

Risk Factors Comparison 2024-03-11 to 2023-03-07 Form: 10-K

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The following is a discussion of the material risk factors; however, they may not be the only risks that we may face. The risks described below should not be considered a complete list of potential risks that we face, and additional risks and uncertainties not currently known to us or that we currently consider immaterial may also negatively impact our business. If any of these risks develop into actual or expected events, our business, financial condition, results of operations or cash flows could be materially and adversely affected, and, as a result, the trading price of our common stock could decline. You should carefully consider the risk factors described below, together with the other information included in this Annual Report on Form 10-K, before you decide to invest in our securities. Please read the cautionary notice regarding forward-looking statements under the heading “Forward-Looking Statements.”

RISKS RELATED TO OUR PRODUCTS AND PRICING

Our Product Portfolio Lacks Diversification

We have two broad technology segments that provide advanced engineering solutions to meet the pollution control, efficiency improvement, and operational optimization needs of coal and natural gas-fired energy-related facilities worldwide. They are as follows:

- The Air Pollution Control technology segment includes technologies to reduce NOx emissions in flue gas generated by the firing of natural gas or coal from boilers, incinerators, furnaces and other stationary combustion sources. These include ~~Over-Fire Air (OFA) systems,~~ NOxOUT[®] and HERT[™] SNCR systems, and SCR systems. Our SCR systems can also include AIG, and GSG[™] systems to provide high NOx reductions at significantly lower capital and operating costs than conventional SCR systems. ULTRA[®] technology creates ammonia at a plant site using safe urea for use with any SCR application. ESP technologies make use of electrostatic precipitator products and services to reduce particulate matter. FGC 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 CFD and CKM boiler modeling for the control of slagging, fouling, corrosion, opacity and other sulfur trioxide-related issues in coal-fired furnaces and boilers through the addition of chemicals into the furnace using TIFI[®] Targeted In-Furnace Injection[™] technology. An adverse development in our advanced engineering solutions business as a result of competition, technological change, government regulation, customers converting to use natural gas or other fuels, or any other factor could have a significantly greater impact than if we maintained more diverse operations.

We Face Substantial Competition

Competition in the Air Pollution Control market comes from competitors utilizing their own NOx reduction processes, including SCR systems, SNCR systems, ~~Low NOx Burners, Over-Fire Air systems,~~ ammonia and urea based delivery systems for SNCR and SCR, which do not infringe our patented or proprietary technologies. Indirect competition will also arise 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 our pricing and participation in the NOx control market if customers elect to comply with regulations by methods other than the purchase of our Air Pollution Control products. See Item 1 “Products” and “APC Competition” in the Air Pollution Control segment overview. Competition for our FUEL CHEM markets include chemicals sold by specialty chemical companies, such as Imerys, Environmental Energy Services, Inc., and SUEZ Water Technologies. Our Dependence Upon Fixed-price Contracts Could Adversely Affect our Operating Results

The majority of our air pollution control projects are currently performed on a fixed-price basis. Under a fixed-price contract, we agree on the price that we will receive for the entire project, based upon a defined scope, which includes specific assumptions and project criteria. If our estimates of the costs to complete the project are below the actual costs that we incur, our margins will decrease, or we may incur a loss. The revenue, cost and gross profit realized on a fixed-price contract will often vary from the estimated amounts because of unforeseen conditions or changes in job conditions and variations in labor and equipment productivity over the term of the contract. While our fixed-price contracts are typically not individually material to our operating results, if we are unsuccessful in mitigating these risks, we may realize gross profits that are different from those originally estimated and incur reduced profitability or losses on projects. Depending on the size of a project, these variations from estimated contract performance could have a significant effect on our operating results. In general, turnkey contracts to be performed on a fixed-price basis involve an increased risk of significant variations. Generally, our contracts and projects vary in length, depending on the size and complexity of the project, project owner demands and other factors. The foregoing risks are exacerbated for projects with longer-term durations and the inherent difficulties in estimating costs and of the interrelationship of the integrated services to be provided under these contracts whereby unanticipated costs or delays in performing part of the contract can have compounding effects by increasing costs of performing other parts of the contract.

Customers May Cancel or Delay Projects

Customers may cancel or delay projects for reasons beyond our control. Our orders normally contain cancellation provisions that permit us to recover our costs, and, for most contracts, a portion of our anticipated profit in the event a customer cancels an order. If a customer elects to cancel an order, we may not realize the full amount of revenues included in our backlog. If projects are delayed, the timing of our revenues could be **adversely** affected and projects may remain in our backlog for extended periods of time. Revenue recognition occurs over long periods of time and is subject to unanticipated delays. If we receive relatively large orders in any given quarter, fluctuations in the levels of our quarterly backlog can result because the backlog in that quarter may reach levels that may not be sustained in subsequent quarters. Our Operating Results May Be Adversely Affected by Product Pricing

The onset of **We typically experience** significant competition for ~~either both~~ **of the our** technology segments ~~might~~ **which may** require us to lower our product prices in order to remain competitive and have a corresponding adverse impact on our realized gross margins and operating

profitability. See the risk factor entitled “ We Face Substantial Competition ” above. Our Customer Base Is Highly Concentrated A small number of customers have historically accounted for a significant portion of our revenues. During 2022-2023, our five largest customers accounted for approximately 61-53% of our net revenues, with our largest customer accounting for approximately 22-20% of our net revenues. There can be no assurance that all significant customers will continue to purchase our products in the same quantities that they have in the past. The loss of any one of our significant customers or a material reduction in sales to a significant customer could have a material adverse effect on our sales and results of operations.

RISKS RELATED TO OUR BUSINESS

Our Financial Performance May Vary Significantly From Period to Period –Our annual revenues and earnings have varied in the past and are likely to vary in the future. Our contracts generally stipulate customer specific delivery terms and may have contract cycles of a year or more, which subjects these contracts to many factors beyond our control. In addition, contracts that are significantly larger in size than our typical contracts tend to intensify their impact on our annual operating results. Furthermore, as a significant portion of our operating costs are fixed, an unanticipated decrease in our revenues, a delay or cancellation of orders in backlog, or a decrease in the demand for our products, may have a significant impact on our annual operating results. Therefore, our annual operating results may be subject to significant variations and our operating performance in one period may not be indicative of our future performance.

Energy Transition The strategic priorities and financial performance of our businesses are subject to market and other dynamics related to decarbonization, which can pose risks in addition to opportunities for those businesses. Given the nature of our businesses and the industries we serve, we must anticipate and respond to market, technological, regulatory and other changes driven by broader trends related to decarbonization efforts in response to climate change. These changes present both risks and opportunities for our businesses, many of which provide products and services to customers in sectors like power generation that have historically been carbon intensive and will remain important to efforts globally to lower greenhouse gas emissions for decades to come. For example, the significant decreases in recent years in the levelized cost of energy for renewable sources of power generation (such as wind and solar), along with ongoing changes in government, investor, customer and consumer policies, commitments, preferences and considerations related to climate change, in some cases have adversely affected, and are expected to continue to affect, the demand for and the competitiveness of products and services related to carbonaceous fuel- based power generation, including sales of new air pollution control equipment and the utilization and servicing needs for existing power plants. Continued shifts toward greater penetration by renewables in both new capacity additions and the proportionate share of power generation, particularly depending on the pace and timeframe for such shifts across different markets globally, could have a material adverse effect on our business and our consolidated results.

Our Manufacturing Operations Are Dependent on Third- party Suppliers –Although we are not dependent on any one supplier, we are dependent on the ability of our third- party suppliers to supply our raw materials, as well as certain specific component parts. The third- party suppliers upon which we depend may default on their obligations to us due to bankruptcy, insolvency, lack of liquidity, adverse economic conditions, operational failure, fraud, loss of key personnel, or other reasons. We cannot assure that our third- party suppliers will dedicate sufficient resources to meet our scheduled delivery requirements or that our suppliers will have sufficient resources to satisfy our requirements during any period of sustained demand. Failure of suppliers to supply, or delays in supplying, our raw materials or certain components, or allocations in the supply of certain high demand raw components, for any reason, including, without limitation, disruptions in our suppliers’ business activities due to cybersecurity incidents, terrorist activity, public health crises (such as coronavirus), fires or other natural disasters could materially adversely affect our operations and ability to meet our own delivery schedules on a timely and competitive basis. Additionally, our third- party suppliers may provide us with raw materials or component parts that fail to meet our expectations or the expectations of our customers, which could subject us to product liability claims, other claims and litigation.

Our Use of Subcontractors Could Potentially Harm our Profitability and Business Reputation –Occasionally we act as a prime contractor in some of the engineered projects we undertake. In our capacity as lead provider and when acting as a prime contractor, we perform a portion of the work on our projects with our own resources and typically subcontract activities such as manufacturing and installation work. In our industry, the lead contractor is normally responsible for the performance of the entire contract, including subcontract work. Thus, when acting as a prime contractor, we are subject to risk associated with the failure of one or more subcontractors to perform as anticipated. We employ subcontractors at various locations around the world to meet our customers’ needs in a timely manner, meet local content requirements and reduce costs. Subcontractors perform all of our manufacturing for customers. The use of subcontractors decreases our control over the performance of these functions and could result in project delays, escalated costs and substandard quality. These risks could adversely affect our profitability and business reputation. In addition, many of our competitors, who have greater financial resources and greater bargaining power than we have, use the same subcontractors that we use and could potentially influence our ability to hire these subcontractors. If we were to lose relationships with key subcontractors, our business could be adversely impacted.

Operational Execution Operational challenges could have a material adverse effect on our business, reputation, financial position, results of operations and cash flows. The Company’ s financial results depend on the successful execution of our businesses’ operating plans across all steps of the engineering and design, manufacture, installation and service lifecycle. We continue working to improve the operations and execution of our businesses and our ability to make the desired improvements will be a significant factor in our overall financial performance. Operational failures in any of our business segments that result in quality problems or potential product, environmental, health or safety risks, could have a material adverse effect on our business, reputation, financial position and results of operations. In addition, for some large- scale projects we may be required by our customer to take on the full scope of engineering, procurement, construction or other services. These types of projects often pose unique risks related to their location, scale, complexity, duration and pricing or payment structure. Performance issues or schedule delays can arise due to inadequate technical expertise, unanticipated project modifications, developments at project sites, environmental, health and safety issues, execution by or coordination with suppliers, subcontractors or consortium partners, financial difficulties of our customers or significant partners or compliance with

government regulations, and these can lead to cost overruns, contractual penalties, liquidated damages and other adverse consequences. Operational, quality or other issues at large projects, or across our projects portfolio more broadly, can adversely affect our business, reputation or results of operations. We Rely on Several Key Employees Whose Absence or Loss Could Disrupt our Operations or Be Adverse to our Business –We are highly dependent on the experience of our management in the continuing development of our operations. The loss of the services of certain of these individuals would have a material adverse effect on our business. Although we have employment and non- competition agreements with certain of our key employees, as a practical matter, those agreements will not assure the retention of our employees, and we may not be able to enforce all of the provisions in any employment or non- competition agreement. Our future success will depend in part on our ability to attract and retain qualified personnel to manage our development and future growth. We cannot guarantee that we will be successful in attracting and retaining such personnel. Our failure to recruit additional key personnel could have a material adverse effect on our financial condition, results of operations and cash flows.

Increasing Costs for Manufactured Components May Adversely Affect our Profitability Our products utilize a variety of manufactured components, including metallurgical catalysts, storage tanks, pumps and fans. The current economic environment has resulted, and may continue to result, in price volatility and inflation of these costs. Further increases in the price of these items could further materially increase our operating costs and materially adversely affect our profit margins if we are unable to successfully pass such costs on to our customers.

Cybersecurity Increased cybersecurity requirements, vulnerabilities, threats and more sophisticated and targeted computer crime pose a risk to our systems, networks, products, solutions, services and data. Increased global cybersecurity vulnerabilities, threats, computer viruses and more sophisticated and targeted cyber- related attacks such as ransomware, as well as cybersecurity failures resulting from human error and technological errors, pose a risk to the security of Fuel Tech and its customers', partners', suppliers' and third- party service providers' infrastructure, products, systems and networks and the confidentiality, availability and integrity of Fuel Tech' s and its customers' data. As the perpetrators of such attacks become more capable, and as critical infrastructure is increasingly becoming digitized, the risks in this area continue to grow. There can be no assurance that our efforts to mitigate cybersecurity risks by employing a number of measures, including employee training, monitoring and testing, vulnerability testing and maintenance of protective systems and contingency plans, will be sufficient to prevent, detect and limit the impact of cyber- related attacks, and we remain vulnerable to known or unknown threats. A significant cyber- related attack could result in other negative consequences, including damage to our reputation or competitiveness, remediation, increased digital infrastructure or other costs that are not covered by insurance, litigation or regulatory action.

We May Not Be Able to Successfully Protect our Patents and Proprietary Rights We hold licenses to or own a number of patents for our products and processes. In addition, we also have numerous patent applications pending both in the U. S. and abroad. There can be no assurance that any of our pending patent applications will be granted or that our outstanding patents will not be challenged, overturned or otherwise circumvented by competitors. In foreign markets, the absence of harmonized patent laws makes it more difficult to ensure consistent respect for our patent rights in emerging markets. In addition, certain critical technical information relating to our products which is not patented is held as trade secret, and protected by trade secret laws and restrictions on disclosure contained in our confidentiality and licensing agreements. There can be no assurance that such protections will prove adequate or that we will have adequate remedies against contractual counterparties for disclosure of our trade secrets or other violations of our intellectual property rights. See Item 1 above under the caption “ Intellectual Property. ”

Our Results May Be Affected By Foreign Operations We currently have foreign operations predominantly in Europe with our offices located in Gallarate, Italy. The future business opportunities in this market are dependent on the continued implementation and enforcement of regulatory policies that will benefit our technologies, the acceptance of our engineering solutions in such markets, the ability of potential customers to utilize our technologies on a competitive, cost- effective basis, and our ability to protect and enforce our intellectual property rights. We May Not Be Able to Purchase Raw Materials on Commercially Advantageous Terms Our FUEL CHEM technology segment is dependent, in part, upon a supply of magnesium hydroxide. Any adverse changes 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 U. S. and Canada. The term of the PSA expires on December 31, ~~2023~~ **2024**. 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 U. S. and Canada. There can be no assurance that we will be able to obtain a stable source of magnesium hydroxide in markets outside the U. S.

RISKS RELATED TO OUR INDUSTRY Demand for Our APC and FUEL CHEM Products is Affected by External Market Factors Reduced coal ~~and natural gas~~- fired electricity demand across the U. S. has led to production declines. Contributing factors to this decline in coal- fired generation were: 1) lower natural gas prices which allowed utility operators to increase the amount of power generated from natural gas plants, 2) increased cost of environmental compliance with current environmental regulations, 3) constrained funding for capital projects, and 4) the increased production of electricity from renewable sources, such as wind and solar.

Our Business Is Dependent on Continuing Air Pollution Control Regulations and Enforcement Our 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 NOx or particulate matter 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 which result in the reduction or closure of a significant number of fossil fuel- fired power plants may adversely affect our business, financial condition and results of operations. See Item 1 above under the caption “ Regulations and Markets ” in the Air

Pollution Control segment overview. GENERAL RISK FACTORS ~~There Is Still Significant Uncertainty Related to the COVID-19 Pandemic; Future Pandemics Could Pose Similar Challenges~~ The continued prevalence of the COVID-19 pandemic around the world presents significant risks to the Company, not all of which the Company is able to fully evaluate or even foresee at the current time. The COVID-19 pandemic has affected the Company's operations in the years ended December 31, 2022 and 2021, although the impact of the pandemic is difficult to quantify, and may continue to do so indefinitely hereafter. The Company has experienced, and may continue to experience, delays in supply of critical equipment, reductions in demand for certain of our products as several accounts remained offline due to soft electricity demand and unplanned outage activities and due to the delay or abandonment of ongoing or anticipated projects due to the customers', suppliers' and other third parties' financial distress or concern regarding the volatility of global markets. Management cannot predict the full impact of the COVID-19 pandemic on the Company's sales and marketing channels and supply chain, and, as a result, the ultimate extent of the effects of the COVID-19 pandemic on the Company is highly uncertain and will depend on future developments. Such effects could exist for an extended period of time even after the pandemic ends and any future such pandemic could have similar or greater challenges. Geopolitical and Unexpected Events May Impact New or Existing Projects and Prices and Availability of Raw Materials, Energy and Other Materials. These events may also impact energy and regulatory policy nationally or regionally for the impacted regions. Such disruptions could have a material adverse effect on our business and financial results.