

CECO INCORPORATES EQUIPMENT INTO IoT TO TRANSFER REAL-TIME EQUIPMENT DATA

CECO Environmental is a publicly traded company with a 2018 revenue of \$337.3M. The organization holds 20 brands globally, all focused towards promoting a cleaner planet for future generations while providing an optimal customer experience with over 150 years of industry expertise. CECO manufactures and sells pollution control equipment solutions including, but not limited to dust collection, fugitive emissions filtration, scrubbers, cyclones, separators, mist eliminators, De-NOx SCR & SNCR, silencers, oxidizers, metal strip cooling and drying, VOC concentrators, pumps, fume capture and exhaust, and professional field services. Their corporate office is based out of Dallas, Texas, but the company has offices around the globe with about 1,000 employees.

Jeremias Schreyer, Business Development Manager - Industrial Solutions. Mr. Schreyer leads CECO's Industrial Solutions segment's market analyses, industry focus, and go-to-market strategies to provide safe, clean, and more efficient solutions for industrial air quality improvement.

Jared Wilken, Territory Sales Manager - Industrial Solutions. Jared leads CECO's Industrial Solution Semiconductor market, with focus on innovation and energy efficiency.

EBJ: What equipment/technologies are used today to treat the following air pollutants?

- **Particulates:** Venturi scrubber, cyclone, dust collectors or baghouse

- **Sulfur oxide:** Submicron filters

- **NOx & CO:** Beta NOx Scrubber or SNCR and SCR

- **VOCs:** Thermal oxidizer (Regenerative, recuperative, catalytic, DFTO) biofilter

- **HAPs:** Packed bed scrubber, biofilter

- **CO2:** Scrubber Thermal oxidizer

- **Other contaminants:** We treat any airstream with particulate matter and with HAPS/VOCS even if they are in the same airstream.

EBJ: Five years ago, the air quality consulting and pollution control equipment industry was expanding at a rapid rate. But that growth was driven by the Asian market. Is that still the case or have things changed in recent years?

CECO: Asia has long created a large demand for air quality consulting and pollution control equipment and they likely will for years ahead, due to their sheer size, energy needs, manufacturing needs,

and regulations. We are beginning to see a larger push within North America and Europe that seems to be slowly closing the gap with Asia. This push is the result of the two regions taking a closer look at what we regulate and how we regulate. For example, fugitive emissions (very small particles suspended in the air) were once a pollutant that we didn't know existed and we are now finding that in certain applications, it can cause health and efficiency effects on employees. We have now been seeing facilities solve this issue with our equipment, giving their employees a much safer workplace.

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EBJ: Some say that air quality and air pollution control are the most regulatory sensitive part of the environmental industry. Do you agree?

CECO: In some states and countries, air quality and air pollution control is a very sensitive part of the environmental industry, but that's not to say pollutants released into our other vital resources, such as water, is any less sensitive or should be taken any less seriously. In other states, neither air quality/air pollution control or water quality is taken as seriously as it should be. When you look at any large population(s) of people, you will always have some ahead of the curve and looking towards the future, while others are only looking towards the now or even stuck in a pastime and not connected to the future vision of human-pollutant free Earth.

EBJ: Which clients are generating increasing demand for your equipment/technologies and what type of equipment/technologies are they purchasing?

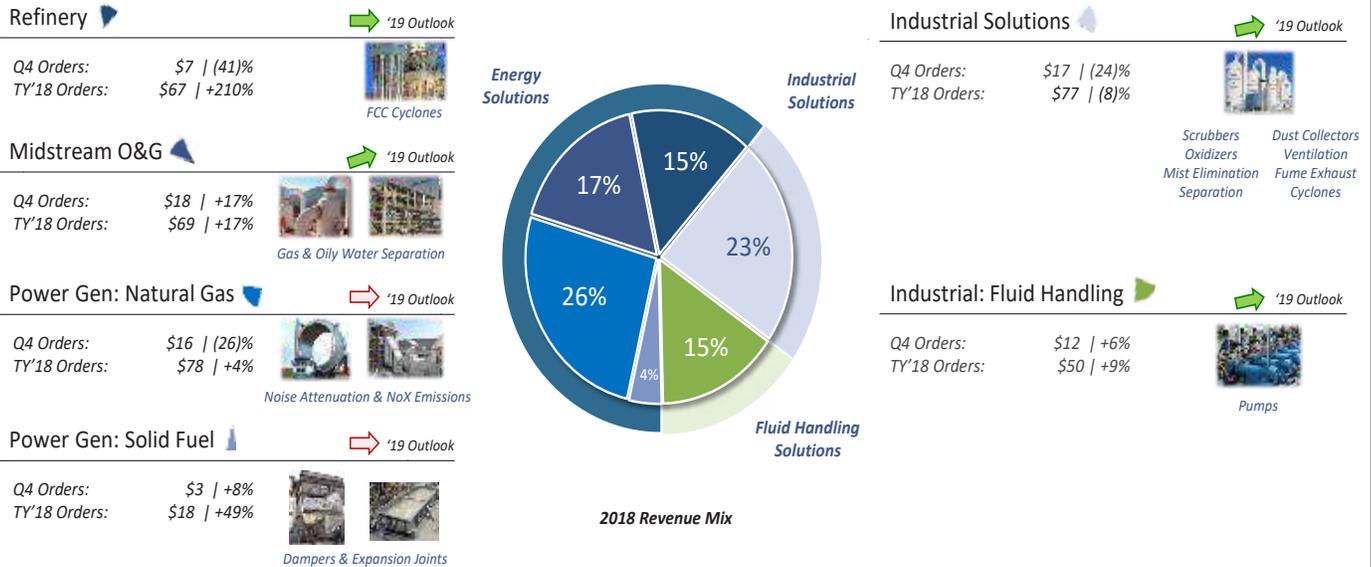
CECO: We have seen market growth globally in the battery, microchip, pharmaceutical and petrochemical markets. Domestically, to compliment those growth markets, we have noted a resurgence in the aluminum, steel, food products, mining and home building markets such as plywood, floor tile, and gypsum.

The above noted markets require EPA Compliance including but not limited to volatile organics with thermal oxidizers, particulate control with ultrahigh efficient cyclone or fabric filters, acid base inorganic with packed bed scrubbers and aerosols with candle coalescing filtration.

EBJ: How are information technology, artificial intelligence and other technologies changing the air pollution equipment business? What impacts has it had in your company?

CECO: Continuous emission monitoring technology improvements over the past 15 years has been beneficial to air quality standards. Being capable of yielding exact data on air emission of inlet to outlet concentrations drives the technical performance of air filtration equipment being proposed. That requires a vendor,

CECO's 2018 Revenue Mix: \$337 Million Total



Source: 4Q 2018 Earnings Deck, CECO. Values in \$million

such as CECO, to meet the tougher regulatory standards, being held accountable based on emission monitoring. CECO has the engineering knowledge and filtration products to meet the tight regulatory standards for gas phase, particle phase or aerosol air stream.

EBJ: How do you think that the air pollution equipment business will evolve over the next 5 years?

CECO: From an environmental regulation standpoint: As time passes, we are beginning to realize that we, as the human race, really aren't doing enough to clean-up after ourselves. Through this realization,

we are starting to see more strict regulations for a variety of industries and states within the U.S. and we believe the federal and state environmental regulations will continue to do their part in eliminating the pollutants we are producing, such as particulates, sulfur oxide, NOx, CO, VOCs, HAPs, CO2, and other contaminants. Sometimes we all can get caught in what is beneficial in the 'now', but we must look forward to create an environment that future generations will be proud of.

From an equipment standpoint: Over the past 50 years, some equipment has improved immensely and others not so much with an "If it isn't broken, don't fix

it" mentality. Here at CECO we are constantly working to improve equipment efficiencies, customer benefits, and total customer experience over the life of the equipment. As we look towards the future, we are incorporating our equipment into the IoT (Internet of Things), creating the ability to transfer real-time equipment data information over a network without taking up the valuable time of our customers, predicting maintenance, and avoiding any unplanned time spent on the asset.

EBJ: What is needed to generate growth for the air quality consulting industry in the United States?

CECO: Something that would/will drive air quality consulting growth is simple—a demanded cleaner earth. When regulation begins to be stricter across all states, there will be a lot of customers (and professional air quality organizations) that may be starting from scratch in the way they view their facility and its air quality. We are beginning to see a bit of that now and are thankful we have built the knowledge and experience in order to accommo-

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date and satisfy customers on their more difficult applications.

EBJ: CECO also provides professional and field services. Can you provide an overview?

Assessment Services: we solve a variety of complex problems for our customers. Our customers must meet a variety of ever-changing requirements. Our assessments help solve these ever-changing problems and provide an implementation plan that our customers can follow for success. Our employees will begin with trending and recording a variety of parameters of system performance. A CECO assessment is the first step in lowering operating costs and improving productivity.

Engineering Services: we provide a range of services and solutions to owner-operators and EPCs in various segments of Oil & Gas, Energy and Electro-mechanical industries. The services we offer include: feasibility studies, analysis & stimulations, feed/basic engineering, detail design/engineering, integrated 3D engineering, project management, brownfield engineering/as-built engineering, site/engineering, validations, O&M support and resource augmentation.

Installation Services

Commissioning Services: Our technicians review installation and safety requirements prior to the startup of the new asset. Operational targets are aligned with original design to baseline the operational running of the asset. The proper commissioning of the investment sets the stage for its maximum reliability throughout its lifecycle.

Maintenance Plans

Repair Services

Retrofit Services: We help clients optimize the total cost of operations for their asset.

Training Services: It is essential that asset operational instructions are understood by key personnel to maximize up-time. Also, it is important that standard maintenance requirements are understood to allow for quick downtime at required intervals. ■

CECO's Significant APC Acquisitions

| Company Acquired | Date of Acquisition | Description |
|---|---------------------|--|
| PMFG | May, 2015 | Leading provider of custom-engineered systems and products designed to help ensure that the delivery of energy is safe, efficient and clean. PMFG primarily served markets for power generation natural gas infrastructure, and petrochemical processing. Headquartered in Dallas, Texas, PMFG markets its systems and products worldwide. CECO paid approximately \$65 million in cash and issued approximately 7.6 million shares of common stock of CECO to prior holders of shares of PMFG common stock as consideration for the transaction. Based on the closing share price of PMFG common stock on September 2, 2015, the transaction was valued at approximately \$138 million. |
| SAT Technology | October, 2014 | Based in Shanghai, China, SAT Technology focused on providing VOC abatement solutions to customers within the industrial manufacturing market. With approximately \$5 million in annual revenue and 17 employees, SAT Technology helped expand CECO's Chinese product and market offering. |
| Emtrol | November, 2014 | Founded in 1973 with headquarters in Long Island, NY and offices in Katy, TX and the United Kingdom, Emtrol generated approximately \$35 million in annual revenues and was highly profitable prior to the acquisition. Emtrol has a significant global installed base with approximately 70% of its business from international markets. Emtrol's 33 employees became an integral part of CECO's APC group. |
| Jiangyin Zhongli Industrial Technology Co | December, 2014 | Leader in the design and manufacture of power industry damper, diverter and ball mill systems in China. The acquisition enhanced CECO's China customer base, distribution channel and manufacturing footprint. Founded in 2004, Zhongli's had annual revenues of approximately \$28 million and nearly 200 employees. Zhongli provided critical technology solutions to the energy sector including traditional power plants, related end-users and engineering, procurement and construction (EPC) firms in China and Russia. |
| Met-Pro Corporation | August, 2013 | Global leader in fluid handling, product recovery and pollution control equipment with a world class customer base. Met-Pro expands CECO's leverage to key segments such as the petrochemical, refinery and industrial manufacturing. It also provides CECO with access to new markets including the food processing, semiconductor and pharmaceutical sectors. |
| Aarding Thermal Acoustics | March, 2013 | Headquartered in the Netherlands with a significant global sales footprint, Aarding is a technology leader within gas turbine downstream engineered exhaust systems and silencing products focused on the natural gas, power and petrochemical industries. Founded in 1960 with revenues of approximately \$34 million in 2012, Aarding's superior brand, management team and technology have resulted in a broad blue-chip customer base located in countries throughout the world. |

Source: CECO Environmental.