FUEL TECH, INC.
Form 10-K
March 18, 2013
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SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 [NO FEE REQUIRED]**

For the fiscal year ended: December 31, 2012

OR

¨ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 [NO FEE REQUIRED]**

For the transition period from to

Commission File No. 001-33059

Fuel Tech, Inc.

(Exact name of registrant as specified in its charter)

Delaware	20-5657551
(State or other jurisdiction of incorporation of organization)	(I.R.S. Employer Identification Number)

Fuel Tech, Inc.

27601 Bella Vista Parkway

Warrenville, IL 60555-1617

630-845-4500

www.ftek.com

(Address and telephone number of principal executive offices)

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

Common Stock $0.01 par value per share	The NASDAQ Stock Market, Inc.
(Title of Class)	(Name of Exchange on Which Registered)

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ¨ No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No x

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x **No ¨**

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, non-accelerated filer or a smaller reporting company (as defined in rule 12b-2 under the Securities Exchange Act of 1934).

Large Accelerated Filer ¨	**Accelerated Filer** x
Non-accelerated Filer ¨ (Do not check if a smaller reporting company)	**Smaller reporting company ¨**

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

The aggregate market value of the voting stock held by non-affiliates of the registrant at June 30, 2012 was approximately $108,262,000 based on the closing stock price as reported on the NASDAQ Stock Exchange.

Indicate number of shares outstanding of each of the registered classes of Common Stock at March 18, 2013: 22,102,549 shares of Common Stock, $0.01 par value.

Documents incorporated by reference:

Certain portions of the registrant s definitive Proxy Statement for the annual meeting of stockholders to be held in 2013 are incorporated by reference in Parts II, III, and IV hereof.

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TABLE OF DEFINED TERMS

Term	Definition
AIG	Ammonia Injection Grid
ASCR	A trademark used to describe Fuel Tech s Advanced Selective Catalytic Reduction process
CAAA	Clean Air Act Amendments of 1990
CAIR	Clean Air Interstate Rule
CAVR	Clean Air Visibility Rule
CFD	Computational Fluid Dynamics
FGC	Flue Gas Conditioning
FUEL CHEM®	A trademark used to describe Fuel Tech s fuel and flue gas treatment processes, including its TIFI® Targeted In-Furnace Injection technology to control slagging, fouling, corrosion and a variety of sulfur trioxide-related issues
GSG	Graduated Straightening Grid
HERT High Energy Reagent Technology	A trademark used to describe a Fuel Tech Selective Non-Catalytic Reduction process
Loan Notes	Nil-coupon, non-redeemable convertible unsecured loan notes of Fuel Tech
NO^x	Oxides of nitrogen
NO^xOUT®	A trademark used to describe Fuel Tech s Selective Non-Catalytic Reduction process for the reduction of NOx
NO^xOUT-SCR®	A trademark used to describe Fuel Tech s direct injection of urea as a catalyst reagent
NO^xOUT CASCADE®	A trademark used to describe Fuel Tech s combination of Selective Non-Catalytic Reduction and Selective Catalytic Reduction
SCR	Selective Catalytic Reduction
SIP Call	State Implementation Plan Regulation
SNCR	Selective Non-Catalytic Reduction
TCI® Targeted Corrosion Inhibition	A trademark used to describe the FUEL CHEM program designed for high-temperature slag and corrosion control, principally in waste-to-energy boilers
TIFI® Targeted In-Furnace Injection	A trademark used to describe Fuel Tech s proprietary technology that enables the precise injection of a chemical reagent into a boiler or furnace as part of a FUEL CHEM program
ULTRA	A trademark used to describe Fuel Tech s process for generating ammonia for use as Selective Catalytic Reduction reagent

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EXPLANATORY NOTE

The Company s independent registered public accounting firm, McGladrey LLP (McGladrey), recently advised the Company s Audit Committee that it had identified a matter that raised questions in relation to the SEC s auditor independence rules. Specifically, an entity associated with McGladrey provided certain bookkeeping and payroll processing services to the Company s subsidiary in China which were not consistent with the auditor independence rules. The services were provided in 2010 and 2011 and in the first quarter of 2012; the fees for the services were insignificant. McGladrey noted for the Audit Committee that during each of these periods, its audit engagement team was not aware of the services being provided to the Company s subsidiary in China. McGladrey advised the Audit Committee that it believes that this matter did not compromise or impair its integrity or objectivity with respect to conducting its audits and issuing reports on the Company s consolidated financial statements, and the Audit Committee upon careful evaluation agreed with these conclusions. As an additional measure taken in response to the matter described above, the Audit Committee engaged another independent accounting firm to perform an audit of the Company s subsidiary in China for the year ended December 31, 2012; the firm performing this audit is providing the results of its audit work to McGladrey, so that McGladrey can issue its report on the Company s consolidated financial statements for the year ended December 31, 2012.

As a result of the steps taken to resolve this matter, the audit of the Company s 2012 consolidated financial statements could not be completed by March 18, 2013, the date by which this annual report on Form 10-K is required to be filed under applicable SEC rules, and this annual report on Form 10-K does not include information required under Items 6, 7, 7A, 8 and 9A of Form 10-K and does not include Exhibits 23 and 32 or complete certifications in the form of Exhibit 31 and Exhibit 32. Upon issuance of McGladrey s audit report on the Company s 2012 consolidated financial statements, the Company will file a corresponding amendment to this Form 10-K to include the foregoing information. The Company believes that it will be able to file this amendment on or before April 1, 2013, but no assurances can be given that this will be the case.

PART I

Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements, as defined in Section 21E of the Securities Exchange Act of 1934, as amended, that are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and reflect our current expectations regarding our future growth, results of operations, cash flows, performance and business prospects, and opportunities, as well as assumptions made by, and information currently available to, our management. We have tried to identify forward-looking statements by using words such as anticipate, believe, plan, expect, intend, will, and similar expressions, but these words are not the exclusive means of identi forward-looking statements. These statements are based on information currently available to us and are subject to various risks, uncertainties, and other factors, including, but not limited to, those discussed herein under the caption Risk Factors that could cause our actual growth, results of operations, financial condition, cash flows, performance and business prospects and opportunities to differ materially from those expressed in, or implied by, these statements. Except as expressly required by the federal securities laws, we undertake no obligation to update such factors or to publicly announce the results of any of the forward-looking statements contained herein to reflect future events, developments, or changed circumstances or for any other reason. Investors are cautioned that all forward-looking statements involve risks and uncertainties, including those detailed in Fuel Tech s filings with the Securities and Exchange Commission. See Risk Factors in Item 1A.

ITEM 1 BUSINESS

As used in this Annual Report on Form 10-K, the terms we, us, our, the Company, and Fuel Tech refer to Fuel Tech, Inc. and our wholly-ow subsidiaries.

Fuel Tech

Fuel Tech is a fully integrated company that uses a suite of advanced technologies to provide boiler optimization, efficiency improvement and air pollution reduction and control solutions to utility and industrial customers worldwide. Originally incorporated in 1987 under the laws of the Netherlands Antilles as Fuel-Tech N.V., Fuel Tech became domesticated in the United States on September 30, 2006, and continues as a Delaware corporation with its corporate headquarters at 27601 Bella Vista Parkway, Warrenville, Illinois, 60555-1617. Fuel Tech maintains an Internet website at www.ftek.com. Our Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934 are made available through our website as soon as reasonably practical after we electronically file or furnish the reports to the Securities and Exchange Commission. Also available on our website are the Company s Corporate Governance Guidelines and Code of Ethics and Business Conduct, as well as the charters of the Audit, Compensation, and Nominating and Corporate Governance Committees of the Board of Directors. All of these documents are available in print without charge to stockholders who request them. Information on our website is not incorporated into this report.

Fuel Tech s special focus is the worldwide marketing of its nitrogen oxide (NO_x) reduction and FUEL CHEM® technologies. The Air Pollution Control (APC) technology segment reduces NO_x emissions in flue gas from boilers, incinerators, furnaces and

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other stationary combustion sources by utilizing combustion optimization techniques and Low NO_x and Ultra Low NO_x Burners; NO_xOUT® and HERT High Energy Reagent Technology SNCR systems; systems that incorporate Advanced SCR (ASCR) and NO_xOUT CASCADE® technologies, ULTRA and NO_xOUT-SCR® technologies; and Ammonia Injection Grid (AIG) and Graduated Straightening Grid (GSG) technologies. Fuel Tech s APC technology business is materially dependent on the continued existence and enforcement of worldwide air quality regulations. The FUEL CHEM technology segment improves the efficiency, reliability and environmental status of combustion units by controlling slagging, fouling and corrosion, as well as the formation of sulfur trioxide, ammonium bisulfate, particulate matter ($PM_{2.5}$), carbon dioxide, and unburned carbon in fly ash through the addition of chemicals into the fuel or via TIFI® Targeted In-Furnace Injection programs. Fuel Tech has other technologies, both commercially available and in the development stage, all of which are related to APC and FUEL CHEM processes or are similar in their technological base.

American Bailey Corporation

Douglas G. Bailey, Chairman, Chief Executive Officer, President, and Director of Fuel Tech, is a stockholder of American Bailey Corporation (ABC), which is a related party. On January 1, 2004, Fuel Tech entered into an agreement whereby ABC reimburses Fuel Tech for services that certain employees of Fuel Tech provide to ABC. ABC is a sub-lessee under Fuel Tech s February 1, 2010 lease of its offices in Stamford, Connecticut, which runs through December 31, 2019, and ABC reimburses Fuel Tech for its share of lease and lease-related expenses under the sublease agreement. The amount due from ABC related to both compensation and the sublease agreement was approximately $16, $27, and $217 at December 31, 2012, 2011, and 2010, respectively. Additionally, see the more detailed information relating to this subject under the caption Certain Relationships and Related Transactions in Fuel Tech s definitive Proxy Statement to be distributed in connection with Fuel Tech s 2013 Annual Meeting of Stockholders, which information is incorporated by reference.

Air Pollution Control

Regulations and Markets: Domestic

The U.S. air pollution control market, and more specifically federal and state NO_x regulations, currently is the primary driver in Fuel Tech s APC technology segment. This market is dependent on air pollution regulations and their continued enforcement. These regulations are based on the Clean Air Act Amendments of 1990, which require reductions in NO_x emissions on varying timetables with respect to various sources of emissions. The EPA s efforts to implement these regulations have been complicated by legal challenges in the Federal courts.

The SIP Call: In 1994, governors of 11 Northeastern states, known collectively as the Ozone Transport Region, signed a Memorandum of Understanding requiring utilities to reduce their NO_x emissions by 55% to 65% from 1990 levels by May 1999. In 1998, the Environmental Protection Agency (EPA) announced more stringent regulations. Under the State Implementation Plan (SIP) Call, a regulation promulgated under the Amendments (discussed further below), over 1,000 utility and large industrial boilers in 19 states were required to achieve NO_x reduction targets by May 31, 2004. The Ozone Transport SIP Call regulation, designed to mitigate the effects of wind-aided ozone transported from the Midwestern and Southeastern U.S. into the Northeastern non-attainment areas, required, following the litigation described below, 19 states to make even deeper aggregate reductions of 85% from 1990 levels by May 31, 2004. Additionally, most other states with non-attainment areas were also required to meet ambient air quality standards for ozone by 2007.

The SIP Call was the subject of litigation, but an appellate court of the U.S. District Court of Appeals for the District of Columbia Circuit upheld the validity of this regulation. The D.C. Circuit Court s ruling was later affirmed by the U.S. Supreme Court in 2001 when , in a unanimous decision, the Supreme Court upheld EPA s authority to revise the National Ambient Air Quality Standard for ozone to 0.080 parts per million averaged through an eight-hour period from the then current 0.120 parts per million for a one-hour period. This more stringent standard provided clarity and impetus for air pollution control efforts well beyond the then current ozone attainment requirement. In keeping with this trend, the Supreme Court, only days later, denied industry s attempt to stay the SIP Call, effectively exhausting all means of appeal. The ozone standard is currently 0.075 parts per million averaged over an eight-hour period, a level established in May 2008. EPA is planning to propose an updated ozone standard in December 2013, with a final rule scheduled for mid-2014.

CAIR: On December 23, 2003, the EPA proposed a new regulation affecting the SIP Call states by specifying more expansive NO_x reduction. This rule, known as the Clean Air Interstate Rule (CAIR), was adopted by the EPA in 2005. CAIR specifies that additional annual NO_x reduction requirements be extended to most SIP-affected units in 28 Eastern states, while permitting a cap and trade format similar to the SIP Call. The Company estimates an additional 1,300 electric generating units using coal and other fuels to be affected by this rule. In an action related to CAIR, on June 15, 2005, the EPA issued the Clean Air Visibility Rule (CAVR), which is a nationwide initiative to improve federally preserved areas through reduction of NO_x and other pollutants. CAVR expands the NO_x reduction market to Western states unaffected by CAIR or the SIP Call. Compliance begins in 2013 and CAVR will potentially affect an additional 230 Western coal-fired electric-generating units. In addition, CAVR, along with the anticipated updated EPA rule for eight-hour ozone attainment, have the potential to impact thousands of boilers

and industrial units in multiple industries nationwide for units burning coal and other fuels starting in 2013.

On July 11, 2008, the U.S. District Court of Appeals for the District of Columbia Circuit vacated the CAIR regulations under the premise that the EPA exceeded its authority when the rule was created in 2005. The court found more than several fatal flaws in the rule but did not take issue with the concept that NO_x emissions are to be controlled or the limits and thresholds established

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by CAIR. In vacating the rule in its entirety, the court remanded to EPA to promulgate a rule consistent with the D.C. Circuit Court s opinion. On December 23, 2008, the D.C. Circuit Court granted a petition by the EPA to keep the CAIR regulation in place while the EPA conducted further proceedings consistent with the court s prior opinion. In summary, the court stated that allowing CAIR to remain in effect until it is replaced by a rule consistent with our opinion would at least temporarily preserve the environmental values covered by CAIR. CAIR was re-instated and required the affected states to be in year-round NO_x emission compliance beginning January 1, 2009.

CSAPR: As a replacement for CAIR, EPA issued the Cross State Air Pollution Rule (CSAPR) in July 2011. CSAPR included more stringent NO_x regulations affecting 27 states, with compliance for the first phase in 2012, with additional reductions required in the second phase by 2014. Under CSAPR, state emission caps were designated to mitigate the emission impact on downwind states by controlling emissions from upwind states. If sources within a state caused the state to exceed its assurance limit, severe penalties including a two-for-one reduction based on each source s contribution percentage of the state overage would be applied. A stay on CSAPR was ordered by the D.C. Circuit Court on December 30, 2011, pending resolution of litigation filed by a number of states and companies with combustion sources. The D.C. Circuit Court vacated CSAPR on August 21, 2012. The decision identified issues with EPA procedures and authority of certain CSAPR provisions which were not consistent with the Clean Air Act. On October 5, 2012, EPA filed for an en banc review of CSAPR by the full DC Circuit Court, which was rejected. on January 24, 2013. As a result of the demise of CSAPR, CAIR was once again re-instated.

The primary driver of CSAPR, CAIR and any EPA rule relating to NOx and ozone standards is the Federal Clean Air Act which includes National Ambient Air Quality Standards for criteria pollutants. Even following the vacating of CSAPR, these fundamental emission requirements continue to remain in effect and states must comply with the requirements of this law, and new NAAQS standards for nitrogen dioxide (NO_2) were issued in 2010, and tighter ozone standards are expected in 2014.

Regulations and Markets: International

Fuel Tech also sells NO_x control systems outside the United States, specifically in Europe, Latin America, and in the Pacific Rim, including the People s Republic of China (China). Under European Union Directives and new regulations in Chile, certain power plants must come into compliance with specified NO_x reduction targets by 2016.

China also continues to represent an attractive opportunity for Fuel Tech as the government set pollution control and energy conservation and efficiency improvements as top priorities as part of tightened standards that were issued in 2012. Fuel Tech has viable technologies to help achieve these objectives. China s dominant reliance on coal as an energy resource is not expected to change in the foreseeable future. China alone is forecasted to account for 76% of the projected increase in world coal use through 2035. Clean air will continue to be a pressing issue, especially given China s robust economic growth, expected growth in thermal power production, and an increasingly expanded role in international events and organizations.

China s Ministry of Environmental Protection issued regulations to be implemented as part of the Twelfth Five-Year Plan, running from 2011 to 2015, in support of reducing harmful pollutants and further defining the technologies recommended to achieve the reductions. The regulations for NO_x apply to all thermal power units that have a steaming rate of 65 tons per hour (155 megawatts (MW)) or larger. Newly constructed units and existing units that were approved subsequent to December 31, 2003, must meet the same stringent emission standard, while certain existing units approved prior to December 31, 2003 must meet a standard that is less stringent. In addition, all units that are in Key Regions must achieve the same standard as the newly constructed units. Key Regions are defined as those areas that are highly developed or highly populated and are sensitive to environmental overloading. All existing coal and oil-fired thermal units must comply with the proposed regulation by January 1, 2014 while all new units were scheduled to comply by January 1, 2012.

In addition, the regulation noted that NO_x reduction should be achieved via the use of Low NO_x Burners and Over-Fire Air systems in combination with Selective Non-Catalytic Reduction (SNCR) or SCR, where appropriate, to achieve required emissions levels. The combination of SNCR and SCR technologies in tandem is also considered as a viable technology choice.

While the current regulations do not specifically comment on the use of urea as the preferred reducing reagent in the NO_x control process in high population density areas, Fuel Tech believes that technologies to convert urea to ammonia will be deployed in Key Regions in support of safety objectives, and this practice has already been implemented in major cities such as Beijing, Guangzhou and Shanghai.

Fuel Tech has established a market position in NO_x control resulting from the initial national demonstration projects utilizing NO_xOUT CASCADE® technology at Jiangsu Kanshan (two new 600 MW units), NO_xOUT SNCR® technology at Jiangyin Ligang (four new 600 MW units) and Inner Mongolia (two new 600 MW units), and ULTRA technology on projects in Beijing (multiple projects on units of varying sizes including two district heating units), Zhejiang (four 1000 MW retrofit units), Shanxi (two new 660 MWunits) and Liaoning (two new 330 MW units). These projects have established Fuel Tech s NO_xcontrol technologies as being acceptable for use in reducing NO_x emissions and have

resulted in additional contracts in China. The regulations established in support of the NO_x standards defined as part of the Twelfth Five-Year Plan will offer potential business opportunities for Fuel Tech and its suite of NO_x technologies.

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Products

Fuel Tech s NO_x reduction technologies are installed worldwide on over 700 combustion units, including utility, industrial and municipal solid waste applications. Our products include customized NO_x control systems and our patented ULTRA™ technology, which converts urea-to-ammonia on site which provides safe reagent for use in Selective Catalytic Reduction (SCR) systems.

Low NO_x Burners and Ultra Low NO_x Burners (LNB and ULNB) are available for coal-, oil-, and gas-fired industrial and utility units. Each system application is specifically designed to maximize NO_x reduction. Computational fluid dynamics combustion modeling is used to validate the design prior to fabrication of equipment. NO_x reductions can range from 40%-60% depending on the fuel type. Over-Fire Air (OFA) systems stage combustion for enhanced NO_x reduction. Additional NO_x reductions, beyond Low NO_x Burners, of 35% - 50% are possible on different boiler configurations on a range of fuel types. Combined overall reductions range from 50% - 70%, with overall capital costs ranging from $10 - $20/kW and total costs ranging from $300 - $1,500/ton of NO_x removed, depending on the scope.

Fuel Tech s NO_xOUT® and HERT SNCR processes use non-hazardous urea as the reagent rather than ammonia. Both the NO_xOUT® and HERT processes on their own are capable of reducing NO_x by up to 25% - 50% for utilities and by potentially significantly greater amounts for industrial units in many types of plants with capital costs ranging from $5 - $20/kW for utility boilers and with total annualized operating costs ranging from $1,000 - $2,000/ton of NO_x removed.

Fuel Tech s Advanced Selective Catalytic Reduction (ASCR) systems include LNB, OFA, and SNCR components, along with a downsized SCR catalyst, Ammonia Injection Grid (AIG), and Graduated Straightening Grid (GSG) systems to provide up to 90% NO_x reduction at significantly lower capital and operating costs than conventional SCR systems while providing greater operational flexibility to plant operators. The capital costs for ASCR systems can range from $30 - $150/kW depending on boiler size and configuration, which is significantly less than that of conventional SCRs, which can cost $300/kW or more, while operating costs are competitive with those experienced by SCR systems. The NO_xOUT CASCADE® and NO_xOUT-SCR® processes are basic types of ASCR systems which use just SNCR and SCR catalyst components. The NO_xOUT CASCADE® systems can achieve 60% - 70% NO_x reduction, with capital costs being a portion of the ASCR values defined above. Fuel Tech s NO_xOUT-SCR® process utilizes urea as the SCR catalyst reagent to achieve NO_x reductions of up to 85% from smaller stationary combustion sources with capital and operating costs competitive with equivalently sized, standard SCR systems.

Fuel Tech s ULTRA process is designed to convert urea to ammonia safely and economically for use as a reagent in the SCR process for NO_x reduction. Recent local objections in the ammonia permitting process have raised concerns regarding the safety of ammonia shipment and storage in quantities sufficient to supply SCR. In addition, the Department of Homeland Security has characterized anhydrous ammonia as a Toxic Inhalation Hazard commodity. This is contributing to new restrictions by rail carriers on the movement of anhydrous ammonia and to an escalation in associated rail transport and insurance rates. Overseas, new coal-fired power plants incorporating SCR systems are expected to be constructed at a rapid rate in China, and Fuel Tech s ULTRA process is believed to be a market leader for the safe conversion of urea to ammonia just prior to injection into the flue gas duct, which is particularly important near densely populated cities, major waterways, harbors or islands, or where the transport of anhydrous or aqueous ammonia is a safety concern.

Fuel Tech s SCR group provides process design optimization, performance testing and improvement, and catalyst selection services for SCR systems on coal-fired boilers. In addition, other related services, including start-ups, maintenance support and general consulting services for SCR systems, Ammonia Injection Grid design and tuning to help optimize catalyst performance, and catalyst management services to help optimize catalyst life, are now offered to customers around the world. Fuel Tech also specializes in both physical experimental models, which involve construction of scale models through which fluids are tested, and computational fluid dynamics models, which simulate fluid flow by generating a virtual replication of real-world geometry and operating inputs. Fuel Tech designs flow corrective devices, such as turning vanes, ash screens, static mixers and our patent pending Graduated Straightening Grid (GSG). Fuel Tech s models help clients optimize performance in flow critical equipment, such as selective catalytic reactors in SCR systems, where the effectiveness and longevity of catalysts are of utmost concern. The Company s modeling capabilities are also applied to other power plant systems where proper flow distribution and mixing are important for performance,

such as flue gas desulphurization scrubbers, electrostatic precipitators, air heaters, exhaust stacks and carbon injection systems for mercury removal.

The key market dynamic for the APC product line is the continued use of coal as the principal fuel source for global electricity production. Coal currently accounts for approximately 42% of all U.S. electricity generation and roughly 79% of Chinese electricity generation. Major coal consumers include China, the United States and India.

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Competition

Competition with Fuel Tech s NO_x reduction suite of products may be expected from companies supplying urea SNCR systems, combustion modification products, SCR systems and ammonia SNCR systems. In addition, Fuel Tech experiences competition in the urea-to-ammonia conversion market.

Combustion modifications, including Low NO_x Burners and Over-Fire Air systems, can be fitted to most types of boilers with cost and effectiveness varying with specific boilers. Combustion modifications may yield up to 20% - 60% NO_x reduction economically with capital costs ranging from $10 - $20/kW and total costs ranging from $300 - $1,500/ton of NO_x removed. The modifications are designed to reduce the formation of NO_x and are typically the first NO_x reduction efforts employed. Companies such as Alstom, Babcock Power, Inc., The Babcock & Wilcox Burner Business, Combustion Components Associates, Inc., Foster Wheeler Corporation, and Siemens are active competitors in the Low NO_x Burner business. Once NO_x is formed, then the SCR process is an effective and proven method of control for removal of NO_x up to 90%. SCR systems have a high capital cost of $300+/kW on retrofit coal applications. Such companies as Alstom, The Babcock & Wilcox Company, Hitachi, Foster Wheeler Corporation, Peerless Manufacturing Company, and Babcock Power, Inc., are active SCR system providers, or providers of the catalyst itself.

The use of ammonia as the reagent for the SNCR process can reduce NO_x by 30% - 70% on incinerators, but has limited applicability in the utility industry. Ammonia system capital costs range from $5 - $20/kW, with annualized operating costs ranging from $1,000 - $3,000/ton of NO_x removed. These systems require the use of either anhydrous or aqueous ammonia, both of which are hazardous substances.

In addition to or in lieu of using the foregoing processes, certain customers may elect to close or de-rate plants, purchase electricity from third-party sources, switch from higher to lower NO_x-emitting fuels or purchase NO_x emission allowances.

Lastly, with respect to urea-to-ammonia conversion technologies, a competitive approach to Fuel Tech s controlled urea decomposition system is available from Wahlco, Inc., which manufactures a system that hydrolyzes urea under high temperature and pressure.

APC BACKLOG

Consolidated APC segment backlog at December 31, 2012 was approximately $46.7 million versus backlog at December 31, 2011 of $30.8 million. A substantial portion of the backlog as of December 31, 2012 is expected to be recognized as revenue in fiscal 2013, although the timing of such revenue recognition in 2013 is subject to the timing of the expenses incurred on existing projects.

FUEL CHEM

Product and Markets

The FUEL CHEM® technology segment revolves around the unique application of specialty chemicals to improve the efficiency, reliability and environmental status of plants operating in the electric utility, industrial, pulp and paper, waste-to-energy, university and district heating markets. FUEL CHEM programs are currently in place on combustion units in North America and Europe, treating a wide variety of solid and liquid fuels, including coal, heavy oil, black liquor, biomass and municipal waste.

Central to the FUEL CHEM approach is the introduction of chemical reagents, such as magnesium hydroxide, to combustion units via in-body fuel application (pre-combustion) or via direct injection (post-combustion) utilizing Fuel Tech s proprietary TIP® technology. By attacking performance-hindering problems, such as slagging, fouling and corrosion, as well as the formation of sulfur trioxide (SO_3), ammonium bisulfate (ABS), particulate matter ($PM_{2.5}$), carbon dioxide (CO_2), NO_x and unburned carbon in fly ash, the Company s programs offer numerous operational, financial and environmental benefits to owners of boilers, furnaces and other combustion units.

The key market dynamic for this product line is the continued use of coal as the principal fuel source for global electricity production. Coal currently accounts for approximately 45% of all U.S. electricity generation and roughly 80% of Chinese electricity generation. Major coal consumers include the United States, China and India.

The principal markets for this product line are electric power plants burning coals with slag-forming constituents such as sodium, iron and high levels of sulfur. Sodium is typically found in the Powder River Basin (PRB) coals of Wyoming and Montana. Iron is typically found in coals produced in the Illinois Basin region. High sulfur content is typical of Illinois Basin coals and certain Appalachian coals. High sulfur content can give rise to unacceptable levels of SO_3 formation especially in plants with SCR systems and flue gas desulphurization units (scrubbers).

The combination of slagging coals and SO_3-related issues, such as blue plume formation, air pre-heater fouling and corrosion, SCR fouling and the proclivity to suppress certain mercury removal processes, represents attractive market potential for Fuel Tech.

A potentially large fuel treatment market exists in Mexico, where high-sulfur, low-grade fuel oil containing vanadium and nickel is a major source for electricity production and refinery steam production. The presence of these metallic constituents and high sulfur promotes slag build-up and high and low temperature corrosion of combustion units, and releases acid gas emissions from

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the stack. Fuel Tech has successfully treated such units with its TIFI and in-fuel technologies. To capitalize on this market opportunity, the Company has a license implementation agreement until 2015 with options for renewal with a large Mexican energy company to implement our TIFI program for utility and industrial end user customers in Mexico. In 2011, our TIFI program was in continuous use on three boilers at one of this Company s power plants (110 MW generating capacity). In addition, we have installed TIFI equipment on three boilers at a different power plant (610 MW) affiliated with this Company. The first of these units has successfully undergone an initial test in 2011.

Competition

Competition for Fuel Tech s FUEL CHEM product line includes chemicals sold by specialty chemical and combustion engineering companies, such as Ashland Inc., Environmental Energy Services, Inc., and GE Infrastructure. No substantive competition currently exists for Fuel Tech s TIFI technology, which is designed primarily for slag control and SO_3 abatement, but there can be no assurance that such lack of substantive competition will continue.

INTELLECTUAL PROPERTY

The majority of Fuel Tech s products are protected by U.S. and non-U.S. patents. Fuel Tech owns 76 granted patents worldwide and 3 allowed utility model patents in China. Fuel Tech has 96 patent applications pending; including 12 in the United States, 81 pending in non-U.S. jurisdictions, and 3 utility model applications in China. These patents and applications cover some 36 inventions, 17 associated with the NO_x reduction business, 9 associated with the FUEL CHEM business and 10 associated with non-commercialized technologies. Our patents have expiration dates ranging from April 12, 2013 to November 9, 2028. The average remaining duration of our patents is approximately eight years. Three invention patents in Taiwan are due to expire in 2013.

Fuel Tech believes that the protection provided by the numerous claims in the above referenced patents or patent applications is substantial, and affords Fuel Tech a significant competitive advantage in its business. Accordingly, any significant reduction in the protection afforded by these patents or any significant development in competing technologies could have a material adverse effect on Fuel Tech s business.

EMPLOYEES

At December 31, 2012, Fuel Tech had 184 employees, 147 in North America, 27 in China, 9 in Europe and 1 in Chile. Fuel Tech enjoys good relations with its employees and is not a party to any labor management agreement.

ITEM 1A RISK FACTORS

Investors in Fuel Tech should be mindful of the following risk factors relative to Fuel Tech s business.

Lack of Diversification

Fuel Tech has two broad technology segments that provide advanced engineering solutions to meet the pollution control, efficiency improvement, and operational optimization needs of energy-related facilities worldwide. They are as follows:

The Air Pollution Control technology segment includes technologies to reduce NO_x emissions in flue gas from boilers, incinerators, furnaces and other stationary combustion sources. These include Low and Ultra Low NO_x Burners (LNB and ULNB), Over-Fire Air (OFA) systems, NO_xOUT® and HERT Selective Non-Catalytic Reduction (SNCR) systems, and Advanced Selective Catalytic Reduction (ASCR) systems. The ASCR system includes ULNB, OFA, and SNCR components, along with a downsized SCR catalyst, Ammonia Injection Grid (AIG), and Graduated Straightening Grid (GSG) systems to provide high NO_x reductions at significantly lower capital and operating costs than conventional SCR systems. The NO_xOUT CASCADE® and NO_xOUT-SCR® processes are basic types of ASCR systems, using just SNCR and SCR catalyst components. ULTRA technology creates ammonia at a plant site using safe urea for use with any SCR application. Flue Gas Conditioning systems are chemical injection systems offered in markets outside the U.S. and Canada to enhance electrostatic precipitator and fabric filter performance in controlling particulate emissions.

The FUEL CHEM® technology segment, which uses chemical processes in combination with advanced Computational Fluid Dynamics (CFD) and Chemical Kinetics Modeling (CKM) boiler modeling, for the control of slagging, fouling, corrosion, opacity and other sulfur trioxide-related issues in furnaces and boilers through the addition of chemicals into the furnace using TIFI® Targeted In-Furnace Injection technology.

An adverse development in Fuel Tech s advanced engineering solution business as a result of competition, technological change, government regulation, or any other factor could have a significantly greater impact than if Fuel Tech maintained more diverse operations.

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Competition

Competition in the Air Pollution Control market comes from competitors utilizing their own NO_x reduction processes, including SNCR systems, Low NO_x Burners, Over-Fire Air systems, flue gas recirculation, ammonia SNCR, SCR and, with respect to particular uses of urea not infringing Fuel Tech s patents (see Item 1 Intellectual Property in the *Air Pollution Control* segment overview). Competition will also come from business practices such as the purchase rather than the generation of electricity, fuel switching, closure or de-rating of units, and sale or trade of pollution credits and emission allowances. Utilization by customers of such processes or business practices or combinations thereof may adversely affect Fuel Tech s pricing and participation in the NO_x control market if customers elect to comply with regulations by methods other than the purchase of Fuel Tech s suite of Air Pollution Control products. See Item 1 *Products* and *NO_x Reduction Competition* in the *Air Pollution Control* segment overview.

Competition in the FUEL CHEM markets includes chemicals sold by specialty chemical and combustion engineering companies, such as GE Infrastructure, Ashland Inc. and Environmental Energy Services, Inc. As noted previously, no significant competition currently exists for Fuel Tech s patented TIFI technology, which is designed primarily for slag control and SO_3 abatement. However, there can be no assurance that such lack of significant competition will continue.

Dependence on and Change in Air Pollution Control Regulations and Enforcement

Fuel Tech s business is significantly impacted by and dependent upon the regulatory environment surrounding the electricity generation market. Our business will be adversely impacted to the extent that regulations are repealed or amended to significantly reduce the level of required NO_x reduction, or to the extent that regulatory authorities delay or otherwise minimize enforcement of existing laws. Additionally, long-term changes in environmental regulation that threaten or preclude the use of coal or other fossil fuels as a primary fuel source for electricity production, based on the theory that gases emitted therefrom impact climate change through a greenhouse effect, and result in the reduction or closure of a significant number of fossil fuel-fired power plants, may adversely affect the Company s business, financial condition and results of operations. See Item 1 above under the caption *Regulations and Markets* in the *Air Pollution Control* segment overview.

Protection of Patents and Proprietary Rights

Fuel Tech holds licenses to or owns a number of patents for our products and processes. In addition, we also have numerous patents pending. There can be no assurance that pending patent applications will be granted or that outstanding patents will not be challenged or circumvented by competitors. Moreover, the absence of harmonized patent laws outside of the United States makes it more difficult to ensure consistent respect for our patent rights in emerging markets. Certain critical technology relating to our products is protected by trade secret laws and by confidentiality and licensing agreements. There can be no assurance that such protection will prove adequate or that we will have adequate remedies against contractual counterparties for disclosure of our trade secrets or violations of Fuel Tech s intellectual property rights. See Item 1 above under the caption Intellectual Property.

Foreign Operations

In 2007, we expanded our operations in China by establishing a wholly-owned subsidiary in Beijing. The Asia-Pacific region, particularly China, offers significant market opportunities for Fuel Tech as nations in this region look to establish regulatory policies for improving their environment and utilizing fossil fuels, especially coal, efficiently and effectively. In 2012, we expanded our operations in Latin America by establishing a wholly-owned subsidiary in Chile. The future business opportunities in these markets are dependent on the continued implementation of regulatory policies that will benefit our technologies, the acceptance of Fuel Tech s engineering solutions in such markets, the ability of potential customers to utilize Fuel Tech s technologies on a cost-effective basis, and our ability to protect and enforce our intellectual property rights.

Product Pricing and Operating Results

The onset of significant competition for either of the technology segments might have an adverse impact on product pricing and a resulting adverse impact on realized gross margins and operating profitability.

Raw Material Supply and Pricing

The FUEL CHEM technology segment is dependent, in part, upon a supply of magnesium hydroxide. Any adverse change in the availability of this chemical will likely have an adverse impact on ongoing operation of our FUEL CHEM programs. On March 4, 2009, we entered into a Restated Product Supply Agreement (PSA) with Martin Marietta Magnesia Specialties, LLC (MMMS) in order to assure the continuance of a

stable supply from MMMS of magnesium hydroxide products for our requirements in the United States and Canada until December 31, 2013, the date of the expiration of the PSA. Magnesium hydroxide products are a significant component of the FUEL CHEM programs. Pursuant to the PSA, MMMS supplies us with magnesium hydroxide products manufactured pursuant to our specifications and we have agreed to purchase from MMMS, and MMMS has agreed to supply, 100% of our requirements for such magnesium hydroxide products for our customers who purchase such products for delivery in the United States and Canada. There can be no assurance that Fuel Tech will be able to obtain a stable source of magnesium hydroxide in markets outside the United States.

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Customer Access to Capital Funds

Uncertainty about current economic conditions in the United States and globally poses risk that Fuel Tech s customers may postpone spending for capital improvement projects in response to tighter credit markets, negative financial news and/or decline in demand for electricity generated by combustion units, all of which could have a material negative effect on demand for the Fuel Tech s products and services.

Customer Concentration

A small number of customers have historically accounted for a material portion of Fuel Tech s revenues. There can be no assurance that Fuel Tech s current customers will continue to place orders, that orders by existing customers will continue at the levels of previous periods, or that Fuel Tech will be able to obtain orders from new customers. The loss of one or more of our customers could have a material adverse effect on our sales and operating results.

Domestic Credit Facility

Fuel Tech is party to a $15 million domestic revolving credit agreement with JPMorgan Chase Bank, N.A. As of December 31, 2012, there were no outstanding borrowings on this facility and Fuel Tech was in compliance with all financial covenants contained in the agreement. In addition, Beijing Fuel Tech Environmental Technologies Company, Ltd. has a RMB $35 million (approximately $5.5 million) revolving credit facility with JPMorgan Chase Bank (China) Company Limited. As of December 31, 2012, there were no outstanding borrowings on this facility. In the event of any default on the part of Fuel Tech or Beijing Fuel Tech under either of these agreements, the lender is entitled to accelerate payment of any amounts outstanding and may, under certain circumstances, cancel the facilities. If the Company were unable to obtain a waiver for a breach of covenant and the lender accelerated the payment of any outstanding amounts, such acceleration may cause the Company s cash position to significantly deteriorate or, if cash on hand were insufficient to satisfy the payment due, may require the Company to obtain alternate financing.

ITEM 1B UNRESOLVED STAFF COMMENTS

None

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ITEM 2 PROPERTIES

Fuel Tech owns an office building in Warrenville, Illinois, which has served as our corporate headquarters since June 23, 2008. This facility, with approximately 40,000 square feet of office space, was purchased for approximately $6,000,000 and subsequently built out and furnished for an additional cost of approximately $5,500,000. This facility will meet our growth requirements for the foreseeable future.

Fuel Tech and its subsidiaries also operate from leased office facilities in Stamford, Connecticut; Durham, North Carolina; Gallarate, Italy and Beijing, China. Fuel Tech does not segregate any of its leased facilities by operating business segment. The terms of the Company s four material lease arrangements are as follows:

The Stamford, Connecticut building lease term, for approximately 6,440 square feet, runs from February 1, 2010 to December 31, 2019. The facility houses certain administrative functions including Investor Relations.

The Beijing, China building lease term, for approximately 5,800 square feet, runs from September 1, 2012 to August 31, 2013. This facility serves as the operating headquarters for our Beijing Fuel Tech operation. Fuel Tech has the option to extend the lease term at a market rate to be agreed upon between Fuel Tech and the lessor.

The Durham, North Carolina building lease term, for approximately 16,000 square feet, runs from November 1, 2005 to April 30, 2014. Fuel Tech has no option to extend the lease.

The Gallarate, Italy building lease term, for approximately 1,300 square feet, runs from July 1, 2005 to April 30, 2013. Fuel Tech has no option to extend this lease.

ITEM 3 LEGAL PROCEEDINGS

We are from time to time involved in litigation incidental to our business. We are not currently involved in any litigation in which we believe an adverse outcome would have a material effect on our business, financial conditions, results of operations, or prospects.

In 2011, Fuel Tech filed a series of civil actions in the Second People s Intermediate Court of Beijing against Liu Minghui, Zhu Limin and related parties who formerly worked with or for Fuel Tech (collectively, the Defendants.) As a result of one of the civil actions, Fuel Tech was granted ownership of a Chinese patent filed in China by certain of the Defendants pertaining to air pollution control technologies. In a related action filed by certain of the Defendants before the Chinese Patent Review Board, two separate China patents held by Fuel Tech for use in China relating to its ULTRA product line were invalidated. All of the above referenced actions have concluded.

ITEM 4 MINE SAFETY DISCLOSURES

Not Applicable

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PART II

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

Market

Fuel Tech s Common Shares have been traded since September 1993 on The NASDAQ Stock Market, Inc. The trading symbol is FTEK.

Prices

The table below sets forth the high and low sales prices during each calendar quarter since January 2011.

2012	High	Low
Fourth Quarter	$ 4.38	