant agreements between us and a warrant agent that we will name in the prospectus supplement.

The prospectus supplement relating to any warrants we are offering will include specific terms relating to the offering. These terms will include some or all of the following:

the title of the warrants;

the aggregate number of warrants offered;

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the designation, number and terms of the debt securities, shares of common stock or shares of preferred stock purchasable upon exercise of the warrants and procedures by which those numbers may be adjusted;

the exercise price of the warrants;

the dates or periods during which the warrants are exercisable;

the designation and terms of any securities with which the warrants are issued;

if the warrants are issued as a unit with another security, the date on and after which the warrants and the other security will be separately transferable;

if the exercise price is not payable in U.S. dollars, the foreign currency, currency unit or composite currency in which the exercise price is denominated;

any minimum or maximum amount of warrants that may be exercised at any one time;

any terms relating to the modification of the warrants; and

any terms, procedures and limitations relating to the transferability, exchange or exercise of the warrants.

DESCRIPTION OF STOCK PURCHASE CONTRACTS AND STOCK PURCHASE UNITS

We may issue stock purchase contracts, including contracts obligating holders to purchase from us, and us to sell to the holders, a specified number of shares of common stock at a future date or dates, which we refer to in this prospectus as stock purchase contracts. The price per share of common stock and number of shares of common stock may be fixed at the time the stock purchase contracts are issued or may be determined by reference to a specific formula set forth in the stock purchase contracts. The stock purchase contracts may be issued separately or as a part of units consisting of a stock purchase contract and our debt securities or debt obligations of third parties, securing the holders' obligations to purchase the shares of common stock under the stock purchase contracts, which we refer to in this prospectus as stock purchase units. The stock purchase contracts may require holders to secure their obligations thereunder in a specified manner. The stock purchase contracts also may require us to make periodic payments to the holders of the stock purchase units or vice-versa and such payments may be unsecured or prefunded on some basis.

The applicable prospectus supplement will describe the terms of any stock purchase contracts or stock purchase units. The description in the prospectus supplement will not necessarily be complete, and reference will be made to the stock purchase contracts, and, if applicable, collateral or depositary arrangements, relating to the stock purchase contracts or stock purchase units. Material United States federal income tax considerations applicable to the stock purchase units and the stock purchase contracts will also be discussed in the applicable prospectus supplement.

PLAN OF DISTRIBUTION

We or the selling stockholders may sell the applicable securities covered by this prospectus from time to time in one or more transactions, including, without limitation:

directly to one or more purchasers;

through agents;

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to or through underwriters, brokers or dealers; or

through a combination of any of these methods.

A distribution of the securities offered by this prospectus may also be effected through the issuance of derivative securities, including, without limitation, warrants, subscriptions, exchangeable securities, forward delivery contracts and the writing of options.

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In addition, the manner in which we may sell some or all of the securities covered by this prospectus and the manner in which the selling stockholders may sell their shares of common stock, include, without limitation, through:

a block trade in which a broker-dealer will attempt to sell as agent, but may position or resell a portion of the block, as principal, in order to facilitate the transaction;

purchases by a broker-dealer, as principal, and resale by the broker-dealer for its account;

ordinary brokerage transactions and transactions in which a broker solicits purchasers; or

privately negotiated transactions.

We or the selling stockholders may also enter into hedging transactions. For example, we or the selling stockholders may:

enter into transactions with a broker-dealer or affiliate thereof in connection with which such broker-dealer or affiliate will engage in short sales of shares of common stock pursuant to this prospectus, in which case such broker-dealer or affiliate may use shares of common stock received from us or the selling stockholders, as applicable, to close out its short positions;

sell securities short and re-deliver such shares to close out our or the selling stockholders' short positions;

enter into option or other types of transactions that require us or the selling stockholders, as applicable, to deliver shares of common stock to a broker-dealer or an affiliate thereof, who will then resell or transfer the shares of common stock under this prospectus; or

loan or pledge the shares of common stock to a broker-dealer or an affiliate thereof, who may sell the loaned shares or, in an event of default in the case of a pledge, sell the pledged shares pursuant to this prospectus.

A prospectus supplement with respect to each offering of securities will state the terms of the offering of the securities, including:

the name or names of any underwriters or agents and the amounts of securities underwritten or purchased by each of them, if any;

the public offering price or purchase price of the securities and the net proceeds, if any, to be received from the sale by us or the selling stockholders;

any delayed delivery arrangements;

any underwriting discounts or agency fees and other items constituting underwriters' or agents' compensation;

any discounts or concessions allowed or reallocated or paid to dealers; and

any securities exchange or markets on which the securities may be listed.

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The offer and sale of the securities described in this prospectus by us, the selling stockholders, the underwriters or the third parties described above may be effected from time to time in one or more transactions, including privately negotiated transactions, either:

at a fixed price or prices, which may be changed;

at market prices prevailing at the time of sale;

at prices related to the prevailing market prices; or

at negotiated prices.

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Any public offering price and any discounts, commissions, concessions or other items constituting compensation allowed or reallocated or paid to underwriters, dealers, agents or remarketing firms may be changed from time to time. The selling stockholders, underwriters, dealers, agents and remarketing firms that participate in the distribution of the offered securities may be "underwriters" as defined in the Securities Act. Any discounts or commissions they receive from us or the selling stockholders and any profits they receive on the resale of the offered securities may be treated as underwriting discounts and commissions under the Securities Act. We or the selling stockholders will identify any underwriters, agents or dealers and describe their commissions, fees or discounts in the applicable prospectus supplement.

Members of the Financial Industry Regulatory Authority, Inc., or FINRA, may participate in distributions of the offered debt securities. In compliance with the guidelines of FINRA, as of the date of this prospectus, the maximum discount or commission to be received by any FINRA member or independent broker-dealer may not exceed 8.0% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

LEGAL MATTERS

The legality of the securities offered hereby will be passed upon for us by Sidley Austin LLP, Chicago, Illinois. The legality of the securities offered hereby and certain other matters for any underwriters, dealers or agents will be passed upon by counsel as may be specified in the applicable prospectus supplement.

EXPERTS

Our consolidated financial statements as of March 31, 2011(Successor) and 2010 (Predecessor) of Thermon Holdings, LLC, and the related consolidated statements of operations, members'/shareholders' equity, and cash flows for the period from May 1, 2010 to March 31, 2011(Successor), for the period from April 1, 2010 to April 30, 2010 (Predecessor) and for the years ended March 31, 2010 and 2009 (Predecessor), incorporated in the registration statement of which this prospectus forms a part by reference to the Company's Annual Report on Form 10-K for the period ended March 31, 2011, have been audited by Ernst & Young LLP, independent registered public accounting firm, as stated in their report thereon appearing therein, and are based in part on the reports of MNP LLP, Bell Partners and Shanghai Jialiang CPAs, with respect to Thermon Canada Inc., Thermon Australia Pty Ltd. and Thermon Heat Tracing & Engineering (Shanghai) Co., Ltd., respectively. The financial statements referred to above are included in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

We are incorporating by reference certain documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents. Any information that we reference this way is considered part of this prospectus.

We incorporate by reference into this prospectus the documents listed below and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (i) after the date of the initial registration statement and prior to effectiveness of the registration statement and (ii) between the date of this prospectus and the date of the closing of each offering, other than information furnished pursuant to Item 2.02 or 7.01 (including any financial statements or exhibits relating thereto furnished pursuant to Item 9.01) of any Current Report on Form 8-K, unless expressly stated otherwise in such Current Report on Form 8-K. You should review these filings as they may disclose a change in our business, prospects, financial condition or other affairs after the date of this prospectus.

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This prospectus incorporates by reference the documents listed below that we have filed with the SEC but have not included or delivered with this prospectus:

our Annual Report on Form 10-K for the fiscal year ended March 31, 2011, filed with the SEC on June 20, 2011;

our Quarterly Reports on Form 10-Q for the quarters ended June 30, 2011, September 30, 2011 and December 31, 2011, filed with the SEC on August 12, 2011, November 14, 2011 and February 9, 2012, respectively;

our Current Reports on Form 8-K filed on May 13, 2011, June 2, 2011, June 7, 2011, July 11, 2011, August 5, 2011, November 22, 2011, April 2, 2012 and May 10, 2012, and our Current Report on Form 8-K/A filed on July 7, 2011; and

the description of Thermon Group Holdings, Inc.'s common stock contained in the Company's registration statement on Form 8-A filed with the SEC on April 28, 2011 under Section 12(b) of the Exchange Act, including any amendment or report filed for the purposes of updating such description.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed modified or superseded for purposes of this prospectus to the extent that a statement contained herein or in any other subsequently filed document which also is, or is deemed to be, incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Exchange Act, and, as a result, are required to file periodic reports, proxy statements and other information with the SEC. We have filed a registration statement on Form S-3 under the Securities Act with the SEC with respect to the shares of our common stock covered by this prospectus. This prospectus is a part of that registration statement. The registration statement contains additional important information about us and our capital stock. The rules and regulations of the SEC allow us to omit from this prospectus certain information that is included in the registration statement. You should refer to the registration statement and its exhibits to read that information.

You may read and copy the registration statement, the related exhibits, the periodic reports we file and the other material we file with the SEC at its Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Information on the operation of the Public Reference Room may be obtained by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet site at <http://www.sec.gov>, from which interested persons can electronically access the registration statement, including the exhibits thereto. Copies of the registration statement, including the exhibits thereto, are also available at your request, without charge, from Thermon Group Holdings, Inc., 100 Thermon Drive, San Marcos, TX 78666, Attention: Investor Relations. Our telephone number at that address is (512) 396-5801. We also maintain an Internet site at <http://www.thermon.com>. Our website and the information contained therein or connected thereto shall not be deemed to be incorporated into this prospectus or the registration statement of which it forms a part.

Table of Contents

8,000,000 Shares

Thermon Group Holdings, Inc.

Common Stock

Prospectus Supplement
September , 2012

Joint Book-Running Managers

Barclays

Jefferies

Co-Managers

William Blair

BMO Capital Markets

KeyBanc Capital Markets
