

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington D.C. 20549

Form 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number: 001-34112



Energy Recovery, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware

(State or Other Jurisdiction of Incorporation)

01-0616867

(I.R.S. Employer Identification No.)

1717 Doolittle Drive

San Leandro California

(Address of Principal Executive Offices)

94577

(Zip Code)

(510) 483-7370

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, \$0.001 par value per share	ERII	The Nasdaq Stock Market LLC

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

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

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

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 No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

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

The aggregate market value of the voting stock held by non-affiliates amounted to approximately \$389 million on June 30, 2019.

The number of shares of the registrant's common stock outstanding as of February 27, 2020 was 55,492,350 shares.

DOCUMENTS INCORPORATED BY REFERENCE

As noted herein, the information called for by Part III is incorporated by reference to specified portions of the registrant's definitive proxy statement to be filed in conjunction with the registrant's 2020 Annual Meeting of Stockholders, which is expected to be filed not later than 120 days after the registrant's fiscal year ended December 31, 2019.

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Forward Looking Information

This Annual Report on Form 10-K for the year ended December 31, 2019 including “Part I, Item 7 – Management’s Discussion and Analysis of Financial Condition and Results of Operations” (the “MD&A”), and certain information incorporated by reference, contain forward-looking statements within the “safe harbor” provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements in this report include, but are not limited to, statements about our expectations, objectives, anticipations, plans, hopes, beliefs, intentions or strategies regarding the future.

Forward-looking statements represent our current expectations about future events, are based on assumptions, and involve risks and uncertainties. If the risks or uncertainties occur or the assumptions prove incorrect, then our results may differ materially from those set forth or implied by the forward-looking statements. Our forward-looking statements are not guarantees of future performance or events.

Words such as “expects,” “anticipates,” “aims,” “projects,” “intends,” “plans,” “believes,” “estimates,” “seeks,” variations of such words and similar expressions are also intended to identify such forward-looking statements. These forward-looking statements are subject to risks, uncertainties and assumptions that are difficult to predict; therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. Readers are directed to risks and uncertainties identified under “Item 1A – Risk Factors” and elsewhere in this report for factors that may cause actual results to be different from those expressed in these forward-looking statements. Except as required by law, we undertake no obligation to revise or update publicly any forward-looking statements for any reason.

Forward-looking statements in this report include, without limitation, statements about the following:

- our belief that levels of gross profit margin are sustainable to the extent that volume grows, we experience a favorable product mix, pricing remains stable and we continue to realize cost savings through production efficiencies and enhanced yields;*
- our plan to improve our existing energy recovery devices and to develop and manufacture new and enhanced versions of these devices;*
- our belief that our PX[®] energy recovery devices are the most cost-effective energy recovery devices over time and will result in low life-cycle costs;*
- our belief that our turbocharger devices have long operating lives;*
- our belief that our turbocharger is designed for maximum durability and reliability and deliver substantial savings and ease of integration into desalination systems;*
- our belief that our pumps are designed for maximum durability, reliability and efficiency and that our pumping systems offer users operational savings;*
- our expectation that there will be new desalination emerging markets that will provide us with further revenue growth opportunities;*
- our belief that OEM desalination projects are less susceptible to economic and regional shocks and provides us with a more stable source of revenue;*
- our belief that a technology conversion from thermal to reverse osmosis desalination is occurring and that such conversion will create demand for our products.*
- our belief that our solutions and products offer a competitive advantage or are competitive with our competitor’s solutions and products;*
- our objective of finding new applications for our technology and developing new products for use outside of desalination, including oil & gas applications;*
- our expectation that our expenses for research and development and sales and marketing may increase as a result of diversification into markets outside of desalination;*
- our expectation that we will continue to rely on sales of our energy recovery devices in the desalination market for a substantial portion of our revenue, and that new desalination markets, including the U.S., will provide revenue opportunities to us;*
- our ability to meet projected new product development dates, anticipated cost reduction targets or revenue growth objectives for new products;*
- our belief that we can commercialize the VorTeq[™] hydraulic fracturing system;*

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- our belief that the VorTeq hydraulic fracturing system reduces equipment failure and enables oilfield services (“OFS”) companies to migrate to more efficient pumping technology;
- our belief that the VorTeq hydraulic fracturing system can help operators reduce repair and maintenance costs, reduce capital costs by extending frac-pump life expectancy and eliminate redundant capital equipment and thereby lower costs and reduce the emissions and energy intensity of oil & gas production;
- our belief that we will be able to progress the MTeqSM solution through the R&D phase and ultimately commercialize the solution;
- our belief that customers will accept and adopt our new products;
- our belief that we will successfully complete our capacity expansion and such facilities will be adequate for the foreseeable future;
- our expectation that sales outside of the U.S. will remain a significant portion of our revenue;
- the timing of our receipt of payment for products or services from our customers;
- our belief that our existing cash balances and cash generated from our operations will be sufficient to meet our anticipated liquidity needs for the foreseeable future, with the exception of a decision to enter into an acquisition and/or fund investments in our latest technology arising from rapid market adoption that could require us to seek additional equity or debt financing;
- our expectation that, as we expand our international sales, a portion of our revenue could be denominated in foreign currencies and the impact of changes in exchange rates on our cash and cash equivalents and operating results;
- our belief that new markets will grow in the water desalination market;
- our expectation that we will be able to enforce our intellectual property rights;
- our expectation that the adoption of new accounting standards will not have a material impact on our financial position or results of operations;
- the outcome of proceedings, lawsuits, disputes and claims;
- the impact of losses due to indemnification obligations;
- the impact of changes in internal control over financial reporting; and
- other factors disclosed under Item 1 - Business, Item 1A - Risk Factors, Item 2 - Properties, Item 7 - Management’s Discussion and Analysis of Financial Condition and Results of Operation, Item 7A - Quantitative and Qualitative Disclosures about Market Risks and elsewhere in this Form 10-K.

You should not place undue reliance on these forward-looking statements, which reflect management’s opinions only as of the date of the filing of this Annual Report on Form 10-K. All forward-looking statements included in this document are subject to additional risks and uncertainties further discussed under “Item 1A – Risk Factors” and are based on information available to us as of March 6, 2020. We assume no obligation to update any such forward-looking statements, certain risks and uncertainties which could cause actual results to differ materially from those projected in the forward-looking statements, as disclosed from time to time in our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as in our Annual Reports to Stockholders and in “Part I, Item 1A – Risk Factors” within this Annual Report on Form 10-K. It is important to note that our actual results could differ materially from the results set forth or implied by our forward-looking statements. The factors that could cause our actual results to differ from those included in such forward-looking statements are set forth under the heading “Item 1A – Risk Factors,” and our results disclosed from time to time in our reports on Forms 10-Q and 8-K and our Annual Reports to Stockholders.

We provide our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, Proxy Statements, Forms 3, 4 and 5 filed by or on behalf of directors, executive officers and certain large shareholders, and any amendments to those documents filed or furnished pursuant to the Securities Exchange Act of 1934, free of charge on the Investor Relations section of our website, www.energyrecovery.com. These filings will become available as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. From time to time, we may use our website as a channel of distribution of material company information.

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We also make available in the Investor Relations section of our website our corporate governance documents including our code of business conduct and ethics and the charters of the audit, compensation and nominating and governance committees. These documents, as well as the information on the website, are not intended to be part of this Annual Report on Form 10-K. We use the Investor Relations section of our website as a means of complying with our disclosure obligations under Regulation FD. Accordingly, you should monitor the Investor Relations section of our website in addition to following our press releases, SEC filings and public conference calls and webcasts.

PART I

Item 1 — Business

Overview

Energy Recovery, Inc. (the “Company”, “Energy Recovery”, “we”, “our” and “us”) has, for more than 20 years, created technologies that solve complex challenges for industrial fluid flow markets worldwide. We design and manufacture solutions that reduce waste, improve operational efficiency, and lower the production costs of clean water and oil & gas. What began as a game-changing invention for water desalination has grown into a global business delivering solutions that enable more affordable access to these critical resources.

We were incorporated in Virginia in 1992 and reincorporated in Delaware in 2001. Our headquarters and principal research, development and manufacturing facility is located in San Leandro, California, and, as of January 2020, we opened our commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas and, as of February 10, 2020, we leased an additional office and warehouse space located in Tracy, California, which commenced on March 1, 2020, to supplement the existing manufacturing, warehouse and distribution of our energy recovery devices (“ERDs”).

Engineering, research and development have been, and remain, an essential part of the Company’s history, culture and corporate strategy. Since our formation, we have developed and become experts in our unique PX Pressure Exchanger technology, which provides benefits when applied to industrial fluid flow system with pressure differentials. Today, our PX Pressure Exchanger is the industry standard in the reverse osmosis desalination industry. In addition, we have been actively developing new applications of our pressure exchanger technology in the oil & gas industry. This focus on engineering, research and development will continue to be core component of our future strategy as we focus on developing new products outside of our water and oil & gas business units.

Our worldwide sales and technical service organization provides on-site support for our line of water solutions, and we maintain direct sales offices and technical support centers in Europe, the Middle East and Asia.

Water

The world’s need for clean water is intensifying, driven by population growth, industrialization, rapid urbanization, and climate change. According to the United Nations’ estimates, global demand for water will surge 30% by 2050, outstripping supply. Apart from seasonal variations, the supply of fresh water generally remains fixed and is falling in some geographic areas. These trends make desalinating sea, brackish and contaminated water, increasingly vital to quench global water demand. In many water starved parts of the world, desalination contributes significantly to the local freshwater supply. We deliver efficient, scalable solutions for recovering otherwise wasted energy in the reverse osmosis desalination process, lowering operating costs and reducing carbon emissions associated with the production of clean water. We also offer high-pressure multi- and single-stage centrifugal pumps designed to complement our ERDs for any size reverse osmosis plant.

Solutions

We are a market leader in the engineering, design, manufacturing and supply of ERDs to the global reverse osmosis desalination market. Our ERDs are categorized into two technology groups: positive displacement isobaric ERDs, namely our proprietary Pressure Exchanger (“PX® Pressure Exchanger®”), and centrifugal-type ERDs such as our hydraulic turbochargers (“Turbochargers”). We also manufacture high-performance and high-efficiency pumps that are utilized in the reverse osmosis desalination process.

Energy Recovery Devices

Prior to the introduction of ERDs, the reverse osmosis desalination process was often cost prohibitive when compared to more traditional water treatment processes due to the high energy needs required by the process. Generally speaking, energy intensive pumps are used to pressurize feed waters with varying concentrations of salts, minerals and contaminants, which is then forced through a membrane to achieve the desired water quantity and quality. The process results in fresh water, suitable for potable, agricultural and industrial use. In the case of seawater reverse osmosis (“SWRO”) desalination, for example, this process results in a concentrated and pressurized concentrate or brine stream. Prior to the adoption of ERDs, the concentrated residual pressure energy was dissipated through a throttle valve before the fluid was returned to the ocean. The pressurization of the feed water and subsequent dissipation of the pressure energy in the discharge water was inefficient and resulted in tremendous amounts of wasted pressure energy that made SWRO desalination substantially more expensive than alternative water production options.

When introduced, ERDs fundamentally altered this paradigm by capturing and reusing this wasted pressure energy. The Pelton wheel was one of the first energy recovery device, followed by the development of hydraulic turbochargers, both of which provide suboptimal efficiencies in the reuse of wasted pressure energy. In the late 1990s, our PX Pressure Exchanger was introduced, delivering efficiencies now peaking above 98%. Rather than dissipating or “wasting” the pressure energy from the discharge brine, our PX Pressure Exchanger, which is SWRO’s most widely used energy recovery solution, can transfer the pressure energy from the discharge water directly to a portion of the low-pressure filtered feed water, thereby reducing the amount of flow required by the main high-pressure processes’ pumps. This results in a much more efficient process as the size of the high-pressure pumps and the corresponding energy usage can be reduced by up to 60%. As a result, our PX Pressure Exchangers have helped make SWRO desalination an economically viable option in the production of potable water.

The brackish water reverse osmosis (“BWRO”) desalination process is identical to that of the SWRO desalination process. Brackish water typically has lower salt content than seawater, therefore, fewer solids need to be removed and less energy is expended on pressurizing the feed water. The amount of salts in the feed water will ultimately determine the system design and operating conditions which, in turn, will drive decisions related to the specification or type of ERD to be employed, if any. Due to the lower cost and available pressure energy involved, our Turbochargers generally have characteristics more applicable to BWRO, although this is not always the case. BWRO is typically focused on maximizing membrane recovery and thus reducing the amount of brine generated throughout the process. In doing so, multiple membrane stages and “interstage boost” designs are being widely used.

The PX Pressure Exchanger, high efficiency isobaric ERD. Our patented PX Pressure Exchanger technology consists of a ceramic rotor supported by a highly efficient hydrodynamic and hydrostatic bearing system. Our PX Pressure Exchangers compete largely in the SWRO industry, or in higher salinity BWRO desalination applications, and enable desalination plant operators to recover otherwise wasted hydraulic pressure energy from a high-pressure fluid flow and transfer the energy to a low-pressure fluid flow, reducing energy costs and carbon emissions associated with the reverse osmosis process.

Turbochargers, high efficiency centrifugal ERD. Our Turbochargers consist of a single-stage turbine impeller connected to a single-stage pump impeller via a common shaft. All hydraulics are housed within the casing, with no seals required. The turbine impeller absorbs the hydraulic energy of the concentrate stream and converts it into mechanical energy. This energy is then transferred to the pump impeller. The impeller converts the mechanical energy back to hydraulic energy, providing an additional pressure boost to the feed stream of the brackish or SWRO desalination systems. Our Turbochargers are used for both low-pressure brackish and high-pressure SWRO desalination systems, as well as various other water treatment applications. Our AT and LPT Turbocharger product lines provide high efficiency with state-of-the-art engineering utilizing a compact configuration. We believe our Turbochargers deliver substantial savings and ease of integration into desalination systems. With custom-designed hydraulics that allow for optimum performance over a wide range of operating conditions, our Turbocharger technology offers solutions to capital cost constrained single-stage SWRO applications, as well as inter-stage boost desalination applications typically found in BWRO systems.

Pumps

High efficiency pumps, high-pressure feed and high-pressure circulation pumps. In addition to ERDs, reverse osmosis desalination requires specialized high-pressure membrane feed and, in PX Pressure Exchanger applications, high-pressure circulation pumps. These devices, in combination with ERDs, must efficiently pressurize and circulate feed water to the membranes to purify water. Plant operators require specialized pumps with performance matched to the requirements of the membranes and ERDs. To minimize plant costs these pumps must provide high energy efficiency and reliability with low maintenance requirements.

We manufacture and/or supply specialized high-pressure feed and circulation pumps for only a portion of the markets served by our ERD solutions. Our high-pressure feed pumps are designed to pressurize the membrane feed flow and overcome the osmotic pressure requirements of the feed water resulting in the production of permeate water. Our high-pressure circulation pumps are designed to “circulate” and control the high-pressure flow rates through the PX Pressure Exchanger and to compensate for small pressure losses across the membrane, PX Pressure Exchanger, and associated process piping.

Markets

Sea and brackish water reverse osmosis desalination have been our primary markets for revenue generation. The water market ranges from small desalination plants, such as those used in cruise ships and resorts, to mega-project scale desalination plants, defined as those which produce over 50,000 cubic meters of water per day. Because of the geographical location of many significant water desalination projects, geopolitical and economic events can influence the timing of expected projects. We anticipate that emerging markets traditionally not associated with desalination, including the United States (“U.S.”) will inevitably develop and provide further revenue growth opportunities.

Greenfield

The greenfield market represents newly constructed reverse osmosis desalination projects. These facilities vary in size, scope and geography. Large scale greenfield projects are typically public in nature and involve a formal tendering process. Smaller greenfield projects may be private in nature, but typically still involve a formal tendering process. We work directly with the project bidders, generally large engineering, procurement and construction (“EPC”) firms, end-users and industry consultants, to specify our products prior to the project being awarded, where possible. Once the project is awarded to an EPC, our normal sales process ensues. The greenfield market has been the key market for our water business. This market is highly competitive, and the tendering process pays close attention to the cost to desalinate water (*i.e.*, dollars per cubic meter of water produced). Our PX Pressure Exchanger’s industry-leading efficiency for ERDs in the desalination industry has allowed us to remain a market leader in the global ERD market.

Retrofit (or Brownfield)

The retrofit market represents existing water facilities that are currently in operation utilizing legacy ERD technologies or no ERDs, at all. These facilities and their owners not only face high energy consumption and reduced plant availability due to these legacy technologies, but also encounter capital expenditure and “know-how” issues that may prevent them from retrofitting plants. Typical retrofits include improvements to existing operations, equipment upgrades and potential expansions of existing capacity. We leverage our best-in-class solutions and “know how” to unseat legacy technology in Brownfield plants by implementing water production efficiency measures to reduce overall power consumption, repair and maintenance costs and avoid costly capital upgrades, as well as increase throughput and/or plant uptime. These retrofit opportunities may or may not have a formal tendering process. We typically approach the plant operators, owners and/or end-users of these facilities to present our leading life-cycle cost value-proposition.

Technology Conversion

A technology conversion within the desalination industry, from thermal to reverse osmosis desalination, is occurring due to significant cost savings associated with reverse osmosis. Over 22 million cubic meters per day of potable or desalinated water capacity was installed from 1980 through 2018. As these plants age, the industry expects the majority of plants to replace their existing technology with reverse osmosis technologies. These conversions are driving new demand for reverse osmosis solutions to simply maintain existing water supplies in the world today, which in turn may create demand for our products.

Service & Aftermarket

Service & aftermarket is comprised of existing water facilities that have our solutions installed or in operation. We provide spare parts and repair services, field services and various commissioning activities to our global customer base. We leverage our industry expertise in supporting our existing installed base to ensure that our solutions are being operated effectively and efficiently. Readily available aftermarket products and services are required by our industry partners and customers in order to maximize plant availability and overall profitability of their operations.

Customers

We sell our ERDs, Turbochargers, high-pressure pumps, circulation “booster” pumps, and services to (1) major international EPC firms that can design, build, own and operate large-scale desalination plants (mega projects); (2) original equipment manufacturers (“OEM”) which are companies that supply equipment and packaged solutions for small- to medium-sized desalination plants, and national, state and local municipalities worldwide; and (3) plant owners and/or operators who can utilize our technology to upgrade or keep their plant running, or retrofit their existing plant equipment with various efficiency measures to optimize operations by reducing overall power consumed and reduce other operating costs in the desalination process.

Large Engineering, Procurement and Construction Firms – EPCs

A significant portion of our revenue has historically come from sales to large EPC firms worldwide which have the required desalination expertise to engineer, undertake procurement for, construct, and sometimes own and operate, large-scale desalination plants or mega-projects. Due to the enormous volume of water being processed by these mega-projects, ongoing operating costs rather than the initial capital expenditures is the key factor in their selection of an ERD solution. As such, EPCs most often select our PX Pressure Exchangers, which we believe offers market-leading efficiency and total lifecycle cost to the end client. We work with these EPC firms to specify our PX Pressure Exchanger solutions for their plant designs. The time between project tender and shipment can range from 16 months to 36 months, or more. Each mega-project represents revenue opportunities ranging from approximately \$1 million to \$18 million.

We estimate that the total capital investments in these mega-projects may fall between \$50 million to \$1 billion. Due to the large capital investments needed to fund these projects, which are typically provided by national or local governments, these projects are more susceptible to macroeconomic and regional risks, such as economic downturns, currency shocks, or political risks.

Original Equipment Manufacturers – OEMs

We sell a broad set of our products to OEMs, including our PX Pressure Exchangers, Turbochargers, high-pressure pumps, circulation “booster” pumps, and services. Our sale of solutions and services to OEM suppliers are for integration and use in small- to medium-sized desalination plants processing up to 50,000 cubic meters of water per day, such as desalination plants located in local municipalities, hotels and resorts, power plants, cruise ships, and farm operations. In addition, these OEMs purchase our solutions for mobile, decentralized “quick water” or emergency water solutions.

Unlike mega-projects, OEM projects are smaller in scope and, as such, the initial capital expenditure, rather than future ongoing operating costs, is often the key factor in selection of an ERD solution. Accordingly, we sell not only our PX Pressure Exchanger, but also our Turbochargers, which offer a lower cost alternative to our PX Pressure Exchanger. The typical time from project tender and shipment can range from 1 month to 12 months. OEM projects typically represent revenue opportunities up to \$1 million.

Capital investments in OEM projects typically range between \$10 million to \$50 million. Due to a more diverse customer base and source of financing, typically privately financed or financed by local municipalities, OEM projects tend to be less susceptible to economic and regional shocks and provide a more stable source of revenue.

End-users and Service Providers

Our existing and expanding installed base of ERDs and pump products in water plants has created a growing customer base comprised of plant operators and service providers. These customers purchase spare parts, replacement parts, and service contracts, as well as utilize our field service expertise to perform maintenance and repairs. Owners and operators of older plants without effective ERDs, and newer plants with devices manufactured by our competitors, purchase our equipment to retrofit plants to realize operational expense reductions or expansions in plant capacity.

Competition

The market for ERDs, turbochargers, high-pressure pumps, and circulation “booster” pumps, is competitive. As the demand for fresh water increases and the market expands, we expect competition to persist and intensify.

We have three main competitors for our ERDs: Flowserve Corporation (“Flowserve”), Fluid Equipment Development Company (“FEDCO”), and Danfoss Group (“Danfoss”). We believe our solutions offer a competitive advantage compared to our competitors’ solutions because our ERDs provide the lowest life-cycle cost and are, therefore, the most cost-effective ERD solutions for the reverse osmosis desalination industry.

In the market for large mega-projects, our PX Pressure Exchanger competes primarily with Flowserve’s DWEER product. We believe our PX Pressure Exchangers have a competitive advantage, as compared to the DWEER product, because our devices are made with highly durable and corrosion-resistant alumina ceramic parts that are designed for a life of more than 25 years, are warranted for high efficiencies, and cause minimal unplanned downtime, resulting in lower lifecycle costs. Additionally, our PX Pressure Exchanger offers optimum scalability with a quick startup, as well as no scheduled maintenance.

In the market for small- to-medium-sized desalination plants, our ERD solutions compete with FEDCO’s turbochargers and Danfoss’ iSave ERD. We believe that our PX Pressure Exchangers have a distinct competitive advantage over these solutions because our devices provide up to 98% efficiency, have lower lifecycle maintenance costs, and are made of highly durable and corrosion-resistant alumina ceramic parts. We also believe that our Turbochargers compete favorably with FEDCO’s turbochargers based on efficiency, price, and because our Turbochargers have design advantages that enhance efficiency, operational flexibility and serviceability.

In the applicable market and flow ranges that we serve for high-pressure pumps and circulation pumps, our solutions compete with pumps manufactured by FEDCO, Flowserve, KSB Aktiengesellschaft, Torishima Pump Mfg. Co., Ltd., Sulzer Pumps, Ltd., and other companies. We believe that our pump solutions are competitive with these solutions because our pumps are developed specifically for reverse osmosis desalination, are highly efficient, feature product-lubricated bearings, and are often purchased with our ERDs in small- to medium-sized plants.

Sales and Marketing

Our strategically located direct sales force offers our products through capital sale to our customers around the world. We have sales offices in the U.S., Madrid, Shanghai, and Dubai, and we maintain a sales and service footprint in strategic territories, allowing rapid response to our customers’ needs. Our team is composed of individuals with many years of desalination and water industry expertise. Aligning to the geographic breadth of our current and potential future customers, our product marketing approach includes a strategic presence at water industry events across various regions. In addition, we leverage our industry and market intelligence to develop new solutions and services that can be adopted by our growing customer base.

A significant portion of our revenue is from outside of the U.S. Additional segment and geographical information regarding our product revenue is included in Note 12, “Business Segment,” and Note 13, “Concentrations,” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K.

Operations

Our ERDs, such as our PX Pressure Exchangers, Turbochargers, high-pressure pumps, and circulation “booster” pumps, are designed, produced, assembled, and tested, at our facility located in San Leandro, California. Our San Leandro, California manufacturing facility of 100,000 square feet (“sq.ft.”) includes an advanced ceramics manufacturing facility and testing laboratory, five hydraulic performance testing loops, computer numerical control (“CNC”) machines, assembly stations and warehouse. Aluminum Oxide (“Alumina”) ceramic components for our PX Pressure Exchanger are manufactured in-house from high-grade, raw alumina to the final product. Components for our other products also undergo final precision finishing to protect the proprietary nature of our manufacturing methods and product designs and to maintain premium quality standards. The availability of multiple test loops allows us to test every water product we manufacture to its full rated operating conditions.

On February 10, 2020, we entered into a lease agreement, that commenced on March 1, 2020, for an additional office and warehouse space located in Tracy, California. This office and warehouse space is approximately 54,429 sq.ft. and will supplement the existing manufacturing, warehouse and distribution of our ERDs.

We obtain raw, processed and certain pre-machined materials from various suppliers to support our manufacturing operations. A limited number of these suppliers are near sole-source to maintain material consistency and support new product development. A qualified redundant material source exists in most cases, or whenever feasible.

Through our vertically integrated precision manufacturing process, we ensure that all components meet our high standards for quality, durability, and reliability. Our production facility operates under the principles of Lean Manufacturing and we continuously seek ways to improve product and process performance. Our manufacturing operations is certified to ISO9001:2015 standards.

Water field activities are conducted by our aftermarket and field service organization on-site at customer locations.

Seasonality

We often experience substantial fluctuations in product revenue from quarter-to-quarter and from year-to-year because a single order for our ERDs by a large EPC firm for a particular plant is based upon each firm’s project planning, which varies from year to year and firm to firm, may represent a significant portion of our revenue.

Oil & Gas

Across the oil & gas markets, highly pressurized fluid flows are required to extract and process hydrocarbons. These pressurized fluid flows are a necessity but come at a high cost to the oil & gas industry. In the upstream sector, high rates of flow, high pressure differentials and hostile (*i.e.*, corrosive, erosive or abrasive) fluids lead to rapid degradation of expensive pressure pumping equipment. In the mid-stream and down-stream sectors, pressure energy becomes a waste product at various stages of the oil & gas processing thereby driving excessive energy usage and cost. Oil & gas operators seek ways to reduce these costs and improve overall productivity.

Markets

Upstream Sector

Hydraulic fracturing is a well-stimulation technique in which pressurized liquid containing a highly abrasive, proppant-laden fluid is injected into a wellbore. Oilfield service (“OFS”) providers utilize high-pressure hydraulic fracturing pumps (commonly referred to as “frac-pumps”) to pressurize fracturing fluid (commonly referred to as “frac-fluid”) at treating pressures up to 15,000 pounds per square inch (“psi”). This frac-fluid is sent from the frac-pumps through traditional missile manifolds into the wellbore to create cracks in the deep-rock formations thereby permitting oil & gas extraction. These frac-pumps are routinely destroyed by the abrasive frac-fluids used during the hydraulic fracturing process causing significant OFS operator costs associated with excessive downtime, repairs, maintenance and capital equipment redundancy.

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During mud pumping in the drilling process, a drilling fluid (commonly referred to as “drilling mud”) is circulated from a mud pit through the wellbore utilizing high-pressure mud pumps, which pressurize the drilling mud at treating pressures up to 7,500 psi, to control formation pressures, lubricate the drill bit, and to remove cuttings. Although the existing mud pumping process removes most of the solids from the drilling mud, debris and sand often remain. The pumps circulating the drilling mud is therefore subjected to extreme wear, resulting in burdensome repair and maintenance costs. Components of these mud pumps are routinely destroyed by the hostile drilling mud used during the mud pumping process causing OFS operators significant costs associated with excessive downtime, repairs, maintenance, capital equipment redundancy, safety, and rig mobilization.

OFS operators have long sought ways to ruggedize or extend the life of pumps thereby reducing costs in both the hydraulic fracturing and drilling processes. We believe the most efficient method of extending the life of these pumps is to isolate the high-pressure pumps from the abrasive fluids completely, thereby enabling OFS operators to realize immediate and long-term savings in the form of reduced downtime, repairs and maintenance costs and capital equipment redundancy.

Midstream and Downstream Sectors

Today, natural gas is typically processed by removing acid gases, such as carbon dioxide and hydrogen sulfide, before it is ready for distribution and use. A common acid gas removal process uses an amine solvent to absorb acid gases in a high-pressure contactor column. Having absorbed the carbon dioxide and hydrogen sulfide, the pressurized (rich) amine is then depressurized and processed into regenerated (lean) amine for reuse. An ERD, such as our Turbocharger, can recover the energy wasted during this reduction in pressure of the amine. This recovered energy can then be converted to electricity, or hydraulic energy, which eliminates the need for a high-pressure pump. Fewer high-pressure pumps reduce capital expenditures, and energy and maintenance costs, positively impacting plant availability.

Within pipeline applications, crude oil or final hydrocarbon products must be pressurized to travel from upstream gathering facilities or refineries, to terminals and tank farms. Fluid pressure builds within the pipeline during transport, and this pressure must be reduced before storing the liquid. This required pressure-drop, typically managed through a control valve that simply dissipates the energy into the atmosphere, represents an opportunity to generate electricity from otherwise wasted pressure energy.

Solutions

Our technology solutions seek to preserve or eliminate pumping technology in hostile processing environments or convert wasted pressure energy into a reusable asset. Our core oil & gas solutions, currently in research and development, are based upon our proven pressure exchanger technology, the VorTeq™ and MTeq™, isolate high cost pumping equipment from hostile processing fluids. Our centrifugal line of solutions based upon our Turbocharger technology, the IsoBoost™ and IsoGen™, recycle otherwise lost pressure energy.

Upstream Sector

VorTeq, a PX solution for hydraulic fracturing applications: The VorTeq reduces equipment failure common during well completion operations by re-routing the abrasive proppants that can cause pump failure away from frac-pumps, and ultimately enables a more efficient pumping model. The advanced pressure exchanger technology at the heart of the VorTeq works as a pump. Frac-fluid is pressurized in the VorTeq manifold before being sent downhole. This process ensures that high-pressure frac-pumps handle water, not abrasive proppants, protecting frac-pumps from erosion and reducing operational downtime. Using VorTeq, site operators can reduce repair and maintenance costs, reduce capital costs by extending frac-pump life expectancy, and eliminate redundant capital equipment. By minimizing pump redundancy and increasing equipment lifespan, the VorTeq can lower costs and reduce the emissions and energy intensity of oil & gas production. The VorTeq is currently in the advance stages of research and development (“R&D”). We completed a substantial re-design of the VorTeq during 2017 and have progressed the technology significantly in 2018 and 2019. Our focus remains on commercializing this technology.

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MTeq, a PX solution for mud pumping applications: Our MTeq technology isolates and preserves costly mud pumps by re-routing hostile drilling mud from these critical pumps, and ultimately enables a more efficient pumping model. These mud pumps will process only clean fluid, which leads to reduced repairs and maintenance costs, and reduced capital costs by extending pump life expectancy and eliminating redundant capital equipment. Our MTeq technology is currently in the R&D stage. We designed the MTeq during late 2016 and early 2017 and completed building the first prototype in December 2017 and we began testing MTeq in 2018.

Midstream and Downstream Sectors

IsoBoost & IsoGen, Turbocharger solutions, for gas processing & pipeline applications: Within the gas processing and pipeline pressure down cycle, the IsoBoost and IsoGen technologies enable the recovery of pressure energy in the fluid flows either through the exchange of pressure within the application or by converting it to electricity. Our technology enables gas processing plant and pipeline owners and operators to achieve immediate and long-term energy savings with little or no operational disruption. Our IsoBoost is comprised of hydraulic turbochargers and related controls and automation systems. The IsoBoost solution enables oil & gas operators to capture and use wasted hydraulic pressure energy within the acid gas removal process, acting like a pump that is powered by hydraulic pressure that would otherwise be discarded through a control valve. Our IsoGen is comprised of hydraulic turbines, generators, and related controls and automation systems. The IsoGen enables oil & gas operators to generate electricity from the hydraulic energy in high-pressure fluid flows, either within the acid gas removal process in gas processing or at pipeline choke stations.

Customers

We license, lease or sell our oil & gas products to OFS companies, international oil companies (“IOC”), national oil companies (“NOC”), exploration and production companies (“E&P”), OEMs and EPC firms.

Oilfield Service Companies

OFS companies provide the infrastructure, equipment, intellectual property, and services needed by the oil & gas industry to explore for, extract, and transport, crude oil and natural gas. OFS hydraulic fracturing and mud pumping operators face significant pressure to reduce costs as oil & gas companies curtail capital expenditures and seek operational efficiencies in response to lower commodity prices.

In 2014, we entered into a strategic partnership with Liberty Oil Field Services (“Liberty”) to pilot and conduct field trials with the VorTeq. Through this agreement, Liberty has the rights to lease up to twenty VorTeq missiles for a period of up to five years following commercialization. In 2015, we entered into a 15-year license agreement with Schlumberger Technology Corporation (the “VorTeq Licensee”) for the exclusive, worldwide right to use the VorTeq for hydraulic fracturing onshore operations. The license agreement provides a carve out for Liberty’s contractual rights to utilize the VorTeq. We are currently working with the VorTeq Licensee and Liberty to commercialize the VorTeq technology.

As the MTeq technology matures, the Company intends to evaluate the best potential distribution method for the technology, which may include leasing or licensing partnerships with OFS companies that specialize in drilling wells or OEMs that supply or lease equipment to market participants.

Gas Processing & Pipeline Operators

We have contracted and delivered oil & gas solutions to customers in North America, Asia, and the Middle East for use in gas processing applications. Our target market consists of gas processing plants, pipeline substations and ammonia plants worldwide. Our IsoBoost solution has been installed in a major gas processing plant in the Middle East.

In 2016, we received our first major purchase order for multiple units of our IsoBoost solution for integration into a major gas processing plant under construction in the Middle East. We completed and shipped the initial units to the Middle East in fourth quarter of 2018. In April 2017, we entered into a 10-year licensing agreement with Alderley FZE for our IsoBoost and IsoGen technologies in gas processing and pipeline applications within the countries of the Gulf Cooperation Council (“GCC”), as well as Iraq and Iran to the extent international sanctions and laws permit.

Competition

The landscape for our technology within the oil & gas market is competitive as the industry is continuously seeking ways to reduce costs and extend the life of assets used in the production, transportation or processing of hydrocarbons.

We believe our VorTeq technology represents a competitive advantage over existing missile manifold technology because our solution re-routes abrasive proppant away from high-pressure pumps and will provide OFS operators the option to transition to more robust, longer lived, centrifugal pumps thereby further decreasing operating and capital costs. While our VorTeq replaces a traditional manifold, the competitors to our VorTeq are the high-pressure frac-pump manufacturers. There are a multitude of these pump manufacturers, including Gardner Denver, Inc., FMC Technologies, the Weir Group, Stewart & Stevenson and Forum Energy Technologies.

Similar to the VorTeq, we believe MTeq enhances the useful life of mud pumps and consumable pump components used in land drilling by re-routing the hostile drilling mud away from the high-pressure pumps, and OFS operators have the option to transition to more robust, longer life, centrifugal pumps thereby further decreasing operating and capital costs. The competition to the MTeq is a more robust mud pump or more durable mud pump components. The primary manufacturers of mud pumps are National Oilwell Varco, Inc., Gardner Denver, Inc. and Cameron International Corporation.

Several companies manufacture competitive technology to the IsoGen, which primarily consists of reverse running pumps (also called “hydraulic power recovery turbines” or “HPRTs”) and perform a basic form of energy recovery. Manufacturers of reverse running pumps include, but are not limited to, Flowserve, Sulzer Pumps, Ltd., and Shin Nippon Machinery. Several companies manufacture hydraulic turbochargers, which could eventually develop into competitive technology to our IsoBoost. However, none of these companies that manufacture turbochargers have significant experience within gas processing. In order to utilize a turbocharger in gas processing, expertise is required to validate the system level design and integration within a gas processing application.

Sales and Marketing

In the oil & gas market, we target OFSs, IOCs, NOCs, E&Ps, OEMs or EPCs on behalf of oil producers and chemical producers who have applications for our solutions and services. We endeavor to limit capital sales into the oil & gas market, thereby minimizing installation and distribution costs, as well as associated sales and marketing expenses. As a result, our primary go-to-market strategy in the oil & gas market is through technology leasing or licensing as outlined in the Customer section of this overview.

A significant portion of our revenue is from outside of the U.S. Additional segment and geographical information regarding our product revenue is included in Note 13, “Concentrations” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K

Operations

Our oil & gas product manufacturing, assembly and testing, as well as overseeing the commercialization of the VorTeq, has been historically managed through our operations in Ireland. In October 2018, these functions were transitioned to the U.S. branch of our Ireland operating company, which is a tax resident in Malta. To produce our oil & gas products, we utilize multiple supply chain partners, in addition to our San Leandro, California manufacturing facility. We complete critical machining, assembly and testing operations, in-house to protect the proprietary nature of our manufacturing methods and product designs and to maintain premium quality standards.

Oil & gas field activities are conducted by our field operations organization located in Texas, which also provides support to R&D activities leading to VorTeq and MTeq commercialization.

In January 2020, we opened our commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas. This facility consolidates our Texas oil & gas operations and allow us to test the VorTeq and MTeq technologies at scale and in real world conditions on a regular, uninterrupted basis. The facility contains a test yard with equipment that simulates the pressures, flows, and operating conditions of commercial frac sites for scalable, continuous product testing. In addition, the facility houses equipment to complete critical machining, assembly and testing operations in support of R&D and eventual commercialization.

Seasonality

In our Oil & Gas segment, we do not currently have enough history to determine seasonal revenue patterns.

Research, Development and Technology

Our focus on R&D is a key driver of our future evolution. When developing products, we seek three distinct process criteria: (1) high rates of fluid flow; (2) large pressure differentials; and (3) high degrees of capital intensity, specifically in the form of pumping and/or compression assets. Using these criteria, our product development strategy is to identify fluid flow applications where equipment is being destroyed or adversely affected and/or where pressure energy is being wasted. We maintain a product development road map, which guides R&D resource allocation across all business units. Our R&D team guides products through defined development stages with structured toll-gate reviews throughout the process.

We have invested in R&D to support our product development strategy and have grown our R&D organization significantly since 2013. We maintain advanced testing capabilities to test our PX Pressure Exchanger, Turbocharger, and pump solutions at our headquarters located in San Leandro, California and, as of January 2020, our new commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas allows us to test our oil & gas products at full scale (full flow and pressure). In 2018, we made a sizable investment in high pressure frac-equipment, such as frac-pumps, blenders, and other equipment, to bolster our testing capabilities to advance our oil & gas solutions.

Our engineers specialize in a range of technical fields spanning our core engineering competencies of fluid mechanics and aerodynamics, solid mechanics with expertise in computational fluid dynamics and finite element analysis, bearings design (roller-element, hydrostatic, and hydrodynamic), multi-phase flow, dynamics and controls, acoustics and vibrations, tribology, material science and coatings, pumps and turbines, turbo-machinery, and rotating equipment.

We have invested in advanced numerical modeling and analytical tools that allow for 3-dimensional (“3D”), multi-phase, multi-physics, and multi-scale computational fluid dynamics and fluid structure interactions. Leading-edge modeling and analytical techniques coupled with extensive experimental capabilities allow us to further refine our existing water and oil & gas technologies, as well as developing new derivatives of our pressure exchanger technology for complex systems and applications.

Today our R&D investments are focused on (1) commercialization of the VorTeq and MTeq solutions; (2) advances to our existing PX Pressure Exchanger, Turbocharger, and pump solutions to better service our water end markets; (3) development of new pump technologies in support of our water business; and (4) fundamental research into new applications of our pressure exchanger technology in existing and new verticals.

Intellectual Property

We seek patent protection for new technologies, inventions, and improvements that are likely to be incorporated into our solutions. We rely on patents, trade secret laws, and contractual safeguards to protect the proprietary tooling, processing techniques, and other know-how used in the production of our solutions. We have a robust intellectual property (“IP”) portfolio consisting of U.S. and international issued patents as well as pending patent applications.

We have registered the following trademarks with the United States Patent and Trademark office: “ERI,” “PX,” “PX Pressure Exchanger,” “Pressure Exchanger,” the Energy Recovery logo, “Making Desalination Affordable,” “IsoBoost,” and “IsoGen.” Applications are pending for “VorTeq” and “MTeq.” We have also applied for and received registrations in international trademark offices.

Employees

As of December 31, 2019, we had 188 employees: 66 in manufacturing; 49 in engineering, research and development; 42 in corporate services and management; and 31 in sales, service, and marketing. Fourteen of these employees were located outside of the U.S. We also engage a relatively small number of independent contractors, primarily as sales agents worldwide. We have not experienced any work stoppages, and our employees are not unionized. We consider our relations with our employees to be good.

Additional Information

The Energy Recovery website is www.energyrecovery.com. In addition, we maintain an Investor Relations website as a routine channel for distribution of important information, including news releases, presentations, and financial statements (<https://ir.energyrecovery.com>). We intend to use the Investor Relations website as a means of complying with our disclosure obligations under Regulation FD. Accordingly, investors should monitor our Investor Relations website in addition to press releases, Securities and Exchange Commission (“SEC”) filings, and public conference calls and webcasts. Our Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, all amendments to those reports, and the Proxy Statement for our Annual Meeting of Stockholders are made available, free of charge, in the Investor Relations section of our website, as soon as reasonably practicable after the reports have been filed with or furnished to the SEC. The information contained on our website or any other website is not part of this report nor is it considered to be incorporated by reference herein or with any other filing we make with the SEC. Our headquarters and primary manufacturing center is located at 1717 Doolittle Drive, San Leandro, California 94577, and our main telephone number is (510) 483-7370. The SEC maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC and the address of that site (<http://www.sec.gov>).

Item 1A — Risk Factors

The following discussion sets forth what management currently believes could be the most significant risks and uncertainties that could impact our businesses, results of operations, and financial condition. Other risks and uncertainties, including those not currently known to us or our management, could also negatively impact our businesses, results of operations, and financial conditions. Accordingly, the following should not be considered a complete discussion of all of the risks and uncertainties we may face. We may amend or supplement these risk factors from time to time in other reports we file with the SEC.

Risk Related to our Water Segment

Our Water segment depends on the construction of new desalination plants, and the retrofit of existing plants, for revenue, and as a result, our operating results have experienced, and may continue to experience, significant variability due to volatility in capital spending, availability of project financing, and other factors affecting the water desalination industry.

We currently derive the majority of our revenue from sales of products and services used in desalination plants for municipalities, hotels, mobile containerized desalination solutions, resorts, and agricultural operations in dry or drought-ridden regions of the world. The demand for our Water segment products may decrease if the construction of desalination plants or the retrofit of existing plants, declines for political, economic, or other factors, especially in these dry or drought-ridden regions. In addition, the desalination industry is witnessing the start of a technology shift from thermal desalination plants to SWRO production. If this technology shift does not occur or we are unable to capture a portion of the market created by this shift, our Water segment sales and revenue can be negatively impacted. Other factors that could affect the number and capacity of desalination plants built or the timing of their completion, include the availability of required engineering and design resources; a weak global economy; shortage in the supply of credit and other forms of financing; changes in government regulation, permitting requirements, or priorities; and reduced capital spending for desalination. Each of these factors could result in reduced or uneven demand for our Water segment products. Pronounced variability or delays in the construction of desalination plants or reductions in spending for desalination, could negatively impact our Water segment sales and revenue, which in turn could have an adverse effect on our entire business, financial condition, or results of operations and make it difficult for us to accurately forecast our future sales and revenue.

Our Water segment faces competition from a number of companies that offer competing energy recovery and pump solutions. If any one of these companies produces superior technology or offers more cost-effective products, our competitive position in the market could be harmed and our profits may decline.

The market for ERD and pumps for desalination plants is competitive and evolving. We expect competition, especially competition on price, to persist and intensify as the desalination market grows and new competitors enter the market. Some of our current and potential competitors may have significantly greater financial, technical, marketing, and other resources; longer operating histories; or greater name recognition. They may also have more extensive products and product lines that would enable them to offer multi-product or packaged solutions as well as competing products at lower prices or with other more favorable terms and conditions. As a result, our ability to sustain our market share may be adversely impacted, which would affect our business, operating results, and financial condition. In addition, if one of our competitors were to merge or partner with another company, the change in the competitive landscape could adversely affect our continuing ability to compete effectively.

If we are unable to collect unbilled receivables, which are caused in part by holdback provisions, our operating results could be adversely affected.

Our contracts with large engineering, procurement, and construction firms generally contain holdback provisions that typically delay final installment payments for our products by up to 24 months, after the product has been shipped and revenue has been recognized. Generally, 10% or less of the revenue we recognize pursuant to our customer contracts is subject to such holdback provisions and is accounted for as contract assets. Such holdbacks may result in relatively high unbilled receivables. If we are unable to collect these performance holdbacks, our results of operations would be adversely affected.

We depend on a limited number of suppliers for some of our components. If our suppliers are not able to meet our demand and/or requirements, our business could be harmed.

We rely on a limited number of suppliers for vessel housings, stainless steel ports, alumina powder, and tungsten carbide for our portfolio of PX ERDs and stainless steel castings and components for our Turbochargers and pumps. Our reliance on a limited number of manufacturers for these supplies involves several risks, including reduced control over delivery schedules, quality assurance, manufacturing yields, production costs, and lack of guaranteed production capacity or product supply. We do not have long-term supply agreements with these suppliers but secure these supplies on a purchase order basis. Our suppliers have no obligation to supply products to us for any specific period, in any specific quantity, or at any specific price, except as set forth in a particular purchase order. Our requirements may represent a small portion of the total production capacities of these suppliers, and our suppliers may reallocate capacity to other customers, even during periods of high demand for our products. We have in the past experienced, and may in the future experience, product quality issues and delivery delays with our suppliers due to factors such as high industry demand or the inability of our vendors to consistently meet our quality or delivery requirements. If our suppliers were to cancel or materially change their commitments to us or fail to meet quality or delivery requirements needed to satisfy customer orders for our products, we could lose time-sensitive customer orders, be unable to develop or sell our products cost-effectively or on a timely basis, if at all, and have significantly decreased revenue, which could harm our business, operating results, and financial condition. We may qualify additional suppliers in the future, which would require time and resources. If we do not qualify additional suppliers, we may be exposed to increased risk of capacity shortages due to our dependence on current suppliers.

Risk Related to our Oil & Gas Segment

We may not be able to successfully commercialize the VorTeq.

In October 2015, we entered into the VorTeq License Agreement with the VorTeq Licensee, which provides the VorTeq Licensee with exclusive worldwide rights to our VorTeq technology for hydraulic fracturing onshore applications. Once the VorTeq is commercialized, the VorTeq Licensee will begin paying ongoing recurring royalty fees to us for the VorTeq technology. In order to commercialize the VorTeq, the VorTeq License Agreement provides, among other things, that we successfully meet certain specified milestones against key performance indicators set forth in the license agreement. The VorTeq is a relatively new technology and the hydraulic fracturing process is extremely complex, which presents a wide range of technological challenges for us. If we are unable to successfully solve these challenges and, as a result, fail to meet the milestones, we may not be able to successfully commercialize the VorTeq. In that circumstance, we will not receive any royalty payments from the VorTeq Licensee, which could have an adverse effect on our entire business, financial condition, or results of operation.

If the VorTeq Licensee fails to adopt the VorTeq, for any reason, we may not receive royalty payments or be able to successfully commercialize the VorTeq.

The successful commercialization of the VorTeq depends heavily on the VorTeq Licensee's support and ultimate adoption of the technology. If the VorTeq Licensee fails to adopt the VorTeq, for any reason, or exits the business altogether, we may not be able to successfully commercialize the VorTeq with the VorTeq Licensee and consequently, we may not receive any royalties under the VorTeq License Agreement. In addition, the VorTeq Licensee recently announced a change in their North American Land business strategy that might result in a prolonged reduction of their presence within the North American market. This reduction could have a material impact on the total royalties we may receive under the VorTeq License Agreement. If any of the foregoing were to occur, we may not be able to find a suitable replacement for the VorTeq Licensee or be able to negotiate royalties similar to those contained in the VorTeq License Agreement or to commercialize the VorTeq, at all. Failure to commercialize the VorTeq could have an adverse effect on our entire business, financial condition, or results of operation.

We may not meet the key performance indicators necessary to meet the two milestones in the VorTeq License Agreement.

The VorTeq License Agreement calls for certain milestone key performance indicators that if met will result in payments to us of \$25 million for each of two milestones. Achievement of these milestones is uncertain, and while we believe we can meet the milestones, if we are unable to do so, the milestone payments will be delayed until such time as the milestones are met or may not be earned and received at all. Failure to meet said milestones may also jeopardize commercialization and the rate of adoption of our VorTeq.

We may not be able to successfully commercialize the MTeq.

We introduced the MTeq in 2017 and the technology is currently in the R&D stage. While we are actively working towards progressing this technology, there is no guarantee we will produce a viable commercialized solution given the complex and extreme conditions found in mud pumping, which present a wide range of technological challenges for us. If we are unable to solve any of the technological challenges we encounter or find partners to adopt the technology, we may not be able to successfully commercialize the MTeq, which could have an adverse effect on our entire business, financial condition, or results of operation.

Our Oil & Gas segment may be impacted by prolonged deflation in global oil prices which may cause delays or cancellations of projects by Oil & Gas segment customers, negatively affecting the rate of our market penetration and consequently our revenue and profitability.

A deflationary oil environment may delay and even stall adoption and deployment of our products within our Oil & Gas segment including but not limited to the VorTeq as licensed for onshore applications by the VorTeq Licensee. Emerging market economies, those dependent on commodity exports, and especially those for whom oil exports make up a significant percent of total exports, may be unable to retrofit or expand their oil exploration, production, and gas processing infrastructure thus negatively impacting our addressable market and future revenue. Additionally, oil price deflation may continue to lead to widespread liquidity and insolvency issues for exploration, production, and processing customers, which may negatively affect our addressable markets and therefore our financial performance.

Risk Related to our Entire Business

Our diversification into new fluid flow markets, such as oil & gas, may not be successful.

We have made a substantial investment in research, development, and sales to execute on our diversification strategy into fluid flow markets such as oil & gas and chemical processing. While we see diversification as core to our growth strategy, there is no guarantee that we will be successful in our efforts. Our model for growth is based in part on our ability to initiate and embrace disruptive technology trends, to enter new markets, both in terms of geographies and product areas, and to drive broad adoption of the products and services that we develop and market. Any inability to execute this model for growth could damage our reputation, limit our growth, and negatively affect our operation results. For example, while we believe that our products will enable gas processing plant operators to operate at a high level of energy efficiency with minimal downtime, we may be subject to warranty claims if customers of these offerings experience significant downtimes or failures for which our warranty reserves may be inadequate given the lack of historical failure rates associated with new product introductions. We also could be subject to damage claims based on our products, which we may not be able to properly insure. In addition, profitability, if any, in new industrial verticals may be lower than in our Water segment, and we may not be sufficiently successful in our diversification efforts to recoup investments.

Our operating results may fluctuate significantly, making our future operating results difficult to predict and causing our operating results to fall below expectations.

Our operating results may fluctuate due to a variety of factors, many of which are outside of our control.

We have experienced significant fluctuations in revenue from quarter-to-quarter and year-to-year, and we expect such fluctuations to continue. In addition, in the past, customer buying patterns led to a significant portion of our sales occurring in the fourth quarter. This presents the risk that delays, cancellations, or other adverse events in the fourth quarter could have a substantial negative impact on annual results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Since it is difficult for us to anticipate our future results, in the event our revenue or operating results fall below the expectations of investors or securities analysts, our stock price may decline.

Our sales cycles can be long and unpredictable, and our sales efforts require considerable time and expense. As a result, our sales are difficult to predict and may vary substantially from quarter to quarter, which may cause our operating results to fluctuate.

Our sales efforts involve substantial education of our current and prospective customers about the use and benefits of our energy recovery products. This education process can be time-consuming and typically involves a significant product evaluation process which is particularly pronounced when dealing with product introduction into new fluid flow industrial verticals. In our Water segment, the sales cycle for our OEM customers, which are involved with smaller desalination plants, averages one to 12 months. The Water segment sales cycle for our international engineering, procurement, and construction firm customers, which are involved with larger desalination plants, ranges from 16 to 36 months. These long sales cycles make quarter-by-quarter revenue predictions difficult and results in our expending significant resources well in advance of orders for our products.

Our business entails significant costs that are fixed or difficult to reduce in the short term while demand for our products is variable and subject to fluctuation, which may adversely affect our operating results.

Our business requires investments in facilities, equipment, research and development, and training that are either fixed or difficult to reduce or scale in the short term. At the same time, the market for our products is variable and has experienced downturns due to factors such as economic recessions, increased precipitation, uncertain global financial markets, and political changes, many of which are outside of our control. During periods of reduced product demand, we may experience higher relative costs and excess manufacturing capacity, resulting in high overhead and lower gross profit margins while causing cash flow and profitability to decline. Similarly, although we believe that our existing manufacturing facilities are capable of meeting current demand and demand for the foreseeable future, the continued success of our business depends on our ability to expand our manufacturing, research and development, and testing facilities to meet market needs. If we are unable to respond timely to an increase in demand, our revenue, gross profit margin, net income, and cash flow may be adversely affected.

Parts of our inventory may become excess or obsolete, which would increase our cost of revenues.

Inventory of raw materials, parts, components, work in-process, or finished products may accumulate, and we may encounter losses due to a variety of factors, including technological change in the water desalination and oil & gas industries that result in product changes; long delays in shipment of our products or order cancellations; our need to order raw materials that have long lead times and our inability to estimate exact amounts and types of items needed, especially with regard to the configuration of our high-efficiency pumps and IsoBoost and IsoGen systems; and cost reduction initiatives resulting in component changes within the products.

In addition, we may from time to time purchase more inventory than is immediately required in order to shorten our delivery time in case of an anticipated increase in demand for our products. If we are unable to forecast demand for our products with a reasonable degree of certainty and our actual orders from our customers are lower than these forecasts, we may accumulate excess inventory that we may be required to write off, and our business, financial condition, and results of operations could be adversely affected.

We may not generate positive returns on our research and development strategy.

Developing our products is expensive and the investment in product development may involve a long payback cycle. For the years ended December 31, 2019, 2018 and 2017, our R&D expenses were \$23.4 million, or approximately 27% of our total revenue, \$17.0 million, or approximately 23% of our total revenue, and \$13.4 million, or approximately 19% of our total revenue, respectively. We believe one of our greatest strengths lies in our innovation and our product development efforts. By investing in R&D, we believe we are well positioned to continue to execute on our product strategy, take into consideration our customers' cost and efficiency sensitivities and take advantage of other market opportunities. We expect that our results of operations may be impacted by the timing and size of these investments. In addition, these investments may take several years to generate positive returns, if ever.

We are subject to risks related to product defects, which could lead to warranty claims in excess of our warranty provision or result in a significant or a large number of warranty or other claims in any given year.

We provide a warranty for certain products for a period of 18 to 30 months and provide up to a five-year warranty for the ceramic components of our PX-branded products. We test our products in our manufacturing facilities through a variety of means; however, there can be no assurance that our testing will reveal latent defects in our products, which may not become apparent until after the products have been sold into the market. The testing may not replicate the harsh, corrosive, and varied conditions of the desalination and other plants in which they are installed. It is also possible that components purchased from our suppliers could break down under those conditions. Certain components of our Turbochargers and pumps are custom-made and may not scale or perform as required in production environments. Accordingly, there is a risk that we may have significant warranty claims or breach supply agreements due to product defects. We may incur additional cost of revenue if our warranty provisions are not sufficient to cover the actual cost of resolving issues related to defects in our products. If these additional expenses are significant, they could adversely affect our business, financial condition, and results of operations.

Business interruptions may damage our facilities or those of our suppliers.

Our operations and those of our suppliers may be vulnerable to interruption by fire, earthquake, flood, and other natural disasters, as well as power loss, telecommunications failure, and other events beyond our control. Our facilities in California are located near major earthquake faults and have experienced earthquakes in the past. If a natural disaster occurs, our ability to conduct our operations could be seriously impaired, which could harm our business, financial condition, results of operations, and cash flows. We cannot be sure that the insurance we maintain against general business interruptions will be adequate to cover all of our losses.

If we are unable to protect our technology or enforce our intellectual property rights, our competitive position could be harmed, and we could be required to incur significant expenses to enforce our rights.

Our competitive position depends on our ability to establish and maintain proprietary rights in our technology and to protect our technology from copying by others. We rely on trade secret, patent, copyright, and trademark laws, as well as confidentiality agreements with employees and third parties, all of which may offer only limited protection. We hold a number of U.S. and counterpart international patents, and when their terms expire, we could become more vulnerable to increased competition. The protection of our intellectual property in some countries may be limited. While we have expanded our portfolio of patent applications, we do not know whether any of our pending patent applications will result in the issuance of patents or whether the examination process will require us to narrow our claims, and even if patents are issued, they may be contested, circumvented, or invalidated. Moreover, while we believe our issued patents and patent pending applications are essential to the protection of our technology, the rights granted under any of our issued patents or patents that may be issued in the future may not provide us with proprietary protection or competitive advantages, and as with any technology, competitors may be able to develop similar or superior technologies now or in the future. In addition, our granted patents may not prevent misappropriation of our technology, particularly in foreign countries where intellectual property laws may not protect our proprietary rights as fully as those in the U.S. This may render our patents impaired or useless and ultimately expose us to currently unanticipated competition. Protecting against the unauthorized use of our products, trademarks, and other proprietary rights is expensive, difficult, and in some cases, impossible. Litigation may be necessary in the future to enforce or defend our intellectual property rights or to determine the validity and scope of the proprietary rights of others. Intellectual property litigation could result in substantial costs and diversion of management resources, either of which could harm our business.

Claims by others that we infringe their proprietary rights could harm our business.

Third parties could claim that our technology infringes their intellectual property rights. In addition, we or our customers may be contacted by third parties suggesting that we obtain a license to certain of their intellectual property rights that they may believe we are infringing. We expect that infringement claims against us may increase as the number of products and competitors in our market increases and overlaps occur. In addition, to the extent that we gain greater visibility, we believe that we will face a higher risk of being the subject of intellectual property infringement claims. Any claim of infringement by a third party, even those without merit, could cause us to incur substantial costs defending against the claim and could distract management from our business. Furthermore, a party making such a claim, if successful, could secure a judgment that requires us to pay substantial damages. A judgment against us could also include an injunction or other court order that could prevent us from offering our products. In addition, we might be required to seek a license for the use of such intellectual property, which may not be available on commercially reasonable terms, or at all. Alternatively, we may be required to develop non-infringing technology, which could require significant effort and expense and may ultimately not be successful. Any of these events could seriously harm our business. Third parties may also assert infringement claims against our customers. Because we generally indemnify our customers if our products infringe the proprietary rights of third parties, any such claims would require us to initiate or defend protracted and costly litigation on their behalf in one or more jurisdictions, regardless of the merits of these claims. If any of these claims succeed, we may be forced to pay damages on behalf of our customers.

We are currently involved in legal proceedings, and may be subject to additional future legal proceedings, that may result in material adverse outcomes.

In addition to the intellectual property litigation risks discussed above, we are presently involved, and may become involved in the future, in various commercial and other disputes as well as related claims and legal proceedings that arise from time to time in the course of our business. See Note 8, "Commitments and Contingencies – Litigation," of the Notes to Consolidated Financial Statements in Part II, Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K for information about certain legal proceedings in which we are involved. Our current legal proceedings and any future lawsuits to which we may become a party are and will likely be expensive and time consuming to investigate, defend and resolve, and will divert our management's attention. Any litigation to which we are a party may result in an onerous or unfavorable judgment that may not be reversed upon appeal or in payments of substantial monetary damages or fines, or we may decide to settle lawsuits on similarly unfavorable terms, which could have an adverse effect on our business, financial condition, or results of operations.

Our global operations expose us to risks and challenges associated with conducting business internationally, and our results of operations may be adversely affected by our efforts to comply with the laws of other countries, as well as U.S. laws which apply to international operations, such as the Foreign Corrupt Practices Act (FCPA) and U.S. export control laws.

We operate on a global basis with offices or activities in Europe, Africa, Asia, South America, and North America. We face risks inherent in conducting business internationally, including compliance with international and U.S. laws and regulations that apply to our international operations. These laws and regulations include tax laws, anti-competition regulations, import and trade restrictions, export control laws, and laws which prohibit corrupt payments to governmental officials or certain payments or remunerations to customers, including the U.S. Foreign Corrupt Practices Act (“FCPA”) or other anti-corruption laws that have recently been the subject of a substantial increase in global enforcement. Many of our products are subject to U.S. export law restrictions that limit the destinations and types of customers to which our products may be sold, or require an export license in connection with sales outside the U.S. Given the high level of complexity of these laws, there is a risk that some provisions may be inadvertently or intentionally breached, for example through fraudulent or negligent behavior of individual employees, our failure to comply with certain formal documentation requirements, or otherwise. Also, we may be held liable for actions taken by our local dealers and partners. Violations of these laws and regulations could result in fines, criminal sanctions against us, our officers or our employees, and prohibitions or conditions on the conduct of our business. Any such violations could include prohibitions or conditions on our ability to offer our products in one or more countries and could materially damage our reputation, our brand, our business, and our operating results. In addition, we operate in many parts of the world that have experienced significant governmental corruption to some degree and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. We may be subject to competitive disadvantages to the extent that our competitors are able to secure business, licenses, or other preferential treatment by making payments to government officials and others in positions of influence or through other methods that relevant law and regulations prohibit us from using. Our success depends, in part, on our ability to anticipate these risks and manage these difficulties. These factors or any combination of these factors may adversely affect our revenue or our overall financial performance.

Uncertainty in the global geopolitical landscape may impact our operations outside the United States.

There is uncertainty as to the position the United States will take with respect to world affairs. This uncertainty may include such issues as U.S. support for existing treaty and trade relationships with other countries, including, notably, China. This uncertainty, together with other recent key global events, such as recently enacted currency control regulations and tariff regimes in or against China, ongoing terrorist activity, and potential hostilities in the Middle East, may adversely impact (i) the ability or willingness of non-U.S. companies to transact business in the United States, including with us, (ii) our ability to transact business in other countries, including the Middle East, where many of the water mega-projects are planned, (iii) regulation and trade agreements affecting U.S. companies, (iv) global stock markets (including The Nasdaq Global Market on which our common shares are traded), and (v) general global economic conditions. All of these factors are outside of our control, but may nonetheless cause us to adjust our strategy in order to compete effectively in global markets.

The decision by British voters to exit the European Union may negatively impact our operations.

The United Kingdom’s (U.K.) exit from the European Union on January 31, 2020, commonly referred to as Brexit, has caused, and may continue to cause, uncertainty in the global markets. Political and regulatory responses to the withdrawal are still developing, and we are in the process of assessing the impact that the withdrawal may have on our business as more information becomes available. Any impact from Brexit on our business and operations over the long term will depend, in part, on the outcome of tariff, tax treaties, trade, regulatory, and other negotiations the U.K. conducts.

Acts of War or Terrorism.

Threats or acts of war or terrorism can adversely affect our business. Terrorist attacks in the United States, Europe and in other countries and continuing hostilities in the Middle East and elsewhere have created significant instability and uncertainty in the world. These and future events may have a material adverse effect on world financial markets as well as the water industry, as many large existing and planned water desalination plants are located in the Middle East. In addition, threats or acts of war or terrorism can cause our customers to curtail their purchase of our products. These factors or any combination of these factors may adversely affect our revenue or our overall financial performance.

We have global operations and face risks related to health epidemics that could impact our results of operations.

Our business could be adversely affected by the effects of a widespread outbreak of contagious disease, including the recent outbreak of respiratory illness caused by a novel coronavirus first identified in Wuhan, Hubei Province, China. Any outbreak of contagious diseases and other adverse public health developments could have a material and adverse effect on our business operations. These could include disruptions or restrictions on our ability to travel or to distribute our products, as well as temporary closures of our facilities or the facilities of our suppliers or customers. Any disruption of our suppliers or customers would likely impact our sales and operating results. In addition, a significant outbreak of contagious diseases in the human population could result in a widespread health crisis that could adversely affect the economies and financial markets of many countries, resulting in an economic downturn that could impact our operating results.

Changes in the method of determining the London Interbank Offered Rate, or LIBOR, or the replacement of LIBOR with an alternative reference rate, may adversely affect our financial condition and results of operations.

Certain of our financial obligations and instruments, including our Loan and Pledge Agreement with Citibank N.A., dated January 27, 2017, are or may be made at variable interest rates that use LIBOR (or metrics derived from or related to LIBOR) as a benchmark for establishing the interest rate. On July 27, 2017, the United Kingdom's Financial Conduct Authority announced that it intends to stop persuading or compelling banks to submit LIBOR rates after 2021. These reforms may cause LIBOR to perform differently than in the past or to disappear entirely. These reforms may also result in new methods of calculating LIBOR to be established, or alternative reference rates to be established. For example, the Federal Reserve Bank of New York has begun publishing a Secured Overnight Funding Rate, or SOFR, which is intended to replace U.S. dollar LIBOR, and central banks in several other jurisdictions have also announced plans for alternative reference rates for other currencies. The potential consequences of these actions cannot be fully predicted and could have an adverse impact on the market value for or value of LIBOR-linked securities, loans, and other financial obligations or extensions of credit held by or due to us. Changes in market interest rates may influence our financing costs, and the returns on financial investments and could reduce our earnings and cash flows. In addition, any transition process may involve, among other things, increased volatility or illiquidity in markets for instruments that rely on LIBOR, reductions in the value of certain instruments or the effectiveness of related transactions such as hedges, increased borrowing costs, uncertainty under applicable documentation, or difficult and costly consent processes. This could materially and adversely affect our results of operations, cash flows, and liquidity.

The U.S. Congress and Trump Administration may make substantial changes to fiscal, political, regulation and other federal policies that may adversely affect our business, financial condition, operating results and cash flows.

Changes in general economic or political conditions in the United States or other regions could adversely affect our business. There have been and may be significant changes in, and uncertainty with respect to, legislation, regulation and government policy. While it is not possible to predict whether and when any such changes will occur, changes at the local, state or federal level could impact our business. Specific legislative and regulatory proposals that could have a material impact on us include, but are not limited to, modifications to international trade policy; public company reporting requirements; and environmental regulation.

Beginning in 2018, the U.S. imposed additional duties, ranging from 10% to 25%, on a variety of goods imported from China. Effective in September 2018, the Office of the U.S. Trade Representative ("USTR") imposed tariffs of 10% on approximately \$200 billion worth of goods imported from China ("List 3 products"), including categories of products we import from China and increased these tariffs to 25% effective in May 2019. In August 2019, the U.S. administration directed the USTR to increase tariffs on List 3 products from 25% to 30%, effective October 2019, which increases were subsequently delayed indefinitely. China responded to the multiple U.S. tariff lists by announcing several lists of products from the U.S. that are subject to additional tariffs upon import to China. The first round of Chinese retaliatory tariffs went into effect on July 6, 2018, and a second set was implemented on August 23, 2018. Our products are not impacted by these tariffs. A third group of items subject to 5% to 10% tariff went into effect on September 24, 2018, which includes our PX Pressure Exchanger, Turbocharger, and pump products.

We cannot predict what actions may ultimately be taken with respect to tariffs or trade relations between the U.S. and other countries, what products may be subject to such actions, or what actions may be taken by the other countries in retaliation. Accordingly, it is difficult to predict how such actions may impact our business, or the business of our customers. Our business operations, as well as the businesses of our customers on which we are substantially dependent, are located in various countries at risk for escalating trade disputes, including the U.S. and China. Any resulting trade wars could have a significant adverse effect on world trade and could adversely impact our revenues, gross margins and business operations.

Regulations related to conflict minerals could adversely impact our business.

The SEC adopted annual disclosure and reporting requirements for those companies who use conflict minerals mined from the Democratic Republic of Congo (also referred to as the “DRC”) and adjoining countries in their products. Based on our purchasing policy and supplier selection, it is considered unlikely that any conflict minerals are used in the manufacturing of our products. Nevertheless, we are continuing reasonable country of origin inquiry and have implemented a program of due diligence on the source and chain of custody for conflict minerals. There are costs associated with complying with these disclosure requirements, including loss of customers and potential changes to products, processes, or sources of supply. The implementation of these rules could adversely affect the sourcing, supply, and pricing of materials used in our products. As there may be only a limited number of suppliers offering “conflict free” minerals, we cannot be sure that we will be able to obtain necessary materials from such suppliers in sufficient quantities or at competitive prices. Also, we may face reputational challenges if we determine that certain of our products contain minerals not determined to be conflict-free or if we are unable to sufficiently verify the origins for all conflict minerals used in our products through the procedures we have implemented.

We may have risks associated with security of our information technology systems.

We make significant efforts to maintain the security and integrity of our information technology systems and data. Despite significant efforts to create security barriers to such systems, it is virtually impossible for us to entirely mitigate this risk. There is a risk of industrial espionage, cyber-attacks, misuse or theft of information or assets, or damage to assets by people who may gain unauthorized access to our facilities, systems, or information. Such cybersecurity breaches, misuse, or other disruptions could lead to the disclosure of confidential information, improper usage and distribution of our intellectual property, theft, manipulation and destruction of private and proprietary data, and production downtimes. Although we actively employ measures to prevent unauthorized access to our information systems, preventing unauthorized use or infringement of our rights is inherently difficult. These events could adversely affect our financial results and any legal action in connection with any such cybersecurity breach could be costly and time-consuming and may divert management’s attention and adversely affect the market’s perception of us and our products. In addition, we must frequently expand our internal information system to meet increasing demand in storage, computing and communication, which may result in increased costs. Our internal information system is expensive to expand and must be highly secure due to the sensitive nature of our customers’ information that we transmit. Building and managing the support necessary for our growth places significant demands on our management and resources. These demands may divert these resources from the continued growth of our business and implementation of our business strategy.

Our actual or perceived failure to adequately protect personal data could adversely affect our business, financial condition and results of operations.

A wide variety of provincial, state, national, foreign, and international laws and regulations apply to the collection, use, retention, protection, disclosure, transfer, and other processing of personal data. These privacy- and data protection-related laws and regulations are evolving, with new or modified laws and regulations proposed and implemented frequently and existing laws and regulations subject to new or different interpretations. Further, our legal and regulatory obligations in foreign jurisdictions are subject to unexpected changes, including the potential for regulatory or other governmental entities to enact new or additional laws or regulations, to issue rulings that invalidate prior laws or regulations, or to increase penalties significantly. Compliance with these laws and regulations can be costly and can delay or impede the development and offering of new products and services.

For example, the General Data Protection Regulation, which became effective in May 2018, imposes more stringent data protection requirements, and provides for significantly greater penalties for noncompliance, than the European Union laws that previously applied. Additionally, California recently enacted legislation, the California Consumer Privacy Act, which became effective January 1, 2020. We may also be subject to additional obligations relating to personal data by contract that industry standards apply to our practices. Our actual or perceived failure to comply with applicable laws and regulations or other obligations to which we may be subject relating to personal data, or to protect personal data from unauthorized access, use, or other processing, could result in enforcement actions and regulatory investigations against us, claims for damages by customers and other affected individuals, fines, damage to our reputation, and loss of goodwill, any of which could have a material adverse effect on our operations, financial performance, and business. Further, evolving and changing definitions of personal data and personal information, including the classification of IP addresses, machine identification information, location data, and other information, may limit or inhibit our ability to operate or expand our business, including limiting business relationships and partnerships that may involve the sharing or uses of data, and may require significant costs, resources, and efforts in order to comply.

We may have risks associated with our international tax optimization structure.

In 2015, we implemented an international tax optimization structure. While we continue to conclude that uncertain tax positions are unlikely, it is possible that the international tax structure could be examined by the Internal Revenue Service in the U.S. and/or the Tax Authorities in Ireland, and it is possible that such an examination could result in an unfavorable impact on us.

The enactment of legislation implementing changes in taxation of international business activities, the adoption of other corporate tax reform policies, or changes in tax legislation or policies could materially impact our financial position and results of operations.

Our future effective tax rates could be subject to volatility or adversely affected by changes in tax laws, regulations, accounting principles, or interpretations thereof. In addition, the U.S. Tax Cuts and Jobs Act (“Tax Act”) made significant changes to the taxation of U.S. business entities that may have a meaningful impact to our provision for income taxes. These changes included a reduction to the federal corporate income tax rate, the current taxation of certain foreign earnings, the imposition of base-erosion prevention measures which may limit the deduction of certain transfer pricing payments, and possible limitations on the deductibility of net interest expense or corporate debt obligations. Accounting for the income tax effects of the Tax Act required significant judgments and estimates that are based on current interpretations of the Tax Act. The U.S. Department of the Treasury continues to issue regulations that affect various components of the Act. Our future effective tax rate may be impacted by changes in interpretation of the regulations, as well as additional legislation and guidance regarding the Act.

In addition, many countries are beginning to implement legislation and other guidance to align their international tax rules with the Organisation for Economic Co-operation’s Base Erosion and Profit Shifting recommendations and action plan that aim to standardize and modernize global corporate tax policy, including changes to cross-border tax, transfer-pricing documentation rules, and nexus-based tax incentive practices. As a result of the heightened scrutiny of corporate taxation policies, prior decisions by tax authorities regarding treatments and positions of corporate income taxes could be subject to enforcement activities, and legislative investigation and inquiry, which could also result in changes in tax policies or prior tax rulings. Any such changes in policies or rulings may also result in the taxes we previously paid being subject to change.

Due to the scale of our international business activities any substantial changes in international corporate tax policies, enforcement activities or legislative initiatives may materially and adversely affect our business, the amount of taxes we are required to pay and our financial condition and results of operations generally.

If we need additional capital to fund future growth, it may not be available on favorable terms, or at all.

Our primary source of cash historically has been customer payments for our products and services and proceeds from the issuance of common stock. This has funded our operations and capital expenditures. We may require additional capital from equity or debt financing in the future to fund our operations or respond to competitive pressures or strategic opportunities, such as a potential acquisition or the expansion of operations. We may not be able to secure such additional financing on favorable terms or at all. The terms of additional financing may place limits on our financial and operational flexibility. If we raise additional funds through further issuances of equity, convertible debt securities, or other securities convertible into equity, our existing stockholders could suffer significant dilution in their percentage ownership of our company, and any new securities that we issue could have rights, preferences, or privileges senior to those of existing or future holders of our common stock. If we are unable to obtain necessary financing on terms satisfactory to us, if and when we require it, our ability to grow or support our business and to respond to business challenges or opportunities could be significantly limited.

We may seek to expand through acquisitions of and investments in other businesses, technologies, and assets. These acquisition activities may be unsuccessful or divert management's attention.

We may consider strategic and complementary acquisitions of and investments in other businesses, technologies, and assets, and such acquisitions or investments are subject to risks that could affect our business, including risks related to:

- the necessity of coordinating geographically disparate organizations;
- implementing common systems and controls;
- integrating personnel with diverse business and cultural backgrounds;
- integrating acquired research and manufacturing facilities, technology and products;
- combining different corporate cultures and legal systems;
- unanticipated expenses related to integration, including technical and operational integration;
- increased costs and unanticipated liabilities, including with respect to registration, environmental, health and safety matters, that may affect sales and operating results;
- retaining key employees;
- obtaining required government and third-party approvals;
- legal limitations in new jurisdictions;
- installing effective internal controls and audit procedures;
- issuing common stock that could dilute the interests of our existing stockholders;
- spending cash and incurring debt;
- assuming contingent liabilities;
- and
- creating additional expenses.

We may not be able to identify opportunities or complete transactions on commercially reasonable terms, or at all, or actually realize any anticipated benefits from such acquisitions or investments. Similarly, we may not be able to obtain financing for acquisitions or investments on attractive terms. If we do complete acquisitions, we cannot ensure that they will ultimately strengthen our competitive or financial position or that they will not be viewed negatively by customers, financial markets, investors, or the media. In addition, the success of any acquisitions or investments also will depend, in part, on our ability to integrate the acquisition or investment with our existing operations.

The integration of businesses that we may acquire is likely to be a complex, time-consuming, and expensive process and we may not realize the anticipated revenues or other benefits associated with our acquisitions if we fail to successfully manage and operate the acquired business. If we fail in any acquisition integration efforts and are unable to efficiently operate as a combined organization utilizing common information and communication systems, operating procedures, financial controls, and human resources practices, our business, financial condition, and results of operations may be adversely affected.

In connection with certain acquisitions, we may agree to issue common stock or assume equity awards that dilute the ownership of our current stockholders, use a substantial portion of our cash resources, assume liabilities, record goodwill and amortizable intangible assets that will be subject to impairment testing on a regular basis and potential periodic impairment charges, incur amortization expenses related to certain intangible assets, and incur large and immediate write-offs and restructuring and other related expenses, all of which could harm our financial condition and results of operations.

Our actual operating results may differ significantly from our guidance.

We release guidance in our quarterly earnings conference calls, quarterly earnings releases, or otherwise, regarding our future performance that represents our management's estimates as of the date of release. This guidance, which includes forward-looking statements, will be based on projections prepared by our management. These projections will not be prepared with a view toward compliance with published guidelines of the American Institute of Certified Public Accountants, and neither our registered public accountants nor any other independent expert or outside party compiles or examines the projections. Accordingly, no such person will express any opinion or any other form of assurance with respect to the projections.

Projections are based upon a number of assumptions and estimates that, while presented with numerical specificity, are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control and are based upon specific assumptions with respect to future business decisions, some of which will change. We will continue to state possible outcomes as high and low ranges which are intended to provide a sensitivity analysis as variables are changed but are not intended to imply that actual results could not fall outside of the suggested ranges. The principal reason that we release guidance is to provide a basis for our management to discuss our business outlook with analysts and investors. We do not accept any responsibility for any projections or reports published by any such third parties.

Guidance is necessarily speculative in nature, and it can be expected that some or all of the assumptions underlying the guidance furnished by us will not materialize or will vary significantly from actual results. Accordingly, our guidance is only an estimate of what management believes is realizable as of the date of release. Actual results may vary from our guidance and the variations may be material. In light of the foregoing, investors are urged not to rely upon our guidance in making an investment decision regarding our common stock.

Any failure to successfully implement our operating strategy or the occurrence of any of the events or circumstances set forth in this "Risk Factors" section in this Annual Report on Form 10-K could result in the actual operating results being different from our guidance and the differences may be adverse and material.

Insiders and principal stockholders will likely have significant influence over matters requiring stockholder approval.

Our directors, executive officers, and other principal stockholders beneficially own, in the aggregate, a substantial amount of our outstanding common stock. These stockholders could likely have significant influence over all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions such as a merger or other sale of our company or its assets.

The market price of our common stock may continue to be volatile.

The market price of our common stock has been, and is likely to continue to be, volatile and subject to fluctuations. Changes in the stock market generally, as it concerns our industry, as well as geopolitical, economic, and business factors unrelated to us, may also affect our stock price. Significant declines in the market price of our common stock or failure of the market price to increase could harm our ability to recruit and retain key employees, reduce our access to debt or equity capital, and otherwise harm our business or financial condition. In addition, we may not be able to use our common stock effectively as consideration in connection with any future acquisitions.

Anti-takeover provisions in our charter documents and under Delaware law could discourage, delay, or prevent a change in control of our company and may affect the trading price of our common stock.

Provisions in our amended and restated certificate of incorporation and bylaws may have the effect of delaying or preventing a change of control or changes in our management. Our amended and restated certificate of incorporation and amended and restated bylaws include provisions that:

- authorize our Board of Directors to issue, without further action by the stockholders, up to 10,000,000 shares of undesignated preferred stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by our Board of Directors, the chairman of the board, the chief executive officer, or the president;

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- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our Board of Directors;
- establish that our Board of Directors is divided into three classes, Class I, Class II, and Class III, with each class serving staggered terms;
- provide that our directors may be removed only for cause;
- provide that vacancies on our Board of Directors may be filled only by a majority vote of directors then in office, even though less than a quorum;
- specify that no stockholder is permitted to cumulate votes at any election of directors; and
- require a super-majority of votes to amend certain of the above-mentioned provisions.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. Section 203 generally prohibits us from engaging in a business combination with an interested stockholder subject to certain exceptions.

Changes in United States Generally Accepted Accounting Principles (“GAAP”) could adversely affect our financial results and may require significant changes to our internal accounting systems and processes.

We prepare our consolidated financial statements in conformity with GAAP. These principles are subject to interpretation by the Financial Accounting Standards Board (“FASB”), the SEC and various bodies formed to interpret and create appropriate accounting principles and guidance. The FASB periodically issues new accounting standards on a variety of topics. For information regarding new accounting standards, please refer to Note 1, “Description of Business and Significant Accounting Policies – Recent Accounting Pronouncements,” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K. These and other such standards generally result in different accounting principles, which may significantly impact our reported results or could result in variability of our financial results.

We are required to evaluate the effectiveness of our internal control over financial reporting and publicly disclose material weaknesses in our controls. Any adverse results from such evaluation may adversely affect investor perception, and our stock price.

Section 404 of the Sarbanes-Oxley Act of 2002 requires our management to assess the effectiveness of our internal control over financial reporting and to disclose in our filing if such controls were unable to provide assurance that a material error would be prevented or detected in a timely manner. We have an ongoing program to review the design of our internal controls framework in keeping with changes in business needs, implement necessary changes to our controls design and test the system and process controls necessary to comply with these requirements. If in the future, our internal controls over financial reporting are determined to be not effective resulting in a material weakness or significant deficiency, investor perceptions regarding the reliability of our financial statements may be adversely affected which could cause a decline in the market price of our stock and otherwise negatively affect our liquidity and financial condition.

In preparing our financial statements we make certain assumptions, judgments and estimates that affect amounts reported in our consolidated financial statements, which, if not accurate, may significantly impact our financial results.

We make assumptions, judgments and estimates for a number of items, including the fair value of financial instruments, goodwill, long-lived assets and other intangible assets, the realizability of deferred tax assets, the recognition of revenue and the fair value of stock awards. We also make assumptions, judgments and estimates in determining the accruals for employee-related liabilities, including commissions and variable compensation, and in determining the accruals for uncertain tax positions, valuation allowances on deferred tax assets, allowances for doubtful accounts, and legal contingencies. These assumptions, judgments and estimates are drawn from historical experience and various other factors that we believe are reasonable under the circumstances as of the date of the consolidated financial statements. Actual results could differ materially from our estimates, and such differences could significantly impact our financial results.

Our business could be negatively affected as a result of actions of activist shareholders, and such activism could impact the trading value of our securities.

In recent years, shareholder activists have become involved in numerous public companies. Shareholder activists frequently propose to involve themselves in the governance, strategic direction and operations of the Company. Such proposals may disrupt our business and divert the attention of our Board of Directors, management and employees, and any perceived uncertainties as to our future direction resulting from such a situation could result in the loss of potential business opportunities, interfere with our ability to execute our strategic plan, be exploited by our competitors, cause concern to our current or potential customers, and make it more difficult to attract and retain qualified personnel and business partners, all of which could adversely affect our business. A proxy contest for the election of directors at our annual meeting could also require us to incur significant legal fees and proxy solicitation expenses. In addition, actions of activist shareholders may cause significant fluctuations in our stock price based on temporary or speculative market perceptions or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business.

Our shareholders may experience future dilution as a result of future equity offerings.

In the future, we may offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock in order to raise additional capital. We cannot assure our shareholders that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share our shareholders paid for our shares. Investors purchasing shares or other securities in the future could have rights, preferences or privileges senior to those of our shareholders and our shareholders may experience dilution. Our shareholders may incur additional dilution upon the exercise of any outstanding stock options or warrants, the issuance of shares of restricted stock, the vesting of restricted stock units, or the issuance, vesting or exercise of other equity awards.

We do not intend to pay cash dividends in the foreseeable future and, consequently, our shareholders' ability to achieve a return on their investment will depend on the appreciation in the price of our common stock.

We have never declared or paid cash dividends on our common stock and we do not intend to pay any cash dividends on our common stock in the foreseeable future. We currently expect to retain all available funds and any future earnings for use in the operation and expansion of our business. In addition, the terms of our revolving credit facility restrict our ability to pay dividends and any future credit facilities, loan agreements, debt instruments or other agreements may further restrict our ability to pay dividends. Payments of future dividends, if any, will be at the discretion of our board of directors after taking into account various factors, including our business, results of operations and financial condition, current and anticipated cash needs, plans for expansion and any legal or contractual limitations on our ability to pay dividends. As a result, capital appreciation, if any, of our common stock will be our shareholders' sole source of potential gain for the foreseeable future.

Item 1B — Unresolved Staff Comments

None

Item 2 — Properties

We lease approximately 171,000 sq.ft. of space located in San Leandro, California for product manufacturing, research and development, and executive headquarters under a lease that expires on December 31, 2028.

On January 10, 2019, we entered into an industrial lease agreement for property located in Katy, Texas, which commenced on January 1, 2020 and expires in 2029. This new lease includes an additional 25,200 sq.ft. of office and warehouse space and approximately 4.5 acres of land, to test our VorTeq and MTeq technologies at scale and in real world conditions on a regular, uninterrupted basis.

On February 10, 2020, we entered into a lease agreement for an additional office and warehouse space located in Tracy, California. This new lease commenced on March 1, 2020 and expires in 2030. This office and warehouse space is approximately 54,429 sq.ft. and will supplement the existing manufacturing, warehouse and distribution of our ERDs.

Additionally, we lease offices located in Dubai, United Arab Emirates; Shanghai, Peoples Republic of China; Houston, Texas. We believe that these facilities will be adequate for our purposes for the foreseeable future.

Item 3 — Legal Proceedings

See Note 8, “Commitments and Contingencies – Litigation” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K, which is incorporated by reference into this Item 3, for a description of the lawsuits pending against us.

Item 4 — Mine Safety Disclosures

Not applicable.

PART II

Item 5 — Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock is listed on The Nasdaq Global Select Market under the symbol “ERII.”

Stockholders

As of December 31, 2019, there were approximately 28 stockholders of record of our common stock as reported by our transfer agent, one of which is Cede & Co., a nominee for Depository Trust Company (“DTC”). All of the shares of common stock held by brokerage firms, banks, and other financial institutions as nominees for beneficial owners are deposited into participant accounts at DTC and are therefore considered to be held of record by Cede & Co., as one stockholder.

Dividend Policy

We have never declared or paid any dividends on our common stock, and we do not currently intend to pay any dividends on our common stock for the foreseeable future. Any future determination to pay dividends on our common stock will be, subject to applicable law, at the discretion of our Board of Directors, and will depend upon, among other factors, our results of operations, financial condition, capital requirements, and contractual restrictions in loan or other agreements.

Sales of Unregistered Securities

None

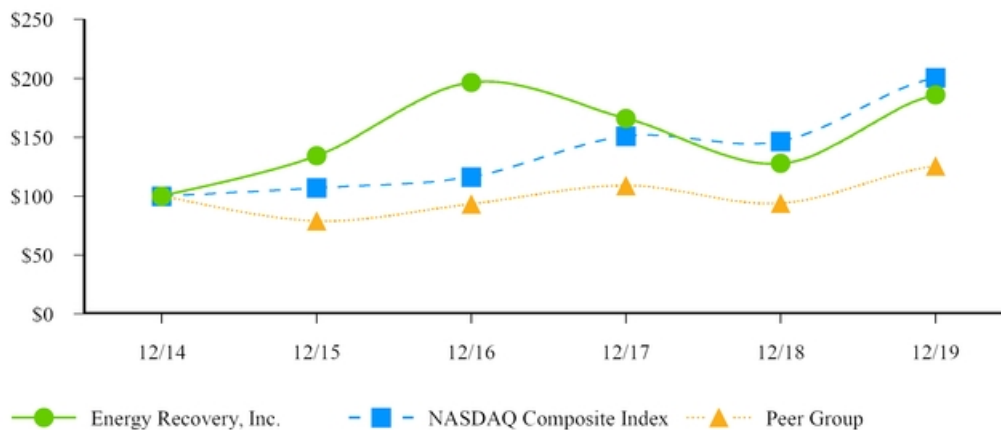
Stock Performance Graph

The following graph shows the cumulative total stockholder return of an investment of \$100 on December 31, 2014 in (i) our common stock, (ii) the NASDAQ Composite Index, and (iii) common stock of a selected group of peer issuers (“Peer Group”). Cumulative total return assumes the reinvestment of dividends, although dividends have never been declared on our stock, and is based on the returns of the component companies weighted according to their capitalizations as of the end of each quarterly period. For each reported year, the reported dates are the last trading dates of our annual year.

The NASDAQ Composite Index tracks the aggregate price performance of equity securities traded on the NASDAQ. The Peer Group tracks the weighted average price performance of equity securities of seven companies in our industry: Consolidated Water Co. Ltd.; Flowserve Corp.; Hyflux Ltd.; Kurita Water Industries Ltd.; Pentair PLC; Tetra Tech, Inc.; and The Gorman-Rupp Company. The return of each component issuer of the Peer Group is weighted according to the respective issuer’s stock market capitalization at the end of each period for which a return is indicated. Our stock price performance shown in the graph below is not indicative of future stock price performance.

The following graph and its related information is not “soliciting material,” is not deemed “filed” with the Securities and Exchange Commission, and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended or the Securities Exchange Act of 1934, as amended, whether made before or after the date hereof and irrespective of any general incorporation language contained in such filing.

**COMPARISON OF FIVE-YEAR CUMULATIVE TOTAL RETURN
Among Energy Recovery Inc., The NASDAQ Composite Index,
And A Peer Group**



	December 31, 2014	December 31, 2015	December 31, 2016	December 31, 2017	December 31, 2018	December 31, 2019
Energy Recovery, Inc.	\$ 100.00	\$ 134.16	\$ 196.39	\$ 166.03	\$ 127.70	\$ 185.77
NASDAQ Composite Index	100.00	106.96	116.45	150.96	146.67	200.49
Peer Group	100.00	78.87	93.32	108.93	93.94	125.37

Item 6 — Selected Financial Data

The following selected financial data should be read in conjunction with Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and Part II, Item 8, “Financial Statements and Supplementary Data,” included in this Annual Report on Form 10-K.

	Years Ended December 31,				
	2019	2018	2017 ⁽¹⁾	2016 ⁽¹⁾	2015 ⁽²⁾
<i>(In thousands, except per share amounts)</i>					
Consolidated Statements of Operations Data:					
Product revenue	\$ 72,834	\$ 61,025	\$ 58,023	\$ 49,715	\$ 43,671
Product cost of revenue	20,335	17,873	19,061	17,849	19,111
Product gross profit	52,499	43,152	38,962	31,866	24,560
License and development revenue	14,108	13,490	11,106	8,069	1,042
Operating expenses:					
General and administrative	22,832	21,476	17,354	16,626	19,773
Sales and marketing	9,434	7,546	9,391	9,116	9,326
Research and development	23,402	17,012	13,443	10,136	7,659
Amortization of intangible assets	575	630	631	631	635
Total operating expenses	56,243	46,664	40,819	36,509	37,393
Income (loss) from operations	10,364	9,978	9,249	3,426	(11,791)
Other income (expense), net	1,892	1,462	680	287	(181)
Income (loss) before income taxes	12,256	11,440	9,929	3,713	(11,972)
Provision for (benefit from) income taxes	1,343	(10,653)	(8,425)	(6)	(334)
Net income (loss)	\$ 10,913	\$ 22,093	\$ 18,354	\$ 3,719	\$ (11,638)
Income (loss) per share					
Basic	\$ 0.20	\$ 0.41	\$ 0.34	\$ 0.07	\$ (0.22)
Diluted	\$ 0.19	\$ 0.40	\$ 0.33	\$ 0.07	\$ (0.22)
Number of shares used in per share calculation:					
Basic	54,740	53,764	53,701	52,341	52,151
Diluted	56,067	55,338	55,612	55,451	52,151

⁽¹⁾ Due to the full retrospective adoption of Accounting Standards Update (“ASU”) No. 2014-09 (“ASU 2014-09”), *Revenue from Contracts with Customers (Topic 606)*, referred to as Accounting Standards Codification (“ASC”) 606 (“ASC 606”) the financial data for the years ended 2017 and 2016 are recast.

⁽²⁾ The 2015 financial data has not been recast for ASC 606 adoption. The impact of ASC 606 for periods prior to 2016 was included as a one-time adjustment to 2016 beginning balance retained earnings.

	As of December 31,				
	2019	2018	2017 ⁽¹⁾	2016 ⁽²⁾	2015 ⁽³⁾
	<i>(In thousands)</i>				
Consolidated Balance Sheets Data:					
Cash and cash equivalents	\$ 26,387	\$ 21,955	\$ 27,780	\$ 61,364	\$ 99,931
Short-term investments	58,736	73,338	70,020	39,073	257
Long-term investments	15,419	1,269	—	—	—
Total assets	188,774	179,841	164,485	148,679	151,799
Long-term liabilities	24,931	39,331	42,231	57,307	72,116
Total liabilities	52,761	66,463	72,591	80,571	88,140
Total stockholders' equity	136,013	113,378	91,894	68,108	63,659

- (1) Due to the full retrospective adoption of ASC 606, *Revenues*, and the modified retrospective adoption of ASU No. 2016-02 (“ASU 2016-02”), *Leases (Topic 842)*, the financial data for the year ended 2017 is recast.
- (2) Due to the full retrospective adoption of ASC 606 the financial data for the year ended 2016 is recast. The impact of ASC 606 for periods prior to 2016 was included as a one-time adjustment to 2016 beginning balance retained earnings.
- (3) The 2015 financial data has not been recast for the adoption of ASC 606.

Item 7 — Management’s Discussion and Analysis of Financial Condition and Results of Operations

The following Management Discussion and Analysis of Financial Condition and Results of Operations is intended to help the reader understand our results of operations and financial condition. It should be read in conjunction with the Consolidated Financial Statements and related Notes included in Part II, Item 8, “Financial Statements and Supplementary Data,” in this Annual Report on Form 10-K.

Overview

We have, for more than 20 years, created technologies that solve complex challenges for industrial fluid flow markets worldwide. We design and manufacture solutions that reduce waste, improve operational efficiency, and lower the production costs of clean water and oil & gas. What began as a game-changing invention for water desalination has grown into a global business delivering solutions that enable more affordable access to these critical resources.

We were incorporated in Virginia in 1992 and reincorporated in Delaware in 2001. Our headquarters and principal research, development and manufacturing facility is located in San Leandro, California, and, as of January 2020, we opened our commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas. On February 10, 2020, we leased an additional office and warehouse space located in Tracy, California, that commenced on March 1, 2020, to supplement the existing manufacturing, warehouse and distribution of our ERDs. Our worldwide sales and technical service organization provides on-site support for our line of water solutions, and we maintain direct sales offices and technical support centers in Europe, the Middle East and Asia.

Engineering, research and development have been, and remain, an essential part of the Company’s history, culture and corporate strategy. Since our formation, we have developed and become experts in our unique PX Pressure Exchanger technology, which provides benefits when applied to industrial fluid flow system with pressure differentials. Today, our PX Pressure Exchanger is the industry standard in the reverse osmosis desalination industry. In addition, we have been actively developing new applications of our pressure exchanger technology in the oil & gas industry. This focus on engineering, research and development will continue to be core component of our future strategy as we focus on developing new products outside of our water and oil & gas business units.

Our reportable operating segments consist of the Water segment and the Oil & Gas segment. These segments are based on the industries in which the technology solutions are sold, the type of ERD or other technology sold and the related solution and service.

Water Segment

Our Water segment consists of revenues and expenses associated with solutions sold for use in sea, brackish and contaminated water reverse osmosis desalination. Our Water segment revenue is principally derived from the sale of ERDs and high-pressure and circulation pumps to our MPD, OEM and AM channels. MPD sales are typically made to global EPC firms to build very large desalination plants worldwide. Our typical MPD sale consists of our PX Pressure Exchangers, and each MPD sale represents revenue opportunities generally ranging from \$1 million to \$18 million. Our packaged solutions to OEMs include our PX Pressure Exchangers, Turbochargers, high-pressure pumps and circulation “booster” pumps for integration and use in small- to medium-sized desalination plants. OEM projects typically represent revenue opportunities of up to \$1 million. Our existing and expanding installed base of ERD and pump products in water plants has created a growing customer base comprised of plant operators and service providers who purchase spare parts, replacement parts and service contracts through our AM channel.

Oil & Gas Segment

Our Oil & Gas segment consists primarily of license and development revenue and expenses associated with solutions for use in hydraulic fracturing, gas processing and chemical processing. In the past several years, we have invested significantly into research and development, sales, and marketing to expand our business into pressurized fluid flow industries within the oil & gas industry.

2019 Highlights

Water Segment

- Water growth product sales increased year over year, due primarily to:
 - Water shortage in the Middle East, driving new and larger MPDs.
 - Thermal seawater desalination process retrofits to seawater reverse osmosis (“SWRO”) desalination process at existing plants continues to drive growth.
- Since our first installation in 1997, more than 20,000 PX Pressure Exchangers have been deployed worldwide.
- Completed phase 1 of our capacity expansion and initiated phase 2, which will be completed at our new facility located in Tracy, California.

Oil & Gas Segment

- We completed construction on a new commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas. This facility will further enhance our capacity to commercialize our VorTeq technology.

Results of Operations

A discussion regarding our financial condition and results of operations for the year ended December 31, 2019 compared to the year ended December 31, 2018 is presented below. A discussion regarding our financial condition and results of operations for the year ended December 31, 2018 compared to the year ended December 31, 2017 can be found under Item 7 in our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 7, 2019, as amended on March 12, 2019, which is available free of charge on the SEC’s website at <http://www.sec.gov> and at our investor relations website (<https://ir.energyrecovery.com>).

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

Total Revenue

	Years Ended December 31,				Change	
	2019		2018		\$	%
	\$	% of Total Revenue	\$	% of Total Revenue		
<i>(In thousands, except percentages)</i>						
Water	\$ 72,730	84%	\$ 60,512	81%	\$ 12,218	20%
Oil & Gas	104	—%	513	1%	(409)	(80%)
Product revenue	72,834	84%	61,025	82%	11,809	19%
License and development revenue	14,108	16%	13,490	18%	618	5%
Total revenue	\$ 86,942	100%	\$ 74,515	100%	\$ 12,427	17%

A limited number of our customers account for a substantial portion of our product revenue, although the number of customers, and which specific customers, change from year to year. Revenue from customers representing 10% or more of product revenue varies from period to period. For the year ended December 31, 2019, one customer represented 19% of product revenue. For the year ended December 31, 2018, two customers represented 15% and 11% of product revenue. See Note 13, “Concentrations,” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K for further details on customer concentration.

Water segment product revenue of \$72.7 million for the year ended December 31, 2019, compared to \$60.5 million for the year ended December 31, 2018, increased \$12.2 million, or 20%, due primarily to an increase of shipments across all channels, including MPD, OEM and AM channels.

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Oil & Gas segment product revenues of \$0.1 million for the year ended December 31, 2019, compared to \$0.5 million for the year ended December 31, 2018, decreased \$0.4 million, or (80%), due primarily to lower unit sales. Our total Oil & Gas segment license and development revenue, of \$14.1 million, compared to \$13.5 million for the year ended December 31, 2018, increased by \$0.6 million, or 5%, due primarily to increased salary, wages and travel costs, partially offset by a change in total planned project costs. See Note 14, “VorTeq Partnership and License Agreement,” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K for additional discussion on the VorTeq License agreement.

Product revenue attributable to domestic and international sales as a percentage of total product revenue is presented in the following table.

	Years Ended December 31,	
	2019	2018
Domestic revenue	2%	3%
International revenue	98%	97%
Total product revenue	100%	100%

Product Gross Profit and Product Gross Margin

	Years Ended December 31,					
	2019		2018		Change	
	Gross Profit (Deficit)	Gross Margin	Gross Profit (Deficit)	Gross Margin	\$	%
	<i>(In thousands, except percentages)</i>					
Water	\$ 52,582	72.3%	\$ 43,301	71.6%	\$ 9,281	21%
Oil & Gas	(83)	(79.8%)	(149)	(29.0%)	66	(44%)
Product gross profit and product gross margin	\$ 52,499	72.1%	\$ 43,152	70.7%	\$ 9,347	22%

Product gross profit represents our product revenue less our product cost of revenue. Our product cost of revenue consists primarily of raw materials, personnel costs (including stock-based compensation), manufacturing overhead, warranty costs, depreciation expense, and manufactured components.

Product gross profit of \$52.5 million for the year ended December 31, 2019, compared to \$43.2 million for the year ended December 31, 2018, increased \$9.3 million, or 22%, due primarily to a \$9.3 million increase in Water segment product gross profit related to higher volumes of products sold, specifically, the increased sales of our PX Pressure Exchangers, and favorable price and product mix.

Product gross margin of 72.1% for the year ended December 31, 2019, compared to 70.7% for the year ended December 31, 2018, increased by 140 basis points. This increase was largely driven by favorable price and product mix, continued improvements in manufacturing efficiencies and higher production levels in the Water segment to support increased demand.

Total Operating Expenses

	Years Ended December 31,					
	2019		2018		Change	
	\$	% of Total Revenue	\$	% of Total Revenue	\$	%
	<i>(In thousands, except percentages)</i>					
Total revenue	\$ 86,942	100%	\$ 74,515	100%		
General and administrative	\$ 22,832	26%	\$ 21,476	29%	\$ 1,356	6%
Sales and marketing	9,434	11%	7,546	10%	1,888	25%
Research and development	23,402	27%	17,012	23%	6,390	38%
Amortization of intangible assets	575	1%	630	1%	(55)	(9%)
Total operating expenses	\$ 56,243	65%	\$ 46,664	63%	\$ 9,579	21%

General and administrative (“G&A”) expenses of \$22.8 million for the year ended December 31, 2019, compared to \$21.5 million for the year ended December 31, 2018, increased \$1.4 million, or 6%, due primarily to an increase in employee-related costs of \$1.3 million related to higher headcount, and higher professional services and other costs of \$0.1 million.

Sales and marketing (“S&M”) expenses of \$9.4 million for the year ended December 31, 2019, compared to \$7.5 million for the year ended December 31, 2018, increased \$1.9 million, or 25%, due primarily to an increase in employee-related costs of \$1.3 million related to increased headcount, an increase in marketing costs of \$0.4 million and an increase in outside commission costs of \$0.3 million, partially offset by lower other costs of \$0.1 million.

Research and development (“R&D”) expenses of \$23.4 million for the year ended December 31, 2019, compared to \$17.0 million for the year ended December 31, 2018, increased \$6.4 million, or 38%, due primarily to higher testing supplies expenditures of \$3.3 million, an increase in employee-related costs of \$2.1 million related to increased headcount and stock-based compensation cost, higher depreciation expense of certain test equipment of \$0.9 million, and an increase in other costs of \$0.1 million.

Amortization of intangible assets is related to finite-lived intangible assets acquired as a result of our purchase of Pump Engineering, LLC in December 2009. Amortization expense in the year ended December 31, 2019, compared to the year ended December 31, 2018, did not materially change.

Segment Operating Expenses

	Years Ended December 31, 2019			Years Ended December 31, 2018		
	Water	Oil & Gas	Total	Water	Oil & Gas	Total
<i>(In thousands)</i>						
Operating expenses						
General and administrative	\$ 1,501	\$ 1,576	\$ 3,077	\$ 2,078	\$ 1,771	\$ 3,849
Sales and marketing	7,072	741	7,813	5,783	1,264	7,047
Research and development	3,825	19,085	22,910	1,711	15,276	16,987
Amortization of intangibles	575	—	575	629	—	629
Total operating expenses	<u>\$ 12,973</u>	<u>\$ 21,402</u>	<u>34,375</u>	<u>\$ 10,201</u>	<u>\$ 18,311</u>	<u>28,512</u>
Corporate operating expenses			21,868			18,152
Total operating expenses			<u>\$ 56,243</u>			<u>\$ 46,664</u>

Water segment operating expenses of \$13.0 million for the year ended December 31, 2019, compared to \$10.2 million for the year ended December 31, 2018, increased \$2.8 million, or 27%, due primarily to a \$2.1 million increase in R&D expense and a \$1.3 million increase in S&M expense, partially offset by a \$0.6 million decrease in G&A expense. The higher R&D expense is due primarily to increased employee headcount to support both the expansion of our current product offering as well as to the improvement of existing technologies. The higher S&M expenses are due primarily to higher employee headcount and employee-related costs and commission costs due to higher unit sales. The decrease in G&A expenses is due primarily to lower employee-related costs and bad debt expense.

Oil & Gas segment operating expenses of \$21.4 million for the year ended December 31, 2019, compared to \$18.3 million for the year ended December 31, 2018, increased \$3.1 million, or 17%, due primarily to an increase in R&D expense of \$3.8 million, partially offset by decreases of \$0.5 million in S&M expenses and \$0.2 million in G&A expenses. The increase in R&D expenditures is due primarily to the commercialization of new technologies and increased costs related to the operation of our Katy, Texas testing facility.

Corporate operating expenses of \$21.9 million for the year ended December 31, 2019, compared to \$18.2 million for the year ended December 31, 2018, increased \$3.7 million, or 20%, due primarily to higher employee headcount and employee-related expenses, investor relations costs and professional services costs, partially offset by lower equipment depreciation expenses.

Other Income, Net

	Years Ended December 31,		Change
	2019	2018	
<i>(In thousands, except percentages)</i>			
Other income:			
Interest income	\$ 2,010	\$ 1,543	\$ 467 30%
Interest expense	—	(1)	1 100%
Other non-operating expense, net	(118)	(80)	(38) 48%
Total other income, net	<u>\$ 1,892</u>	<u>\$ 1,462</u>	<u>\$ 430</u> 29%

Total other income, net of \$1.9 million for the year ended December 31, 2019, compared to \$1.5 million for the year ended December 31, 2018, increased \$0.4 million, or 29%, due primarily to higher interest income related to our investments in corporate notes and bonds, and U.S. treasury notes.

Income Taxes

	Years Ended December 31,			Change
	2019	2018		
	<i>(In thousands, except percentages)</i>			
Provision for (benefit from) income taxes	\$ 1,343	\$ (10,653)	\$ 11,996	113%
Effective tax rate	11%	(93%)		

For the year ended December 31, 2019, we recognized an income tax expense of \$1.3 million, which included a tax benefit of \$1.1 million. The tax benefit included a deferred tax benefit of \$1.0 million related to an increase in prior year U.S. federal R&D credits and a tax benefit of \$0.5 million related to tax deductions from stock-based compensation, partially offset by deferred tax expense of \$0.4 million due primarily to a remeasurement of our state deferred tax assets due to an adjustment to our estimated blended state effective tax rate.

For the year ended December 31, 2018, we recognized an income tax benefit of \$10.7 million, which included a tax benefit of \$13.5 million. The tax benefit included a tax benefit of \$12.3 million related to the income tax effects of a tax election related to a change to our international tax structure in Ireland that was effective in the second quarter of 2018. This resulted in a deferred tax asset related to tax expense recorded on earnings and profits under the U.S. Tax Cut and Jobs Act ("Tax Act") on deferred revenue not yet recognized under U.S. GAAP. In addition, the discrete tax benefit also included a \$0.8 million tax benefit related to tax deductions from stock-based compensation.

The effective tax rate for the years ended December 31, 2019 and 2018 was 11% and (93%), respectively. The effective tax rate for December 31, 2018 was adversely impacted by the full valuation allowance related to the losses in our Irish operations.

Liquidity and Capital Resources

Overview

As of December 31, 2019, our principal sources of liquidity consisted of: (i) unrestricted cash and cash equivalents of \$26.4 million, (ii) short-term investments of \$58.7 million that are primarily invested in marketable debt instruments such as corporate notes and bonds and U.S. Treasury securities and (iii) accounts receivable, net of allowances of \$13.0 million. As of December 31, 2019, our unrestricted cash, cash equivalents, and short- and long-term investments held outside the U.S. was \$8.6 million. We invest cash not needed for current operations predominantly in high-quality, investment-grade, marketable debt instruments with the intent to make such funds available for operating purposes as needed.

As of December 31, 2019 and 2018, we had \$0.5 million and \$4.1 million, respectively, of short-term contract assets which represents unbilled receivables. In the Water segment, we had contract assets of \$0.5 million pertaining to customer contractual holdback provisions, pursuant to which we will invoice the final retention payment due under certain sales contracts in the next 12 months as of December 31, 2019. The customer holdbacks represent amounts intended to provide a form of security for the customer and, accordingly, these contract assets have not been discounted to present value. In the Oil & Gas segment, there were no unbilled project costs at December 31, 2019.

Loan and Pledge Agreement

We entered into a loan and pledge agreement with a financial institution on January 27, 2017. Since inception, this loan and pledge agreement has been amended multiple times to accommodate our growth (the amended loan and pledge agreement is hereinafter referred to as the "Loan and Pledge Agreement"). The Loan and Pledge Agreement, will expire on June 30, 2022, provides for a committed revolving credit line of \$16.0 million and an uncommitted revolving credit line of \$4.0 million. The covenants of the Loan and Pledge Agreement allows us to incur indebtedness owed to a foreign subsidiary in an aggregate amount not to exceed \$66.0 million, which amount is subordinated to any amounts outstanding under the Loan and Pledge Agreement.

Revolving Loans

Revolving loans under the Loan and Pledge Agreement incur interest per annum at a base rate equal to the London Inter-bank Offered Rate (commonly referred to "LIBOR") plus 1.5%. Any default bears the aforementioned interest rate plus an additional 2%. The unused portion of the credit line is subject to a fee equal to the product of 0.2% per annum multiplied by the difference, if positive, between \$16.0 million and the average daily balance of all advances under the committed facility plus aggregate average daily undrawn amounts of all letters of credit issued under the committed facility during the immediately preceding month or portion thereof.

As of December 31, 2019, there was no debt outstanding under the Loan and Pledge Agreement.

Letters of Credit

Under the Loan and Pledge Agreement, we are allowed to borrow and request letters of credit, which are limited to a term of three years, against the eligible assets held from time to time in the pledged account maintained with the financial institution.

As of December 31, 2019, there were no letters of credit outstanding under the Loan and Pledge Agreement.

Stand-By Letters of Credit

Under the Loan and Pledge Agreement, we are allowed to issue stand-by letters of credit ("SBLCs") up to one year past the expiration date of the Loan and Pledge Agreement and to hold SBLCs with other financial institutions up to \$5.1 million. SBLCs have a term limit of three years, are secured by pledged U.S. investments, and do not have any cash collateral balance requirement. SBLCs are deducted from the total revolving credit line under the Loan and Pledge Agreement and are subject to a non-refundable quarterly fee that is in an amount equal to 0.7% per annum of the face amount of the outstanding SBLCs.

As of December 31, 2019, there were \$11.8 million of outstanding SBLCs.

Cash Flows

	Years Ended December 31,	
	2019	2018
	<i>(In thousands)</i>	
Net cash provided by operating activities	\$ 5,268	\$ 7,565
Net cash used in investing activities	(6,881)	(10,159)
Net cash provided by (used in) financing activities	5,963	(5,886)
Effect of exchange rate differences on cash and cash equivalents	—	(8)
Net change in cash, cash equivalents and restricted cash	<u>\$ 4,350</u>	<u>\$ (8,488)</u>

Cash Flows from Operating Activities

Net cash provided by operating activities is primarily generated by net income adjusted for certain non-cash items, and changes in assets and liabilities.

Cash provided by operating activities was lower in 2019, compared to 2018, by \$2.3 million, due primarily to higher cash used for assets and liabilities of \$3.0 million, partially offset by higher adjusted net income of \$0.7 million.

Net change of cash used for assets and liabilities of \$17.7 million in 2019 were due primarily to a \$13.9 million decrease in contract liabilities due to the recognition of revenue related to our exclusive license agreement recognized under the cost to total cost method, a \$3.3 million increase in inventory due to higher production, and a \$1.3 million increase in prepaid and other assets, partially offset by \$0.7 million net decrease in accounts receivable and contract assets due to the timing of invoices and payments and a \$0.1 million net change of right of use assets and operating lease liabilities.

Due to the project driven, non-cyclical nature of our business, operating cash flow can fluctuate significantly from quarter to quarter, and year to year, due to the timing of receipts of large project orders. Operating cash flow may be negative in one quarter or year and significantly positive in the next, consequently individual quarterly results and comparisons may not necessarily indicate a significant trend - either positive or negative. Similarly, the nature and timing of investing activities and financing activities may be linked to available cash and the timing of events outside those of operating activities. Therefore, it may be difficult to derive meaning directly from quarterly and annual comparisons of cash flow.

Cash Flows from Investing Activities

Net cash used in investing activities primarily relates to maturities and purchases of marketable securities, and capital expenditures supporting our growth. Our investments in marketable securities are structured to preserve principal and liquidity while at the same time maximizing yields without significantly increasing risk.

Cash used in investing activities in 2019 of \$6.9 million was due primarily to \$85.2 million used to purchase investments and \$7.4 million for capital expenditures, partially offset by \$78.1 million and \$7.6 million in maturities and sales, respectively, of marketable security investments.

Cash Flows from Financing Activities

Net cash provided by (used in) financing activities primarily relates to the issuance of equity typically from stock-based compensation and equity buy-backs.

Net cash provided by financing activities in 2019 of \$6.0 million was due primarily to \$6.0 million received from the issuance of common stock related to option exercises, net of taxes paid on vested restricted stock units.

Liquidity and Capital Resource Requirements

We believe that our existing resources and cash generated from our operations will be sufficient to meet our anticipated capital requirements for at least the next 12 months. However, we may need to raise additional capital or incur additional indebtedness to continue to fund our operations or to support acquisitions in the future and/or to fund investments in our latest technology arising from rapid market adoption, needs that could require us to seek additional equity or debt financing. Our future capital requirements will depend on many factors including the continuing market acceptance of our products, our rate of revenue growth, the timing of new product introductions, the expansion of our research and development, manufacturing and sales and marketing activities, the timing and extent of our expansion into new geographic territories and the amount and timing of cash used for stock repurchases. In addition, we may enter into potential material investments in, or acquisitions of, complementary businesses, services or technologies in the future which could also require us to seek additional equity or debt financing. Should we need additional liquidity or capital funds, these funds may not be available to us on favorable terms, or at all.

Contractual Obligations

We lease facilities and equipment under fixed noncancelable operating leases that expire on various dates through 2028. The following table presents a summary of our contractual obligations as of December 31, 2019.

	Payments Due by Period				
	Total	1 Year 2020	2-3 Years 2021-2022	4-5 Years 2023-2024	5+ Years 2025 and thereafter
	<i>(In thousands)</i>				
Operating lease obligations ⁽¹⁾	\$ 17,077	\$ 1,855	\$ 3,465	\$ 3,636	\$ 8,121
Purchase obligations ⁽²⁾	10,448	10,448	—	—	—
Total contractual obligations	\$ 27,525	\$ 12,303	\$ 3,465	\$ 3,636	\$ 8,121

(1) Excludes the Katy Lease and Tracy Lease discussed below.

(2) Purchase obligations are related to open noncancelable purchase orders for materials and supplies.

On January 10, 2019, we entered into an industrial lease agreement, which commenced on January 1, 2020. This new lease of a commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas (the “Katy Lease”), includes an office and warehouse space of approximately 25,200 sq.ft. and land of approximately 4.5 acres. Our annual base rent obligation, paid monthly, will be approximately \$0.3 million with an increase of approximately 3% annually thereafter, totaling \$3.6 million, over the term of the lease. The initial term of the Katy Lease is 120 months after the commencement date, and we have two options to extend this lease by an additional five-year term per option, which must be exercised by written notice at least six months prior to the end of the relevant term.

On February 10, 2020, we entered into a lease agreement, that commenced on March 1, 2020, for an additional office and warehouse space of approximately 54,429 sq.ft., located in Tracy, California (the “Tracy Lease”). The new lease will supplement the existing manufacturing, warehouse and distribution of our ERDs. Our annual base rent obligation, paid monthly, will be approximately \$0.4 million, with an increase of approximately 3% annually thereafter, totaling \$5.0 million, over the term of the lease. The initial term of the Tracy Lease is 122 months after the commencement date, and we have one option to extend the lease by an additional five-year term, which must be exercised by written notice at least nine months prior to the end of the original lease term.

In addition, this table excludes agreements with guarantees or indemnity provisions that we have entered into with customers and others in the ordinary course of business. Based on our historical experience and information known to us as of December 31, 2019, we believe that our exposure related to these guarantees and indemnities as of December 31, 2019 was not material.

Off-Balance Sheet Arrangements

During the periods presented, we did not have any relationships with unconsolidated entities or financial partnerships such as entities often referred to as structured finance or special purpose entities which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Critical Accounting Policies and Estimates

Our Consolidated Financial Statements are prepared in accordance with generally accepted accounting principles (“GAAP”) in the United States. These accounting principles require us to make estimates and judgments that can affect the reported amounts of assets and liabilities as of the date of the Consolidated Financial Statements as well as the reported amounts of revenue and expense during the periods presented. We believe that the estimates and judgments upon which we rely are reasonable based upon information available to us at the time that we make these estimates and judgments. To the extent that there are material differences between these estimates and actual results, our consolidated financial results will be affected. The accounting policies that reflect our more significant estimates and judgments and which we believe are the most critical to aid in fully understanding and evaluating our reported financial results are revenue recognition, capitalization of research and development assets; valuation of stock options; valuation and impairment of goodwill and acquired intangible assets; valuation adjustments for excess and obsolete inventory; deferred taxes and valuation allowances on deferred tax assets; and evaluation and measurement of contingencies.

The following is not intended to be a comprehensive list of all of our accounting policies or estimates. Our accounting policies are more fully described in Note 1, “Description of Business and Significant Accounting Policies” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K.

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to the Company’s customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. At the inception of each contract, performance obligations are identified and the total transaction price is allocated to the performance obligations.

The Company’s contracts with customers may include multiple performance obligations. For such arrangements, the Company allocates revenue to each performance obligation based on its relative stand-alone selling price. The Company generally determines standalone selling prices based on the prices charged to customers.

With respect to termination, the Company does not have the ability to cancel a contract for convenience. In general, customers can cancel for convenience upon the payment of a termination fee that covers costs and profit. It is rare for customers to cancel contracts.

See Note 1, “Description of Business and Significant Accounting Policies – Significant Accounting Policies” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K for more detail on product and service revenue recognition – Water segment, cost-to-total cost (“CTC”) revenue recognition – Oil & Gas segment, license and development revenue recognition – Oil & Gas segment.

Stock-based Compensation

We measure and recognize stock-based compensation expense based on the fair value measurement for all stock-based awards made to our employees and directors, including restricted stock units (“RSUs”) and employee stock options, over the requisite service period (typically the vesting period of the awards). The fair value of RSUs is based on our stock price on the date of grant. The fair value of stock options is calculated on the date of grant using the Black-Scholes option pricing model, which requires a number of complex assumptions including expected life, expected volatility, risk-free interest rate, and dividend yield. The estimation of awards that will ultimately vest requires judgment, and to the extent that actual results or updated estimates differ from our current estimates, such amounts are recorded as a cumulative adjustment in the period in which the estimates are revised. See Note 11, “Stock-based Compensation,” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K for further discussion of stock-based compensation.

Goodwill and Other Intangible Assets

The purchase price of an acquired company is allocated between intangible assets and the net tangible assets of the acquired business with the residual purchase price recorded as goodwill. The determination of the value of the intangible assets acquired involves certain judgments and estimates. These judgments can include, but are not limited to, the cash flows that an asset is expected to generate in the future and the appropriate weighted average cost of capital.

Goodwill is not amortized, but is evaluated annually for impairment at the reporting unit level or when indicators of a potential impairment are present. We estimate the fair value of the reporting unit using the discounted cash flow and market approaches. Forecast of future cash flows are based on our best estimate of future net sales and operating expenses, based primarily on expected category expansion, pricing, market segment, and general economic conditions.

Acquired intangible assets with determinable useful lives are amortized on a straight-line or accelerated basis over the estimated periods benefited, ranging from one to 20 years. Acquired intangible assets with contractual terms are amortized over their respective legal or contractual lives. Customer relationships and other non-contractual intangible assets with determinable lives are amortized over periods ranging from five to 20 years.

We evaluate the recoverability of intangible assets by comparing the carrying amount of an asset to estimated future net undiscounted cash flows generated by the asset. If such assets are considered to be impaired, the impairment recognized is measured as the amount by which the carrying amount of the assets exceeds the fair value of the assets. The evaluation of recoverability involves estimates of future operating cash flows based upon certain forecasted assumptions, including, but not limited to, revenue growth rates, gross profit margins, and operating expenses over the expected remaining useful life of the related asset. A shortfall in these estimated operating cash flows could result in an impairment charge in the future.

Inventories

Inventories are stated at the lower of cost (using the first-in, first-out “FIFO” method) or market. We calculate inventory valuation adjustments for excess and obsolete inventory based on current inventory levels, movement, expected useful lives, and estimated future demand of the products and spare parts.

Income Taxes

Current and non-current tax assets and liabilities are based upon an estimate of taxes refundable or payable for each of the jurisdictions in which the Company is subject to tax. In the ordinary course of business, there is inherent uncertainty in quantifying income tax positions. We assess income tax positions and record tax benefits for all years subject to examination based upon the Company’s evaluation of the facts, circumstances, and information available at the reporting dates. For those tax positions where it is more likely than not that a tax benefit will be sustained, we record the largest amount of tax benefit with a greater than 50% likelihood of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information. For those income tax positions where it is not more likely than not that a tax benefit will be sustained, no tax benefit is recognized in the financial statements. When applicable, associated interest and penalties are recognized as a component of income tax expense. Accrued interest and penalties are included within the related tax asset or liability on the Consolidated Balance Sheets.

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Deferred income taxes are provided for temporary differences arising from differences in bases of assets and liabilities for tax and financial reporting purposes. Deferred income taxes are recorded on temporary differences using enacted tax rates in effect for the year in which the temporary differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Significant judgment is required in determining whether and to what extent any valuation allowance is needed on the Company's deferred tax assets. In making such a determination, we consider all available positive and negative evidence including recent results of operations, scheduled reversals of deferred tax liabilities, projected future income, and available tax planning strategies. See Note 9, "Income Taxes," of the Notes to Consolidated Financial Statements in Part II, Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K for further discussion of the tax valuation allowance.

Our operations are subject to income and transaction taxes in the U.S. and in foreign jurisdictions. Significant estimates and judgments are required in determining our worldwide provision for income taxes. Some of these estimates are based on interpretations of existing tax laws or regulations. The ultimate amount of tax liability may be uncertain as a result.

Recent Accounting Pronouncements

Refer to Note 1, "Description of Business and Significant Accounting Policies – Recent Accounting Pronouncements," of the Notes to Consolidated Financial Statements in Part II, Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K.

Item 7A — Quantitative and Qualitative Disclosures About Market Risk

Foreign Currency Risk

Our foreign currency exposures are due to fluctuations in exchange rates for U.S. dollar (“USD”) versus the British pound, Saudi riyal, United Arab Emirates dirham, European euro, Chinese yuan, Indian rupee and Canadian dollar. Changes in currency exchange rates could adversely affect our consolidated operating results or financial position.

Our revenue contracts have been denominated in USD. At times, our international customers may have difficulty in obtaining USD to pay our receivables, thus increasing collection risk and potential doubtful account expense. As we expand our international sales, a portion of our revenue could be denominated in foreign currencies. As a result, our cash and cash equivalents and operating results could be increasingly affected by changes in exchange rates.

In addition, we pay many vendors in foreign currency and, therefore, are subject to changes in foreign currency exchange rates. Our international sales and service operations incur expense that is denominated in foreign currencies. This expense could be materially affected by currency fluctuations. Our international sales and services operations also maintain cash balances denominated in foreign currencies. To decrease the inherent risk associated with translation of foreign cash balances into our reporting currency, we do not maintain excess cash balances in foreign currencies.

We have not hedged our exposure to changes in foreign currency exchange rates because expenses in foreign currencies have been insignificant to date and exchange rate fluctuations have had little impact on our operating results and cash flows.

Interest Rate and Credit Risk

We have an investment portfolio of fixed-income marketable debt securities including amounts classified as cash equivalents, and short- and long-term investments. The primary objective of our investment activities is to preserve principal and liquidity while at the same time maximizing yields without significantly increasing risk. We invest primarily in investment-grade short-term and long-term debt instruments of high-quality corporate issuers and instruments of the U.S. government and its agencies. These investments are subject to counter-party credit risk. To minimize this risk, we invest pursuant to an investment policy approved by our board of directors. The policy mandates high credit rating requirements and restricts our exposure to any single corporate issuer by imposing concentration limits.

At December 31, 2019, our investments totaled approximately \$74.2 million. These investments were presented in short-term investments and long-term investments on our Consolidated Balance Sheets as of December 31, 2019. These investments are subject to interest rate fluctuations and will decrease in market value if interest rates increase. To minimize the exposure due to adverse shifts in interest rates, we maintain investments with an average maturity of less than seven months. A hypothetical 1% increase in interest rates would have resulted in an approximately \$0.4 million decrease in the fair value of our fixed-income debt securities as of December 31, 2019.

Item 8 — Financial Statements and Supplementary Data

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Energy Recovery, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Energy Recovery, Inc. and subsidiaries (the “Company”) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), stockholders’ equity, and cash flows, for each of the two years in the period ended December 31, 2019, and the related notes (collectively referred to as the “financial statements”). In our opinion, the 2019 and 2018 financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

The consolidated financial statements of the Company for the year ended December 31, 2017, before the effects of the adjustments to retrospectively apply the change in accounting discussed in Note 1 to the financial statements, were audited by other auditors whose report, dated March 8, 2018, expressed an unqualified opinion on those statements. We have also audited the adjustments to the 2017 financial statements to retrospectively apply the change in accounting for the adoption of *Revenue from Contracts with Customers (Topic 606)*, ASU No. 2016-02, *Leases (Topic 842)* and ASU 2016-19, *Statement of Cash Flows (Topic 230)* in 2018, as discussed in Note 1 to the financial statements. In our opinion, such retrospective adjustments are appropriate and have been properly applied. However, we were not engaged to audit, review, or apply any procedures to the 2017 financial statements of the Company other than with respect to the retrospective adjustments, and accordingly, we do not express an opinion or any other form of assurance on the 2017 financial statements taken as a whole.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company’s internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 6, 2020, expressed an unqualified opinion on the Company’s internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

San Francisco, California

March 6, 2020

We have served as the Company’s auditor since 2018.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Energy Recovery, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Energy Recovery, Inc. and subsidiaries (the “Company”) as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2019, of the Company and our report dated March 6, 2020, expressed an unqualified opinion on those financial statements.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying “Management’s Report on Internal Control over Financial Reporting.” Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP

San Francisco, California

March 6, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders
Energy Recovery, Inc.
San Leandro, California

Opinion on the Consolidated Financial Statements

We have audited, before the effects of the adjustments to retrospectively apply the changes in accounting described in Note 1 for the adoption of *Revenue from Contracts with Customers (Topic 606)*, ASU No. 2016-02, *Leases (Topic 842)* and ASU 2016-18, *Statement of Cash Flows (Topic 230)*, the accompanying statements of operations, comprehensive income, stockholders' equity, and cash flows of Energy Recovery, Inc. (the "Company") for the year ended December 31, 2017, and the related notes (collectively referred to as the "consolidated financial statements"). Further, the 2017 financial statements before the effects of the adjustments discussed in Note 1 are not presented herein. In our opinion, the 2017 consolidated financial statements, before the effects of the adjustments to retrospectively apply the changes in accounting described in Note 1, present fairly, in all material respects, the results of its operations and its cash flows for the year ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

We were not engaged to audit, review, or apply any procedures to the adjustments to retrospectively apply the changes in accounting described in Note 1, and, accordingly, we do not express an opinion or any other form of assurance about whether such adjustments are appropriate and have been properly applied. Those adjustments were audited by Deloitte & Touche LLP.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ BDO USA, LLP

We have served as the Company's auditor from 2007 to 2018.

San Jose, California
March 8, 2018

BDO USA, LLP, a Delaware limited liability partnership, is the U.S. member of BDO International Limited, a UK company limited by guarantee, and forms part of the international BDO network of independent member firms.

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ENERGY RECOVERY, INC.
CONSOLIDATED BALANCE SHEETS

	December 31, 2019	December 31, 2018
	<i>(In thousands, except share data and par value)</i>	
ASSETS		
Current assets:		
Cash, cash equivalents and restricted cash	\$ 26,387	\$ 22,052
Short-term investments	58,736	73,338
Accounts receivable, net of allowance for doubtful accounts of \$308 and \$396 at December 31, 2019 and December 31, 2018, respectively	12,979	10,212
Contract assets	501	4,083
Inventories, net	10,317	7,138
Prepaid expenses and other current assets	4,047	2,825
Total current assets	<u>112,967</u>	<u>119,648</u>
Contract assets, non-current	191	—
Long-term investments	15,419	1,269
Deferred tax assets, non-current	16,897	18,318
Property and equipment, net	18,843	14,619
Operating lease, right of use asset	11,195	12,189
Goodwill	12,790	12,790
Other intangible assets, net	65	640
Other assets, non-current	407	368
Total assets	<u>\$ 188,774</u>	<u>\$ 179,841</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 1,192	\$ 1,439
Accrued expenses and other current liabilities	9,869	8,497
Lease liabilities	1,023	926
Contract liabilities	15,746	16,270
Total current liabilities	<u>27,830</u>	<u>27,132</u>
Lease liabilities, non-current	11,533	12,556
Contract liabilities, non-current	13,120	26,539
Other non-current liabilities	278	236
Total liabilities	<u>52,761</u>	<u>66,463</u>
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Preferred stock, \$0.001 par value; 10,000,000 shares authorized; no shares issued or outstanding at December 31, 2019 and December 31, 2018	—	—
Common stock, \$0.001 par value; 200,000,000 shares authorized; 60,717,702 shares issued and 55,261,767 shares outstanding at December 31, 2019 and 59,396,020 shares issued and 53,940,085 shares outstanding at December 31, 2018	61	59
Additional paid-in capital	170,028	158,404
Accumulated other comprehensive loss	(37)	(133)
Treasury stock, at cost, 5,455,935 shares repurchased at December 31, 2019 and 2018	(30,486)	(30,486)
Accumulated deficit	(3,553)	(14,466)
Total stockholders' equity	<u>136,013</u>	<u>113,378</u>
Total liabilities and stockholders' equity	<u>\$ 188,774</u>	<u>\$ 179,841</u>
See Accompanying Notes to Consolidated Financial Statements		

ENERGY RECOVERY, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands, except per share data)</i>		
Product revenue	\$ 72,834	\$ 61,025	\$ 58,023
Product cost of revenue	20,335	17,873	19,061
Product gross profit	52,499	43,152	38,962
License and development revenue	14,108	13,490	11,106
Operating expenses:			
General and administrative	22,832	21,476	17,354
Sales and marketing	9,434	7,546	9,391
Research and development	23,402	17,012	13,443
Amortization of intangible assets	575	630	631
Total operating expenses	56,243	46,664	40,819
Income from operations	10,364	9,978	9,249
Other income (expense):			
Interest income	2,010	1,543	870
Interest expense	—	(1)	(2)
Other non-operating expense, net	(118)	(80)	(188)
Total other income, net	1,892	1,462	680
Income before income taxes	12,256	11,440	9,929
Provision for (benefit from) income taxes	1,343	(10,653)	(8,425)
Net income	\$ 10,913	\$ 22,093	\$ 18,354
Earnings per share:			
Basic	\$ 0.20	\$ 0.41	\$ 0.34
Diluted	\$ 0.19	\$ 0.40	\$ 0.33
Number of shares used in per share calculations:			
Basic	54,740	53,764	53,701
Diluted	56,067	55,338	55,612

See Accompanying Notes to Consolidated Financial Statements

ENERGY RECOVERY, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Net income	\$ 10,913	\$ 22,093	\$ 18,354
Other comprehensive income (loss), net of tax			
Foreign currency translation adjustments	(23)	(12)	57
Unrealized gain (loss) on investments	119	4	(64)
Other comprehensive income (loss), net of tax	96	(8)	(7)
Comprehensive income	\$ 11,009	\$ 22,085	\$ 18,347

See Accompanying Notes to Consolidated Financial Statements

ENERGY RECOVERY, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Cash flows from operating activities:			
Net income	\$ 10,913	\$ 22,093	\$ 18,354
Adjustments to reconcile net income to cash provided by operating activities			
Stock-based compensation	5,676	5,240	4,087
Depreciation and amortization	4,395	3,869	3,666
Amortization of premiums and discounts on investments	65	362	460
Foreign currency transactions	(27)	(10)	144
Realized gain on sale of investments	(10)	—	—
Provision for warranty claims	402	326	246
Reversal of accruals related to expired warranties	(193)	(180)	(200)
Change in allowance for doubtful accounts	(88)	336	55
Adjustments for excess or obsolete inventory	21	197	201
Deferred income taxes	1,421	(10,385)	(8,865)
Loss on disposal of fixed assets	389	408	—
Other non-cash adjustments	—	—	(196)
Changes in operating assets and liabilities:			
Accounts receivable, net	(2,679)	1,917	(761)
Contract assets	3,391	2,196	(4,263)
Inventories, net	(3,256)	(1,872)	(1,250)
Prepaid and other assets	(263)	(682)	(39)
Accounts payable	(373)	(2,274)	2,118
Accrued expenses and other liabilities	(600)	87	611
Income taxes	27	(447)	385
Contract liabilities	(13,943)	(13,616)	(11,858)
Net cash provided by operating activities	<u>5,268</u>	<u>7,565</u>	<u>2,895</u>
Cash flows from investing activities:			
Sales of marketable securities	7,608	—	—
Maturities of marketable securities	78,100	81,268	49,106
Purchases of marketable securities	(85,207)	(86,192)	(80,641)
Capital expenditures	(7,382)	(5,235)	(7,376)
Net cash used in investing activities	<u>(6,881)</u>	<u>(10,159)</u>	<u>(38,911)</u>
Cash flows from financing activities:			
Net proceeds from issuance of common stock	6,073	4,291	5,508
Tax payment for employee shares withheld	(110)	(150)	(270)
Repayment of long-term debt	—	(27)	(11)
Repurchase of common stock	—	(10,000)	(4,276)
Net cash provided by (used in) financing activities	<u>5,963</u>	<u>(5,886)</u>	<u>951</u>
Effect of exchange rate differences on cash and cash equivalents	—	(8)	(57)
Net change in cash, cash equivalents and restricted cash	4,350	(8,488)	(35,122)
Cash, cash equivalents and restricted cash, beginning of year	22,138	30,626	65,748
Cash, cash equivalents and restricted cash, end of year	<u>\$ 26,488</u>	<u>\$ 22,138</u>	<u>\$ 30,626</u>
Supplemental disclosure of cash flow information:			
Cash paid for interest	\$ —	\$ 1	\$ 2
Cash received for income tax refunds	\$ 438	\$ 13	\$ 16
Cash paid for income taxes	\$ 52	\$ 610	\$ 57
Supplemental disclosure on non-cash transactions:			
Purchases of property and equipment in trade accounts payable, and accrued expenses and other liabilities	\$ 1,080	\$ 30	\$ 475
Non-cash lease liabilities arising from obtaining right of use assets	\$ —	\$ 10,411	\$ —

See Accompanying Notes to Consolidated Financial Statements

ENERGY RECOVERY, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Common stock			
Beginning balance	\$ 59	\$ 58	\$ 57
Issuance of common stock, net	2	1	1
Ending balance	61	59	58
Additional paid-in capital			
Beginning balance	158,404	149,006	139,676
Issuance of common stock, net	5,960	4,138	5,237
Stock-based compensation	5,664	5,260	4,093
Ending balance	170,028	158,404	149,006
Accumulated other comprehensive loss			
Beginning balance	(133)	(125)	(118)
Other comprehensive income (loss)			
Foreign currency translation adjustments	(23)	(12)	57
Unrealized gain (loss) on investments	119	4	(64)
Total other comprehensive income (loss), net	96	(8)	(7)
Ending balance	(37)	(133)	(125)
Treasury stock			
Beginning balance	(30,486)	(20,486)	(16,210)
Repurchase of common stock for treasury	—	(10,000)	(4,276)
Ending balance	(30,486)	(30,486)	(20,486)
Accumulated deficit			
Beginning balance	(14,466)	(36,559)	(54,913)
Net income	10,913	22,093	18,354
Ending balance	(3,553)	(14,466)	(36,559)
Total stockholders' equity	\$ 136,013	\$ 113,378	\$ 91,894
Common stock issued (number of shares)			
Beginning balance	59,396	58,168	56,884
Issuance of common stock, net	1,322	1,228	1,284
Ending balance	60,718	59,396	58,168
Treasury stock (number of shares)			
Beginning balance	(5,456)	(4,263)	(3,722)
Repurchase of common stock for treasury ⁽¹⁾	—	(1,193)	(541)
Ending balance	(5,456)	(5,456)	(4,263)

⁽¹⁾ The March 2018 stock repurchase authorization expired in September 2018

See Accompanying Notes to Consolidated Financial Statements

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1 — Description of Business and Significant Accounting Policies

Energy Recovery, Inc. and its wholly-owned subsidiaries (the “Company” or “Energy Recovery”) has, for more than 20 years, created technologies that solve complex challenges for industrial fluid flow markets worldwide. The Company design and manufacture solutions that reduce waste, improve operational efficiency, and lower the production costs of clean water and oil & gas. The Company’s solutions are marketed and sold in fluid flow markets such as water, oil & gas and chemical processing under the trademarks ERI®, PX®, Pressure Exchanger®, PX Pressure Exchanger®, VorTeq™, MTeq™, IsoBoost®, IsoGen®, AT™ and AquaBold™. The Company owns, manufactures and/or develops its solutions, in whole or in part, in the United States of America (“U.S.”).

Basis of Presentation

The Company’s Consolidated Financial Statements include the accounts of the Company and its wholly-owned subsidiaries. All significant inter-company accounts and transactions have been eliminated in consolidation.

Reclassifications

The accompanying Consolidated Financial Statements have been prepared by the Company pursuant to the rules and regulations of the Securities and Exchange Commission (“SEC”). Certain prior period amounts have been reclassified in the balance sheet, statement of cash flows and footnotes to conform to the current period presentation.

Use of Estimates

The preparation of Consolidated Financial Statements, in conformity with the U.S. generally accepted accounting principles (“U.S. GAAP”), requires the Company’s management to make judgments, assumptions and estimates that affect the amounts reported in the Consolidated Financial Statements and accompanying notes.

The accounting policies that reflect the Company’s more significant estimates and judgments and that the Company believes are the most critical to aid in fully understanding and evaluating its reported financial results are revenue recognition; capitalization of research and development (“R&D”) assets; allowance for doubtful accounts; allowance for product warranty; valuation of stock options; valuation and impairment of goodwill and acquired intangible assets; valuation adjustments for excess and obsolete inventory; deferred taxes and valuation allowances on deferred tax assets; and evaluation and measurement of contingencies. Those estimates could change, and as a result, actual results could differ materially from those estimates.

Significant Accounting Policies

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original or remaining maturity of three months or less at the time of purchase to be cash equivalents. Cash equivalents are stated at cost, which approximates fair value. The Company’s cash and cash equivalents are maintained primarily in demand deposit accounts with large financial institutions, institutional money market funds, U.S. treasury securities, and corporate notes and bonds. The Company monitors the creditworthiness of the financial institutions, institutional money market funds, and corporations in which the Company invests its surplus funds. The Company has experienced no credit losses from its cash investments.

Allowances for Doubtful Accounts

The Company records a provision for doubtful accounts based on historical experience and a detailed assessment of the collectability of its accounts receivable. In estimating the allowance for doubtful accounts, the Company considers, among other factors, the aging of the accounts receivable, its historical write-offs, the credit worthiness of each customer, and general economic conditions. Account balances are charged off against the allowance when the Company believes that it is probable that the receivable will not be recovered. Actual write-offs may be in excess of the Company’s estimated allowance.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Short-Term and Long-Term Investments

The Company's short-term and long-term investments consist primarily of investment-grade debt securities, all of which are classified as available-for-sale. Available-for-sale securities are carried at fair value. Amortization or accretion of premium or discount is included in other income (expense) on the Consolidated Statements of Operations. Changes in the fair value of available-for-sale securities are reported as a component of accumulated other comprehensive loss within stockholders' equity on the Consolidated Balance Sheet. Realized gains and losses on the sale of available-for-sale securities are determined by specific identification of the cost basis of each security. Short-term investments mature within 12 months and long-term investments mature in greater than 12 months.

Inventories

Inventories are stated at the lower of cost (using the first-in, first-out "FIFO" method) or net realizable value. The Company calculates inventory valuation adjustments for excess and obsolete inventory based on current inventory levels, movement, expected useful lives, and estimated future demand of the products and spare parts.

Property and Equipment

Property and equipment is recorded at cost and reduced by accumulated depreciation. Depreciation expense is recognized over the estimated useful lives of the assets using the straight-line method. Estimated useful lives are three to ten years. Certain equipment used in the development and manufacturing of ceramic components is depreciated over estimated useful lives of up to ten years. Leasehold improvements represent remodeling and retrofitting costs for leased office and manufacturing space and are depreciated over the shorter of either the estimated useful lives or the term of the lease. Software purchased for internal use consists primarily of amounts paid for perpetual licenses to third-party software providers and installation costs. Software is depreciated over the estimated useful lives of three to five years. Tangible assets acquired for R&D activities and have alternative use are capitalized over the useful life of the acquired asset. Estimated useful lives are periodically reviewed, and when appropriate, changes are made prospectively. When certain events or changes in operating conditions occur, asset lives may be adjusted and an impairment assessment may be performed on the recoverability of the carrying amounts. Maintenance and repairs are charged directly to expense as incurred.

Goodwill and Other Intangible Assets

The purchase price of an acquired company is allocated between intangible assets and the net tangible assets of the acquired business with the residual purchase price recorded as goodwill. The determination of the value of the intangible assets acquired involves certain judgments and estimates. These judgments can include, but are not limited to, the cash flows that an asset is expected to generate in the future and the appropriate weighted average cost of capital.

Acquired intangible assets with determinable useful lives are amortized on a straight-line or accelerated basis over the estimated periods benefited, ranging from one to 20 years. Acquired intangible assets with contractual terms are amortized over their respective legal or contractual lives. Customer relationships and other non-contractual intangible assets with determinable lives are amortized over periods ranging from five to 20 years.

The Company evaluates the recoverability of long-lived assets by comparing the carrying amount of an asset to estimated future net undiscounted cash flows generated by the asset. If such assets are considered to be impaired, the impairment recognized is measured as the amount by which the carrying amount of the assets exceeds the fair value of the assets. The evaluation of recoverability involves estimates of future operating cash flows based upon certain forecasted assumptions, including, but not limited to, revenue growth rates, gross profit margins, and operating expenses over the expected remaining useful life of the related asset. A shortfall in these estimated operating cash flows could result in an impairment charge in the future.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Goodwill is not amortized but is evaluated annually for impairment at the reporting unit level or when indicators of a potential impairment are present. The Company estimates the fair value of the reporting unit using the discounted cash flow and market approaches. Forecast of future cash flows are based on the Company's best estimate of future net sales and operating expenses, based primarily on expected category expansion, pricing, market segment, and general economic conditions.

Fair Value of Financial Instruments

The Company's financial instruments include cash and cash equivalents, restricted cash, investments in marketable securities, accounts receivable, accounts payable, and debt. The carrying amounts for these financial instruments reported in the Consolidated Balance Sheets approximate their fair values. See Note 5, "Investments and Fair Value Measurements," for further discussion of fair value.

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to the Company's customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. At the inception of each contract, performance obligations are identified and the total transaction price is allocated to the performance obligations.

The Company's payment terms vary based on the credit risk of its customer. For certain customer types, the Company requires payment before the products or services are delivered to the customer. The Company performs an evaluation of customer credit worthiness on an individual contract basis to assess whether collectability is reasonably assured at the inception of the contract. As part of this evaluation, the Company considers many factors about the individual customer, including the underlying financial strength of the customer and/or partnership consortium and the Company's prior history or industry-specific knowledge about the customer and its supplier relationships. For smaller projects, the Company requires the customer to remit payment generally within 30 to 60 days after product delivery. In some cases, if credit worthiness cannot be determined, prepayment or other security is required.

Sales commissions are expensed as incurred when product revenue is earned. These costs are recorded within sales and marketing expenses.

Arrangements with Multiple Performance Obligations and Termination for Convenience

The Company's contracts with customers may include multiple performance obligations. For such arrangements, the Company allocates revenue to each performance obligation based on its relative stand-alone selling price. The Company generally determines stand-alone selling prices based on the prices charged to customers.

With respect to termination, the Company does not have the ability to cancel the contract for convenience. In general, customers can cancel for convenience upon the payment of a termination fee that covers costs and profit. It is rare for customers to cancel contracts.

Practical Expedients and Exemptions

In the Water segment, the time period between when the Company transfers control of products to the customer and the payment for the products is, in general, less than one year and, therefore, the practical expedient with respect to a financing component has been adopted by the Company.

With respect to taxes, the Company has made the policy election to exclude taxes from the measurement of the transaction price.

The Company does not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which the Company recognizes revenue at the amount to which the Company has the right to invoice for services performed.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Contract Costs

The Company recognizes the incremental cost of obtaining contracts as an expense when incurred if the amortization period of the assets that the Company otherwise would have recognized is one year or less. The costs of obtaining contracts are included in sales and marketing expenses.

Product and Service Revenue Recognition - Water Segment

In the Water segment, a contract is established by a written agreement (executed sales order, executed purchase order or stand-alone contract) with the customer with fixed pricing, and a credit risk assessment is completed prior to the signing of the agreement to ensure that collectability is reasonably assured.

The Company adheres to consistent pricing in the stand-alone sale of products and services. The Company does not bundle performance obligations in the Water segment. Performance obligations consist of delivery of products, such as the Company's PX Pressure Exchangers, Turbochargers, pumps, and spare parts, and services. Service obligation, such as commissioning, which are not material, are deferred as contract liabilities until the services are performed.

The transfer of control for the Company's products follows transfer of title which typically occurs upon shipment of the equipment in accordance with International Commercial Terms (commonly referred to as "incoterms"). The specified product performance criteria for the Company's products pertain to the ability of the Company's product to meet its published performance specifications and warranty provisions, which the Company's products have demonstrated on a consistent basis. This factor, combined with historical performance metrics, provides the Company's management with a reasonable basis to conclude that the products will perform satisfactorily upon commissioning of the plant. Installation is relatively simple, requires no customization, and is performed by the customer under the supervision of the Company's personnel. Based on these factors, the Company concluded that performance has been completed upon shipment when title transfers based on the shipping terms, and that product revenue is recognized at a point in time.

The Company does not provide its customers with a right of product return; however, the Company will accept returns of products that are deemed to be damaged or defective when delivered that are covered by the terms and conditions of the product warranty. Product warranty is provided consistent with the industry and is considered to be an assurance warranty, not a separate performance obligation. Product returns and warranty charges have not been significant.

For large projects, stand-alone contracts are utilized. For these contracts, consistent with industry practice, the Company's customers typically require their suppliers, including the Company, to accept contractual holdback provisions (also referred to as a retention payment) whereby the final amounts due under the sales contract are remitted over extended periods of time or alternatively, stand-by letters of credit are issued. These retention payments are generally 10% or less of the total contract amount and are due and payable upon the passage of time, generally up to 24 to 36 months from the date of product delivery. These retention payments are generally replaced by bank guarantees which have had no history of being exercised, and they align with the product warranty period. The retention payments with no performance conditions are recorded as unbilled trade receivables. Given that they are not material in the context of the contract, they are not considered to be a financing component.

Shipping and handling charges billed to customers is a pass-through from the freight forwarder and is included in product revenue. The cost of shipping to customers is included in product cost of revenue.

Cost-to-Total Cost ("CTC") Revenue Recognition - Oil & Gas Segment

IsoBoost and IsoGen systems are highly engineered, customized solutions that are designed and manufactured over an extended period of time and are built specifically to meet a customer's specifications. Given the facts and circumstances of these projects, the Company concluded that the CTC method of accounting is appropriate for IsoBoost and IsoGen systems. In the event that a purchase order for an IsoBoost or IsoGen system does not meet these facts and circumstances, then the CTC method of accounting does not apply. The Company had one CTC contract for IsoBoost turbochargers in fiscal years 2017 through 2018, which was completed in 2018, and last units were shipped in the first quarter of 2019. A standard assurance type warranty was provided.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Revenue from fixed price contracts is recognized with progress measured in the ratio of costs incurred to estimated final costs. Contract costs include all direct material and labor costs related to contract performance. Pre-contract costs with no future benefit were expensed in the period in which they were incurred. Since the financial reporting of these contracts depends on estimates, which are assessed continually during the term of the contract, recognized revenues and profit are subject to revisions as the contract progresses to completion. Revisions in profit estimates are reflected in the period in which the facts that give rise to the revisions become known, using the cumulative catchup method. If material, the effects of any changes in estimates are disclosed in the notes to the consolidated financial statements. When estimates indicate that a loss will be incurred on a contract, a provision for the expected loss is recorded in the period in which the loss becomes evident. No loss has been incurred to date. Revenue is recognized only to the extent costs have been recognized in the same period.

Unbilled project costs, and cost and estimated earnings in excess of billings, are included in contract assets and contract liabilities, respectively, on the Consolidated Balance Sheets.

License and Development Revenue Recognition - Oil & Gas Segment

License and development revenue is comprised of revenue recognition over time of the upfront non-refundable \$75.0 million exclusivity fee received in connection with the VorTeq License Agreement, as well as the revenue recognition over time of the two milestone payments of \$25.0 million each when uncertainty of receipt is resolved and receipt of each milestone payment is considered probable.

The VorTeq License Agreement is comprised of a 15-year exclusive license for the Company's VorTeq technology ("VorTeq"). In performing the obligations under the license, the Company provides research and development services to commercialize the technology in accordance with the Key Performance Indicators ("KPIs"), defined in the VorTeq License Agreement. After commercialization is achieved, payments will be received for the supply and servicing of certain components of the VorTeq. All payments are non-refundable. See Note 14, "VorTeq Partnership and License Agreement."

Revenue is recognized when control of the promised goods or services is transferred to customers. Stand-alone selling price was established at the inception of the VorTeq License Agreement by taking the transaction to market on a non-exclusive basis, and pricing in an exclusivity premium. Since the VorTeq License Agreement included an up-front non-refundable payment at the inception of the VorTeq License Agreement and future products and services are provided after initial commercialization, the Company completed an analysis and concluded that there was no material right included in the pricing of the VorTeq License Agreement.

Performance obligations, such as the exclusive license to the Missile technology and upgrades prior to and subsequent to the date of full commercial launch, have been identified. Value has been allocated to the performance obligations and revenue is recognized over time based on the input measure of progress of the cost of salaries, wages and travel costs related to the project prior to full commercialization, and ratably for the unspecified upgrades for the period subsequent to full commercialization until the expiration of the VorTeq License Agreement.

Once commercial launch is achieved and cartridges are provided under the contract, revenue from those royalty payments will be recognized in accordance with Accounting Standards Codification ("ASC") 842, *Lease Accounting*, with the Company as the lessor. It is expected that the cartridge leases will be classified as operating leases, and lease revenue will be recognized as earned.

Research and Development ("R&D") Expense and Capitalization of R&D Assets

R&D expense consists of costs incurred for internal projects and for technology licensed to third parties. These costs include the Company's direct and research-related overhead expenses, which include salaries and other personnel-related expenses (including stock-based compensation), occupancy-related costs, depreciation of facilities, as well as external costs for equipment and supplies. Costs to acquire technologies that are utilized in research and development and that have no alternative future use are expensed when incurred. All R&D costs are expensed as incurred and are included in operating expenses.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The costs of materials that are acquired for R&D activities and have no alternative future uses (in R&D projects or otherwise) are expensed as incurred. With respect to tangible assets acquired or constructed for R&D activities, if the costs of materials that are acquired or constructed for a particular R&D project have alternative future uses (in other R&D projects or otherwise), they are capitalized as an asset and the cost of depreciation is charged to expense.

Warranty Costs

The Company sells products with a limited warranty for a period ranging from 18 months to five years. The Company accrues for warranty costs based on estimated product failure rates, historical activity, and expectations of future costs. Periodically, the Company evaluates and adjusts the warranty costs to the extent that actual warranty costs vary from the original estimates.

Stock-based Compensation

The Company measures and recognizes stock-based compensation expense based on the fair value measurement for all stock-based awards made to its employees and directors, including restricted stock units ("RSUs"), and employee stock options over the requisite service period (typically the vesting period of the awards). The fair value of RSUs are based on the Company's stock price on the date of grant. The fair value of stock options is calculated on the date of grant using the Black-Scholes option pricing model, which requires a number of complex assumptions including the expected life to exercise a vested award, expected volatility based upon the Company's historical stock prices, risk-free interest rate based upon the U.S. Treasury rates, and the Company's dividend yield. The estimation of awards that will ultimately vest requires judgment, and to the extent that actual results or updated estimates differ from the Company's current estimates, such amounts are recorded as a cumulative adjustment in the period in which the estimates are revised. See Note 11, "Stock-based Compensation," for further discussion of stock-based compensation.

Foreign Currency

The Company's reporting currency is the U.S. dollar. The functional currency of the Company's Irish subsidiary is the U.S. dollar, while the functional currency of the Company's other foreign subsidiaries is their respective local currencies. The asset and liability accounts of the Company's foreign subsidiaries are translated from their local currencies at the rates in effect on the balance sheet date. Revenue and expenses are translated at average rates of exchange prevailing during the period. Gains and losses resulting from the translation of the Company's subsidiary balance sheets are recorded as a component of accumulated other comprehensive income (loss). Gains and losses from foreign currency transactions are recorded in other income (expense) in the Consolidated Statements of Operations.

Income Taxes

Current and non-current tax assets and liabilities are based upon an estimate of taxes refundable or payable for each of the jurisdictions in which the Company is subject to tax. In the ordinary course of business, there is inherent uncertainty in quantifying income tax positions. The Company assesses income tax positions and records tax benefits for all years subject to examination based upon the Company's evaluation of the facts, circumstances, and information available at the reporting dates. For those tax positions where it is more likely than not that a tax benefit will be sustained, the Company records the largest amount of tax benefit with a greater than 50% likelihood of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information. For those income tax positions where it is not more likely than not that a tax benefit will be sustained, no tax benefit is recognized in the financial statements. When applicable, associated interest and penalties are recognized as a component of income tax expense. Accrued interest and penalties are included within the related tax asset or liability on the Consolidated Balance Sheets.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Deferred income taxes are provided for temporary differences arising from differences in bases of assets and liabilities for tax and financial reporting purposes. Deferred income taxes are recorded on temporary differences using enacted tax rates in effect for the year in which the temporary differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Significant judgment is required in determining whether and to what extent any valuation allowance is needed on the Company's deferred tax assets. In making such a determination, the Company considers all available positive and negative evidence including recent results of operations, scheduled reversals of deferred tax liabilities, projected future income, and available tax planning strategies. See Note 9, "Income Taxes," for further discussion of tax valuation allowances.

The Company's operations are subject to income and transaction taxes in the U.S. and in foreign jurisdictions. Significant estimates and judgments are required in determining the Company's worldwide provision for income taxes. Some of these estimates are based on interpretations of existing tax laws or regulations. The ultimate amount of tax liability may be uncertain as a result.

Recent Accounting Pronouncements

Recently Adopted Accounting Pronouncements

In August 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2018-15 ("ASU 2018-15"), *Intangibles - Goodwill and Other - Internal-Use Software (Topic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*. ASU 2018-15 aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. The updated guidance is effective for annual periods beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted. The Company elected to early adopt ASU 2018-15 for the period beginning in the second quarter of 2019, applying the guidance under ASU 2018-15 prospectively. During the year ended December 31, 2019, the Company deferred related implementation costs of \$1.0 million.

Prior Year Adopted Pronouncements

In May 2014, the FASB issued ASU No. 2014-09 ("ASU 2014-09"), *Revenue from Contracts with Customers (Topic 606)*, referred to as Accounting Standards Codification ("ASC") 606 ("ASC 606") or the "New Revenue Standard." ASC 606 supersedes the revenue recognition requirements of ASC 605, *Revenue Recognition*, and requires entities to recognize revenue when control of promised goods or services is transferred to customers at an amount that reflects the consideration to which the entity expects to be entitled to in exchange for those goods and services. The Company adopted ASC 606 as of January 1, 2018 using the full retrospective transition method. The Company has implemented changes to its current policies and practices, and internal controls over financial reporting to address the requirements of the standard. Amounts presented for the year-ending December 31, 2017 have been restated.

In February 2016, the FASB issued ASU No. 2016-02 ("ASU 2016-02"), *Leases (Topic 842)*: which supersedes ASC 840, *Leases (Topic 840)*, and provides principles for the recognition, measurement, presentation and disclosure of leases for both lessees and lessors. The Company early adopted ASU 2016-02 on January 1, 2018 concurrent with the Company's adoption of the New Revenue Standard and elected the available practical expedients. Adoption of the standard required the Company to recast certain previously reported results, including the recognition of additional operating lease right of use assets and liabilities.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

In November 2016, the FASB issued ASU 2016-18 (“ASU 2016-18”), *Statement of Cash Flows (Topic 230): Restricted Cash*, also referred to as “New Cash Flow Presentation Standard.” ASU 2016-18 is intended to reduce diversity in practice in the classification and presentation of changes in restricted cash on the Consolidated Statement of Cash Flows. ASU 2016-18 requires that the Consolidated Statement of Cash Flows explain the change in total cash and equivalents and amounts generally described as restricted cash or restricted cash equivalents when reconciling the beginning-of-period and end-of-period total amounts. The Company adopted ASU 2016-18 on January 1, 2018 and has recast its Consolidated Statement of Cash Flow for the year ended December 31, 2017, based on the restricted cash balance on the Company’s Balance Sheet as of December 31, 2017.

Impact of Recently Adopted Accounting Pronouncements

The following table illustrates changes in the Consolidated Balance Sheets as previously reported prior to, and as adjusted subsequent to, the adoption of the New Revenue Standard and New Lease Standard at January 1, 2018.

	December 31, 2017			
	As Previously Reported	Adoption of New Revenue Standard	Adoption of New Lease Standard	As Adjusted
<i>(In thousands)</i>				
Assets				
Current assets:				
Contract assets	\$ 6,411	\$ (133)	\$ —	\$ 6,278
Total current assets	126,196	(133)	—	126,063
Non-current assets				
Deferred tax assets, non-current	7,902	31	—	7,933
Operating lease, right of use asset	—	—	2,843	2,843
Total assets	161,744	(102)	2,843	164,485
Liabilities and Stockholders’ Equity				
Current liabilities:				
Accrued expenses and other current liabilities	8,517	(469)	(100)	7,948
Lease liabilities	—	—	1,603	1,603
Contract liabilities	6,416	9,493	—	15,909
Total current liabilities	19,833	9,024	1,503	30,360
Non-current liabilities				
Lease liabilities, non-current	—	—	1,698	1,698
Contract liabilities, non-current	59,006	(18,489)	—	40,517
Other non-current liabilities	358	—	(358)	—
Total liabilities	79,213	(9,465)	2,843	72,591
Stockholders’ equity:				
Accumulated deficit	(45,922)	9,363	—	(36,559)
Total stockholders’ equity	82,531	9,363	—	91,894
Total liabilities and stockholders’ equity	161,744	(102)	2,843	164,485

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table illustrates changes in the Consolidated Statement of Operations as previously reported prior to, and as adjusted subsequent to, the adoption of the New Revenue Standard effective January 1, 2018.

	Year Ended December 31, 2017		
	As Previously Reported	Adoption of New Revenue Standard	As Adjusted
	<i>(In thousands, except for per share data)</i>		
Product revenue	\$ 58,156	\$ (133)	\$ 58,023
Product gross profit	39,095	(133)	38,962
License and development revenue	5,000	6,106	11,106
Income from operations	3,276	5,973	9,249
Income before income taxes	3,956	5,973	9,929
(Benefit from) provision for income taxes	(8,394)	(31)	(8,425)
Net income	12,350	6,004	18,354
Income per share:			
Basic	\$ 0.23	\$ 0.11	\$ 0.34
Diluted	\$ 0.22	\$ 0.11	\$ 0.33
Number of shares used in per share calculations:			
Basic	53,701	—	53,701
Diluted	55,612	—	55,612

The following table illustrates changes in the Company's segment activities as previously reported prior to, and as adjusted subsequent to, the adoption of the New Revenue Standard effective January 1, 2018.

	Year Ended December 31, 2017		
	As Previously Reported	Adoption of New Revenue Standard	As Adjusted
	<i>(In thousands)</i>		
Oil & Gas			
Product revenue	\$ 3,855	\$ (133)	\$ 3,722
Product gross profit	826	(133)	693
License and development revenue	5,000	6,106	11,106
Income (loss) from operations	(10,184)	5,973	(4,211)

The following table illustrates changes in the Consolidated Statement of Comprehensive Income as previously reported prior to, and as adjusted subsequent to, the adoption of the New Revenue Standard effective January 1, 2018.

	Year Ended December 31, 2017		
	As Previously Reported	Adoption of New Revenue Standard	As Adjusted
	<i>(In thousands)</i>		
Net income	\$ 12,350	\$ 6,004	\$ 18,354
Comprehensive income	12,343	6,004	18,347

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following tables illustrate changes in the Consolidated Statement of Cash Flows as previously reported prior to, and as adjusted subsequent to, the adoption of the New Revenue Standard and New Cash Flow Presentation effective January 1, 2018.

	Year Ended December 31, 2017			
	As Previously Reported	Adoption of New Revenue Standard	Adoption of New Cash Flow Presentation Standard	As Adjusted
	<i>(In thousands)</i>			
Net income	\$ 12,350	\$ 6,004	\$ —	\$ 18,354
Changes in operating assets and liabilities:				
Contract assets	(4,396)	133	—	(4,263)
Accrued expenses and other liabilities	364	247	—	611
Income taxes	416	(31)	—	385
Contract liabilities	(5,505)	(6,353)	—	(11,858)
Net cash used in operating activities	2,895	—	—	2,895
Restricted cash	1,538	—	(1,538)	—
Net cash used in investing activities	(37,373)	—	(1,538)	(38,911)
Net change in cash, cash equivalents and restricted cash	(33,584)	—	(1,538)	(35,122)
Cash, cash equivalents and restricted cash, beginning of year	61,364	—	4,384	65,748
Cash, cash equivalents and restricted cash, end of period	27,780	—	2,846	30,626

Recently Issued Accounting Pronouncements Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments*, which amends ASC 326, *Financial Instruments-Credit Losses*. Subsequent to the issuance of ASU 2016-13, ASC 326 was amended by various updates that amend and clarify the impact and implementation of the aforementioned update. The new guidance introduces the current expected credit loss (“CECL”) model, which will require an entity to record an allowance for credit losses for certain financial instruments and financial assets, including trade receivables, based on expected losses rather than incurred losses. Under this update, on initial recognition and at each reporting period, an entity will be required to recognize an allowance that reflects the entity’s current estimate of credit losses expected to be incurred over the life of the financial instrument. This update is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. The guidance in this update has various elements, some of which are applied on a prospective basis and others on a retrospective basis, with earlier application permitted. The Company will adopt ASU 2016-13 on January 1, 2020, and does not expect this adoption to have a material impact on its Consolidated Financial Statements and related disclosures.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 2 — Revenue**Disaggregation of Revenue**

The following tables present the Company's revenues disaggregated by geography based on the "shipped to" addresses of the Company's customers and by major product/service line. Sales and usage-based taxes are excluded from revenues.

	Year Ended December 31, 2019			Year Ended December 31, 2018			Year Ended December 31, 2017		
	Water	Oil & Gas	Total	Water	Oil & Gas	Total	Water	Oil & Gas	Total
<i>(In thousands)</i>									
Primary geographical market									
Middle East and Africa	\$ 46,574	\$ 104	\$ 46,678	\$ 35,593	\$ 514	\$ 36,107	\$ 26,190	\$ 3,708	\$ 29,898
Americas	9,018	14,108	23,126	6,388	13,490	19,878	7,023	11,120	18,143
Asia	11,952	—	11,952	11,955	—	11,955	12,974	—	12,974
Europe	5,186	—	5,186	6,575	—	6,575	8,114	—	8,114
Total	<u>\$ 72,730</u>	<u>\$ 14,212</u>	<u>\$ 86,942</u>	<u>\$ 60,511</u>	<u>\$ 14,004</u>	<u>\$ 74,515</u>	<u>\$ 54,301</u>	<u>\$ 14,828</u>	<u>\$ 69,129</u>
Major product/service line									
PX Pressure Exchangers, pumps and turbo devices	\$ 72,730	\$ 104	\$ 72,834	\$ 60,511	\$ 514	\$ 61,025	\$ 54,301	\$ 3,722	\$ 58,023
License and development	—	14,108	14,108	—	13,490	13,490	—	11,106	11,106
Total	<u>\$ 72,730</u>	<u>\$ 14,212</u>	<u>\$ 86,942</u>	<u>\$ 60,511</u>	<u>\$ 14,004</u>	<u>\$ 74,515</u>	<u>\$ 54,301</u>	<u>\$ 14,828</u>	<u>\$ 69,129</u>

Contract Balances

The following table presents contract balances by category.

	December 31, 2019	December 31, 2018
<i>(In thousands)</i>		
Accounts receivable, net	<u>\$ 12,979</u>	<u>\$ 10,212</u>
Contract assets:		
Contract assets, current	\$ 501	\$ 4,083
Contract assets, non-current	191	—
Total contract assets	<u>\$ 692</u>	<u>\$ 4,083</u>
Current contract liabilities:		
Customer deposits	\$ 1,506	\$ 706
Deferred revenue:		
Cost and estimated earnings in excess of billings	—	264
License and development	13,846	14,518
Product	78	548
Service	316	234
Total current contract liability	<u>15,746</u>	<u>16,270</u>
Non-current contract liabilities, deferred revenue		
License and development	13,048	26,485
Product	72	54
Total non-current contract liability	<u>13,120</u>	<u>26,539</u>
Total contract liability	<u>\$ 28,866</u>	<u>\$ 42,809</u>

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The Company records unbilled receivables as contract assets. The following table presents significant changes in contract assets during the period.

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Contract assets balance, beginning of year	\$ 4,083	\$ 6,278
Transferred to trade receivables	(13,155)	(8,865)
Additions to contract assets	9,764	6,670
Contract assets balance, end of year	<u>\$ 692</u>	<u>\$ 4,083</u>

The Company records contract liabilities when cash payments are received in advance of the Company's performance. The following table presents significant changes in contract liabilities during the period.

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Contract liabilities balance, beginning of year	\$ 42,809	\$ 56,426
Revenue recognized	(15,247)	(13,493)
Increases (decreases) due to cash received, excluding amounts recognized as revenue during the period	1,304	(124)
Contract liabilities balance, end of year	<u>\$ 28,866</u>	<u>\$ 42,809</u>

Transaction Price Allocated to the Remaining Performance Obligation

The following table presents the estimated revenue expected to be recognized in the future related to performance obligations that are unsatisfied or partially unsatisfied.

	December 31, 2019
	<i>(In thousands)</i>
Year:	
2020	\$ 23,514
2021	17,753
2022	661
2023	646
2024 and thereafter	4,385
Total performance obligation	<u>\$ 46,959</u>

Note 3 — Earnings per Share

Net income for the reported period is divided by the weighted average number of common shares outstanding during the reported period to calculate basic earnings per common share. Basic earnings per share exclude any dilutive effects of stock options and RSUs.

Diluted earnings per common share reflects the potential dilution that would occur if outstanding stock options to purchase common stock were exercised for shares of common stock (using the treasury stock method) and the shares of common stock underlying each outstanding RSU were issued (collectively referred to as "stock awards"). Certain shares of common stock issuable under stock options and RSUs have been omitted from the diluted earnings per share calculations because their inclusion is considered anti-dilutive.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table presents the computation of basic and diluted earnings per share.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands, except per share amounts)</i>		
Numerator:			
Net income	\$ 10,913	\$ 22,093	\$ 18,354
Denominator (weighted average shares):			
Basic common shares outstanding	54,740	53,764	53,701
Dilutive stock awards	1,327	1,574	1,911
Diluted common shares outstanding	56,067	55,338	55,612
Earnings per share:			
Basic	\$ 0.20	\$ 0.41	\$ 0.34
Diluted	\$ 0.19	\$ 0.40	\$ 0.33

The following table presents the potential common shares issuable under stock awards that were excluded from the computation of diluted earnings per share, as their effect would have been anti-dilutive.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Anti-dilutive stock awards	1,898	2,176	1,810

Note 4 — Other Financial Information

Cash, Cash Equivalents and Restricted Cash

The Company's Consolidated Statement of Cash Flows explains the change in the total of cash, cash equivalents and restricted cash. The following table presents a reconciliation of cash, cash equivalents and restricted cash reported within the Consolidated Balance Sheets that sum to the total of such amounts presented.

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Cash and cash equivalents	\$ 26,387	\$ 21,955
Restricted cash, current (included in cash, cash equivalents and restricted cash)	—	97
Restricted cash, non-current (included in other assets, non-current)	101	86
Total cash, cash equivalents and restricted cash	\$ 26,488	\$ 22,138

The Company pledged cash in connection with certain stand-by letters of credit and Company credit cards. The Company deposited corresponding amounts into restricted accounts at several financial institutions.

Accounts Receivable, net

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Accounts receivable, gross	\$ 13,287	\$ 10,608
Less: Allowance for doubtful accounts	(308)	(396)
Accounts receivable, net	\$ 12,979	\$ 10,212

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Allowance for Doubtful Accounts

The following table presents the allowance for doubtful accounts activities.

	December 31, 2019	December 31, 2018	December 31, 2017
	<i>(In thousands)</i>		
Balance, beginning of year	\$ 396	\$ 103	\$ 130
Additions	17	336	55
Changes in estimates ⁽¹⁾	(105)	(43)	(77)
Deductions ⁽²⁾	—	—	(5)
Balance, end of year	<u>\$ 308</u>	<u>\$ 396</u>	<u>\$ 103</u>

⁽¹⁾ Collections of previously reserved accounts

⁽²⁾ Uncollectible accounts written off, net of recoveries

Inventories

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Raw materials	\$ 3,742	\$ 2,238
Work in process	2,141	2,689
Finished goods	4,434	2,211
Inventories, net	<u>\$ 10,317</u>	<u>\$ 7,138</u>

Inventories are stated at the lower of cost or net realizable value (using the first-in, first-out method). Valuation adjustments for excess and obsolete inventory reflected as a reduction of inventory at December 31, 2019 and 2018 were \$0.4 million and \$0.7 million, respectively.

Property and Equipment

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Machinery and equipment	\$ 27,664	\$ 23,675
Leasehold improvements	10,485	10,458
Software	3,210	3,013
Office equipment, furniture, and fixtures	3,011	2,970
Automobiles	199	199
Construction in progress	3,910	945
Total property and equipment	48,479	41,260
Less: Accumulated depreciation and amortization	(29,636)	(26,641)
Property and equipment, net	<u>\$ 18,843</u>	<u>\$ 14,619</u>

Construction in progress costs at December 31, 2019 primarily relates to R&D equipment received and leasehold improvements not placed in service. Construction in progress costs at December 31, 2018 primarily relates to software and system upgrades.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

	Year Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Depreciation and amortization expense	\$ 3,820	\$ 3,228	\$ 3,035

Accrued Expenses and Other Current Liabilities

	December 31, 2019	December 31, 2018
		<i>(In thousands)</i>
Payroll and commissions payable	\$ 6,040	\$ 5,843
Accrued warranty reserve	631	478
Other accrued expenses and current liabilities	3,198	2,176
Total accrued expenses and other current liabilities	\$ 9,869	\$ 8,497

Accumulated Other Comprehensive Loss

There were no reclassifications of amounts out of accumulated other comprehensive loss for the years ended December 31, 2019 and 2018, as there have been no sales of securities or translation adjustments that impacted other comprehensive income (loss) during these periods. The tax impact of the changes in accumulated other comprehensive loss for the years ended December 31, 2019 and 2018 was not material.

Advertising Expense

Advertising expense is charged to operations during the year in which it is incurred. Total advertising expense was not material for the years ended December 31, 2019, 2018 and 2017.

Note 5 — Investments and Fair Value Measurements

The following table presents the Company's cash, cash equivalents, and marketable securities in the form of short-term investments and long-term investments.

	December 31, 2019	December 31, 2018
		<i>(In thousands)</i>
Cash and cash equivalents	\$ 26,387	\$ 21,955
Short-term investments	58,736	73,338
Long-term investments	15,419	1,269
Total cash, cash equivalents and marketable securities	\$ 100,542	\$ 96,562

As of December 31, 2019 and 2018, there were no available-for-sale investments reported in cash and cash equivalents on the Consolidated Balance Sheets.

Available-for-Sale Investments

The Company's short-term and long-term investments are all classified as available-for-sale. As of December 31, 2019 and 2018, all available-for-sale investments were either classified as short-term with maturities less than 12 months or long-term with maturities over 12 months. The Company generally holds available-for-sale investments until maturity; however, from time-to-time, the Company may elect to sell certain available-for-sale investments prior to maturity. During the year ended December 31, 2019, sales of available-for-sale investments were \$7.6 million. During the year ended December 31, 2018, there were no sales of available-for-sale investments.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following tables present available-for-sale investments as of December 31, 2019 and 2018.

	December 31, 2019			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
<i>(In thousands)</i>				
Short-term investments				
U.S. Treasury securities	\$ 2,746	\$ 1	\$ —	\$ 2,747
Corporate notes and bonds	55,951	49	(11)	55,989
Total short-term investments	58,697	50	(11)	58,736
Long-term investments				
Corporate notes and bonds	15,415	9	(5)	15,419
Total long-term investments	15,415	9	(5)	15,419
Total available-for-sale investments	\$ 74,112	\$ 59	\$ (16)	\$ 74,155
December 31, 2018				
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
<i>(In thousands)</i>				
Short-term investments				
U.S. treasury securities	\$ 8,102	\$ 1	\$ (2)	\$ 8,101
Corporate notes and bonds	65,324	1	(88)	65,237
Total short-term investments	73,426	2	(90)	73,338
Long-term investments				
Corporate notes and bonds	1,269	—	—	1,269
Total long-term investments	1,269	—	—	1,269
Total available-for-sale investments	\$ 74,695	\$ 2	\$ (90)	\$ 74,607

The Company monitors investments for other-than-temporary impairment. It was determined that unrealized gains and losses at December 31, 2019 and 2018, are temporary in nature, because the changes in market value for these securities resulted from fluctuating interest rates, rather than a deterioration of the credit worthiness of the issuers. The Company is unlikely to experience gains or losses if these securities are held to maturity. In the event that the Company disposes of these securities before maturity, it is expected that the realized gains or losses, if any, will be immaterial.

Expected maturities can differ from contractual maturities because borrowers may have the right to prepay obligations without prepayment penalties. The following table presents the amortized cost and the related fair value of available-for-sale securities with stated maturities shown by contractual maturity.

	December 31, 2019	
	Amortized Cost	Fair Value
<i>(In thousands)</i>		
Due in one year or less	\$ 58,697	\$ 58,736
Due in greater than one year	15,415	15,419
Total available-for-sale investments	\$ 74,112	\$ 74,155

ENERGY RECOVERY, INC.
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Fair Value of Financial Instruments

The Company follows the authoritative guidance for fair value measurements and disclosures that, among other things, defines fair value, establishes a consistent framework for measuring fair value, and expands disclosure for each major asset and liability category measured at fair value on either a recurring or nonrecurring basis. Fair value is defined as an exit price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability.

Financial assets and liabilities that are remeasured and reported at fair value at each reporting period are classified and disclosed in one of the following three levels:

- Level 1 — Quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2 — Inputs other than quoted prices included within Level 1 that are either directly or indirectly observable; and
- Level 3 — Unobservable inputs in which little or no market activity exists, therefore requiring an entity to develop its own assumptions that market participants would use in pricing.

The carrying values of cash and cash equivalents, restricted cash, accounts receivable, un-billed receivables, cost and estimated earnings in excess of billings, accounts payable, and other accrued expenses approximate fair value due to the short-term maturity of those instruments. For the Company's investments in available-for-sale securities, if quoted prices in active markets for identical investments are not available to determine fair value (Level 1), then the Company uses quoted prices for similar assets or inputs other than quoted prices that are observable either directly or indirectly (Level 2). The investments included in Level 2 consist of corporate notes and bonds and U.S. treasury securities.

The following tables present the fair value of financial assets measured on a recurring basis. As of December 31, 2019 and 2018, the Company had no financial liabilities.

	December 31, 2019			
	Total	Level 1	Level 2	Level 3
	<i>(In thousands)</i>			
Cash equivalents				
Money market securities	\$ 86	\$ 86	\$ —	\$ —
U.S. treasury securities	11,582	—	11,582	—
Total cash equivalents	<u>11,668</u>	<u>86</u>	<u>11,582</u>	<u>—</u>
Short-term investments				
U.S. treasury securities	2,747	—	2,747	—
Corporate notes and bonds	55,989	—	55,989	—
Total short-term investments	<u>58,736</u>	<u>—</u>	<u>58,736</u>	<u>—</u>
Long-term investments				
Corporate notes and bonds	15,419	—	15,419	—
Total long-term investments	<u>15,419</u>	<u>—</u>	<u>15,419</u>	<u>—</u>
Total fair value of financial assets	<u>\$ 85,823</u>	<u>\$ 86</u>	<u>\$ 85,737</u>	<u>\$ —</u>

ENERGY RECOVERY, INC.
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	December 31, 2018			
	Total	Level 1	Level 2	Level 3
	<i>(In thousands)</i>			
Cash equivalents				
Money market securities	\$ 6,661	\$ 6,661	\$ —	\$ —
Total cash equivalents	6,661	6,661	—	—
Short-term investments				
U.S. treasury securities	8,101	—	8,101	—
Corporate notes and bonds	65,237	—	65,237	—
Total short-term investments	73,338	—	73,338	—
Long-term investments				
Corporate notes and bonds	1,269	—	1,269	—
Total long-term investments	1,269	—	1,269	—
Total fair value of financial assets	\$ 81,268	\$ 6,661	\$ 74,607	\$ —

During the years ended December 31, 2019 and 2018, the Company had no transfers of financial assets between Level 1 and Level 2.

The following table presents a summary of the fair value and gross unrealized losses on the available-for-sale securities that have been in a continuous unrealized loss position, aggregated by type of investment instrument as of December 31, 2019 and 2018. The available-for-sale for investments that were in an unrealized gain position have been excluded from the table.

	December 31, 2019		December 31, 2018	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
	<i>(In thousands)</i>			
U.S. Treasury securities	\$ 2,027	\$ —	\$ 8,101	\$ (2)
Corporate notes and bonds	18,754	(16)	61,809	(88)
Total available-for-sale investments with unrealized loss positions	\$ 20,781	\$ (16)	\$ 69,910	\$ (90)

Note 6 — Goodwill and Intangible Assets

Goodwill

Goodwill resulted from the Company's acquisition of Pump Engineering, LLC in December 2009. The net carrying amount of goodwill as of December 31, 2019 and 2018 was \$12.8 million. There was no impairment of goodwill recorded during the years ended December 31, 2019 and 2018.

ENERGY RECOVERY, INC.
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Other Intangible Assets

The following table presents the components of active identifiable intangible assets, all of which are finite-lived, at the beginning of each respective year and their related accumulated amortization and carrying value at the end of each respective year. All intangible assets are amortized on a straight-line basis over their useful life.

	Weighted Average Useful Life	December 31, 2019			December 31, 2018		
		Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
<i>(In thousands, except for weighted average useful life)</i>							
Developed technology	10 years	\$ 6,100	\$ (6,100)	\$ —	\$ 6,100	\$ (5,541)	\$ 559
Patents	18 years	286	(221)	65	543	(462)	81
Total		\$ 6,386	\$ (6,321)	\$ 65	\$ 6,643	\$ (6,003)	\$ 640

There were no impairment of intangible assets recorded during the years ended December 31, 2019, 2018 and 2017.

The following table presents the intangible asset amortization expense recognized during the years ended December 31, 2019, 2018 and 2017.

	Years Ended December 31,		
	2019	2018	2017
<i>(In thousands)</i>			
Amortization of intangible assets	\$ 575	\$ 630	\$ 631

The following table presents the future estimated amortization expense on intangible assets as of December 31, 2019.

Year:	Estimated Future Amortization
	<i>(In thousands)</i>
2020	\$ 16
2021	12
2022	11
2023	11
2024	11
2025	4
Total	\$ 65

Note 7 — Lines of Credit**Loan and Pledge Agreement**

The Company entered into a loan and pledge agreement with a financial institution on January 27, 2017. Since inception, this loan and pledge agreement has been amended multiple times to accommodate the growth of the Company (the amended loan and pledge agreement is hereinafter referred to as the “Loan and Pledge Agreement”). The Loan and Pledge Agreement, as amended, will expire on June 30, 2022, provides for a committed revolving credit line of \$16.0 million and an uncommitted revolving credit line of \$4.0 million. The covenants of the Loan and Pledge Agreement allows the Company to incur indebtedness owed to a foreign subsidiary in an aggregate amount not to exceed \$66.0 million, which amount is subordinated to any amounts outstanding under the Loan and Pledge Agreement.

ENERGY RECOVERY, INC.
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Revolving Loans

Revolving loans under the Loan and Pledge Agreement incur interest per annum at a base rate equal to the London Inter-bank Offered Rate (commonly referred to “LIBOR”) plus 1.5%. Any default bears the aforementioned interest rate plus an additional 2%. The unused portion of the credit line is subject to a fee equal to the product of 0.2% per annum multiplied by the difference, if positive, between \$16.0 million and the average daily balance of all advances under the committed facility plus aggregate average daily undrawn amounts of all letters of credit issued under the committed facility during the immediately preceding month or portion thereof.

As of December 31, 2019 and 2018, there were no debt outstanding under the Loan and Pledge Agreement.

Letters of Credit

Under the Loan and Pledge Agreement, the Company is allowed to borrow and request letters of credit, which are limited to a term of three years, against the eligible assets held from time to time in the pledged account maintained with the financial institution.

As of December 31, 2019 and 2018, there were no letters of credit outstanding under the Loan and Pledge Agreement.

Stand-By Letters of Credit

Under the Loan and Pledge Agreement, the Company is allowed to issue stand-by letters of credit (“SBLCs”) up to one year past the expiration date of the Loan and Pledge Agreement and to hold SBLCs with other financial institutions up to \$5.1 million. SBLCs have a term limit of three years, are secured by pledged U.S. investments, and does not have any cash collateral balance requirement. SBLCs are deducted from the total revolving credit line under the Loan and Pledge Agreement, and are subject to a non-refundable quarterly fee that is in an amount equal to 0.7% per annum of the face amount of the outstanding SBLCs.

As of December 31, 2019 and 2018, there were \$11.8 million and \$8.8 million, respectively, of outstanding SBLCs.

Note 8 — Commitments and Contingencies

Operating Lease Obligations

The Company leases office facilities and equipment under operating leases that expire on various dates through 2028.

On January 10, 2019, the Company entered into an industrial lease agreement, which commenced on January 1, 2020. This new lease for a commercial development center for oil & gas field testing, manufacturing, and training, located in Katy, Texas (the “Katy Lease”), includes an office and warehouse space of approximately 25,200 square feet (“sq.ft.”) and land of approximately 4.5 acres. The Company’s annual base rent obligation, paid monthly, will be approximately \$0.3 million with an increase of approximately 3% annually thereafter, totaling \$3.6 million, over the term of the lease. The initial term of the Katy Lease is 120 months after the commencement date, and the Company has two options to extend the lease by an additional five-year term per option, which must be exercised by written notice at least six months prior to the end of the relevant term.

On February 10, 2020, the Company entered into a lease agreement, that commenced on March 1, 2020, for an additional office and warehouse space of approximately 54,429 sq.ft., located in Tracy, California (the “Tracy Lease”). The new lease will supplement the existing manufacturing, warehouse and distribution of the Company’s energy recovery devices (“ERDs”). The Company’s annual base rent obligation, paid monthly, will be approximately \$0.4 million, with an increase of approximately 3% annually thereafter, totaling \$5.0 million, over the term of the lease. The initial term of the Tracy Lease is 122 months after the commencement date, and the Company has one option to extend the lease by an additional five-year term, which must be exercised by written notice at least nine months prior to the end of the original lease term.

ENERGY RECOVERY, INC.
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The following table presents operating lease expense related to all of the Company's leased property.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Operating lease cost	\$ 1,894	\$ 1,888	\$ 1,699

The following table presents other information related to the operating leases.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Cash payments	\$ 1,824	\$ 964	\$ 1,395

The following table presents the weighted average remaining lease term and discount rate related to the operating leases.

	Years Ended December 31,	
	2019	2018
	<i>(In thousands)</i>	
Weighted average remaining lease term	8.9 years	9.8 years
Weighted average discount rate	6.97%	6.95%

The following table presents the minimum lease payments under noncancelable operating leases, exclusive of executory costs as of December 31, 2019.

	Lease Amounts ⁽¹⁾
	<i>(In thousands)</i>
Year:	
2020	\$ 1,855
2021	1,653
2022	1,812
2023	1,714
2024	1,922
2025 and thereafter	8,121
Total	17,077
Less imputed lease interest	(4,521)
Total lease liabilities	\$ 12,556

⁽¹⁾ Excluded from the above table are the aforementioned executed Katy Lease and Tracy Lease.

Warranty

The following table presents the changes in the Company's accrued product warranty reserve.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Warranty reserve balance, beginning of year	\$ 478	\$ 366	\$ 406
Warranty costs charged to cost of revenue	402	340	246
Utilization charges against reserve	(56)	(48)	(86)
Release of accrual related to expired warranties	(193)	(180)	(200)
Warranty reserve balance, end of year	\$ 631	\$ 478	\$ 366

ENERGY RECOVERY, INC.
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Purchase Obligations

The Company has purchase order arrangements with its vendors for which the Company has not received the related goods or services as of December 31, 2019. These arrangements are subject to change based on the Company's sales demand forecasts. The Company has the right to cancel the arrangements prior to the date of delivery. The purchase order arrangements are related to various raw materials and components parts, as well as for capital equipment. As of December 31, 2019, the Company had approximately \$10.4 million of such open cancellable purchase order arrangements.

Guarantees

The Company enters into indemnification provisions under its agreements with other companies in the ordinary course of business, typically with its customers. Under these provisions, the Company generally indemnifies and holds harmless the indemnified party for losses suffered or incurred by the indemnified party as a result of the Company's activities, generally limited to personal injury and property damage caused by the Company's employees at a customer's plant, and in proportion to the employee's percentage of fault for the accident. Damages incurred for these indemnifications would be covered by the Company's general liability insurance to the extent provided by the policy limitations. The Company has not incurred material costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, the estimated valuation of the potential liability arising from these agreements is not material. Accordingly, the Company recorded no liabilities for these agreements as of December 31, 2019 and 2018.

In certain cases, the Company issues warranty and product performance guarantees to its customers for amounts generally equal to 10% or less of the total sales agreement to endorse the execution of product delivery and to the warranty of design work, fabrication and operating performance of our devices. These guarantees are generally SBLCs that typically remain in place for periods of 24 to 36 months. See Note 7, "Lines of Credit – Stand-By Letters of Credit," for information related to SBLCs.

Litigation

The Company is named in and subject to various proceedings and claims in connection with its business. The Company is contesting the allegations in these claims, and the Company believes that there are meritorious defenses in each of these matters. The outcome of matters the Company has been, and currently is, involved in cannot be determined at this time, and the results cannot be predicted with certainty. There can be no assurance that these matters will not have a material adverse effect on the Company's results of operations in any future period and a significant judgment could have a material adverse impact on our financial condition, results of operations and cash flows. The Company may in the future become involved in additional litigation in the ordinary course of its business, including litigation that could be material to its business.

The Company considers all claims on a quarterly basis and based on known facts assesses whether potential losses are considered reasonably possible, probable and estimable. Based upon this assessment, the Company then evaluates disclosure requirements and whether to accrue for such claims in its consolidated financial statements. The Company records a provision for a liability when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. These provisions are reviewed at least quarterly and adjusted to reflect the impacts of negotiations, settlements, rulings, advice of legal counsel and other information and events pertaining to a particular case.

On September 10, 2014, the Company terminated the employment of its Senior Vice President, Sales, Borja Blanco, on the basis of breach of duty of trust and conduct leading to conflict of interest. On October 24, 2014, Mr. Blanco filed a labor claim against ERI Iberia in Madrid, Spain, challenging the fairness of his dismissal and seeking compensation ("Case 1"). A hearing was held on November 13, 2015, after which the labor court ruled that it did not have jurisdiction over the matter. Mr. Blanco appealed and the appeals court reversed the labor court's finding and instructed the labor court to make a ruling on the merits on November 21, 2017. On February 14, 2018, the Company received notice that the labor court issued a ruling in favor of Mr. Blanco declaring the termination to be an unjustified dismissal and ordered the Company to pay a dismissed severance. The Company appealed the decision on February 21, 2018 and received notice on March 18, 2019 that the appeals court had partially reversed the labor court's order. The Company further appealed the decision on March 25, 2019. The Company denies any allegations of wrongdoing and intends to continue to vigorously defend against this lawsuit. Based on currently available information and review with outside counsel, the Company has estimated and accrued a potential loss.

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On November 24, 2014, Mr. Blanco filed a second action based on breach of contract theories in the same court as Case 1 (“Case 2”), but the cases are separate. In Case 2, Mr. Blanco seeks payment of an unpaid bonus, stock options, and non-compete compensation. The court closed Case 2 in June 2018, and the 1-year period to reinitiate the case elapsed in June 2019.

Note 9 — Income Taxes

The following table presents the Company’s U.S. and foreign components of consolidated income before income taxes and the provision for (benefit from) income taxes.

	Years Ended December 31,		
	2019	2018	2017 ⁽¹⁾
	<i>(In thousands)</i>		
Income before income taxes:			
U.S.	\$ 12,180	\$ 12,139	\$ 11,549
Foreign	76	(699)	(1,620)
Total income before income taxes	<u>\$ 12,256</u>	<u>\$ 11,440</u>	<u>\$ 9,929</u>
Current tax provision (benefit):			
Federal	\$ (120)	\$ (297)	\$ 441
State	3	(2)	12
Foreign	66	25	18
Current tax provision (benefit)	<u>(51)</u>	<u>(274)</u>	<u>471</u>
Deferred tax provision (benefit):			
Federal	949	(9,773)	(9,025)
State	445	(606)	(1,141)
Foreign	—	—	1,270
Total deferred tax provision (benefit)	<u>1,394</u>	<u>(10,379)</u>	<u>(8,896)</u>
Total provision for (benefit from) income taxes	<u>\$ 1,343</u>	<u>\$ (10,653)</u>	<u>\$ (8,425)</u>

⁽¹⁾ Due to the full retrospective adoption of ASC 606, the balance for the year ended December 31, 2017 has been recast.

For the year ended December 31, 2019, the Company recognized an income tax expense of \$1.3 million, which included a tax benefit of \$1.1 million. The tax benefit included a deferred tax benefit of \$1.0 million related to an increase in prior year U.S. federal research and development credits and a tax benefit of \$0.5 million related to tax deductions from stock-based compensation, partially offset by deferred tax expense of \$0.4 million due primarily to a remeasurement of the Company’s state deferred tax assets due to an adjustment to the Company’s estimated blended state effective tax rate.

For the year ended December 31, 2018, the Company recognized an income tax benefit of \$10.7 million, which included a tax benefit of \$13.5 million. The tax benefit primarily included a tax benefit of \$12.3 million related to the income tax effects of a tax election related to a change to the Company’s international tax structure in Ireland that was effective in the second quarter of 2018. This resulted in a deferred tax asset related to tax expense recorded on earnings and profits under the U.S. Tax Cut and Jobs Act (“Tax Act”) on deferred revenue not yet recognized under U.S. GAAP. In addition, the tax benefit also included a \$0.8 million discrete tax benefit related to tax deductions from stock-based compensation.

The Company has evaluated the impact of the global intangible low taxed income (“GILTI”) and has concluded that the impact to the Company of the GILTI is immaterial.

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For the year ended December 31, 2017, the Company recognized a tax benefit of \$8.4 million, which consisted of a net \$10.1 million U.S. federal and state deferred tax benefit after taking into consideration a valuation allowance release on all but \$1.4 million of the Company's U.S. federal and state deferred tax assets, less a valuation allowance for the Irish deferred tax assets of \$1.3 million less U.S. federal, state and foreign current tax expense of \$0.4 million. In addition, as a result of enactment of the legislation, during the fourth quarter of 2017, the Company incurred a one-time income tax expense of \$7.0 million related to the deemed repatriation tax on accumulated foreign earnings (of which \$0.3 million is a cash charge and the remaining \$6.7 million represents a non-cash discrete tax expense largely from the utilization of net operating loss carryovers). The Company also incurred a non-cash income tax expense of \$2.5 million related to the re-measurement of certain deferred tax assets and liabilities based on the tax rates from the Tax Act. For more details on the impact of tax credits and other factors that impact the Company's annual income tax expense, please see the reconciliation of the statutory federal income tax rate to the effective tax rate table below.

The following table presents a reconciliation of income taxes computed at the statutory federal income tax rate to the effective tax rate implied by the accompanying Statements of Operations.

	Years Ended December 31,		
	2019	2018	2017 ⁽¹⁾
U.S. federal taxes at statutory rate	21 %	21 %	34 %
State income tax, net of federal benefit	4	(6)	1
Deemed repatriation transition tax	—	—	71
Deferred tax re-measurement - Change in tax rates	—	1	24
Foreign rate differential	—	(1)	(10)
Change in tax status of foreign operations	—	(102)	—
Stock-based compensation	(1)	(3)	(6)
Non-deductible expenses	2	1	1
Federal research credits	(16)	(6)	(4)
Valuation allowance	—	3	(197)
Other	1	(1)	1
Effective tax rate	<u>11 %</u>	<u>(93 %)</u>	<u>(85 %)</u>

⁽¹⁾ Due to the full retrospective adoption of ASC 606, the tax rate for the year ended December 31, 2017 has been recast.

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The following table presents the Company's total deferred tax assets and liabilities.

	December 31, 2019	December 31, 2018
<i>(In thousands)</i>		
Deferred tax assets:		
Net operating loss carry forwards	\$ 6,488	\$ 5,636
Accruals and reserves	8,922	12,157
Operating lease liabilities	2,750	—
Research and development credit carry forwards	7,533	4,609
Acquired intangibles	804	859
Charitable contributions	26	24
Total deferred tax assets	26,523	23,285
Valuation allowance	(3,933)	(2,850)
Net deferred tax assets	22,590	20,435
Deferred tax liabilities:		
Depreciation on property and equipment	(1,854)	(937)
Right of use asset	(2,443)	—
Unrecognized gain on translation of foreign currency	(33)	(9)
Goodwill	(1,363)	(1,171)
Total deferred tax liabilities	(5,693)	(2,117)
Net deferred tax asset	\$ 16,897	\$ 18,318
As reported on the balance sheet:		
Other assets, non-current	\$ 16,897	\$ 18,318
Net deferred tax asset	\$ 16,897	\$ 18,318

The Company had gross deferred tax assets of approximately \$26.5 million and \$23.3 million at December 31, 2019 and 2018, respectively. In asserting the recoverability of deferred tax assets, management considers whether it is more likely than not that the assets will be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible.

The Company assesses the available positive and negative evidence to estimate if sufficient future taxable income will be generated to use the existing deferred tax assets. In making such a determination, the Company considers all available positive and negative evidence, including recent results of operations, scheduled reversals of deferred tax liabilities, projected future income, and available tax planning strategies. A significant piece of objective positive evidence evaluated was the cumulative profit incurred in the U.S. and the cumulative losses incurred in Ireland over the three-year period ended December 31, 2019.

On the basis of this evaluation, as of December 31, 2019, the Company recognized all of its U.S. federal and state deferred tax assets with the exception that the Company continues to maintain a valuation allowance on its California R&D credit carryovers of approximately \$2.8 million. The Company will maintain a valuation allowance on its California R&D credit carryovers because it is more likely than not that the Company will continue to annually generate more California R&D tax credits than it utilizes, resulting in no net reduction of credits. The Company's policy with respect to California R&D credits is that they are utilized on a last-in, first-out basis.

In addition, as of December 31, 2019, the Company is reporting a full valuation allowance on its Irish entity's deferred tax assets totaling \$1.2 million. The valuation allowance represents a provision for uncertainty as to the realization of tax benefits from these deferred income tax assets. The Company will continue to evaluate the tax benefit uncertainty and will adjust, if warranted, the valuation allowance in future periods to the extent that the Company's deferred income tax assets become more likely than not to be realizable.

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The Company continues to assert that the accumulated foreign earnings of its subsidiaries in Spain and Canada are permanently reinvested. Due to the Tax Act, any future repatriation of the earnings of its subsidiaries in Spain and Canada would not be subject to U.S. federal income tax. The Company has estimated that the foreign withholding taxes and U.S. state income taxes related to a potential future repatriation of these earnings would be immaterial.

The following table presents the Company's net operating loss carryforwards by taxing authority.

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Federal	\$ 21,153	\$ 16,838
California	11,840	12,681
Ireland	9,363	9,363
Total net operating loss carryforwards	<u>\$ 42,356</u>	<u>\$ 38,882</u>

The net operating loss carryforwards, if not utilized, will begin to expire in years 2020 and 2031 for Federal and California, respectively. Utilization of the net operating loss carryforward may be subject to a substantial annual limitation due to the ownership change limitations provided by the U.S. Internal Revenue Code ("IRC") and similar California provisions. The annual limitation will result in the expiration of the net operating loss carryforwards before utilization. The Company has estimated the amount which may ultimately be realized and recorded deferred tax assets accordingly. The Ireland net operating loss carryforwards do not have an expiration date.

The following table presents the Company's R&D credit by taxing authority, minimum tax credit and foreign tax credit carryforwards.

	December 31, 2019	December 31, 2018
	<i>(In thousands)</i>	
Federal	\$ 4,761	\$ 2,925
California	3,509	2,132
Total credit carryforwards	<u>\$ 8,270</u>	<u>\$ 5,057</u>

The federal R&D credit carryforwards, if not utilized, will start to expire in year 2030. The foreign tax credit carryforwards will begin to expire in year 2026. The federal minimum tax credit carryforward will be refunded, if not utilized, no later than year 2021. The California credit carryforwards do not expire. Utilization of the credit carryforwards may be subject to a substantial annual limitation due to the ownership change limitations provided by the IRC and similar California provisions.

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Accounting for uncertain tax positions is based on judgment regarding the largest amount that is greater than 50% likely of being realized upon the ultimate settlement with a taxing authority. The following table presents the aggregate changes in the balance of the gross unrecognized tax benefits.

	December 31, 2019	December 31, 2018	December 31, 2017
	<i>(In thousands)</i>		
Gross unrecognized tax benefits, beginning of year	\$ 1,162	\$ 911	\$ 603
Additions:			
Prior year tax position	27	—	117
Current year tax position	163	251	191
Reductions:			
Prior year tax position	(389)	—	—
Gross unrecognized tax benefits, end of year	<u>\$ 963</u>	<u>\$ 1,162</u>	<u>\$ 911</u>

As of December 31, 2019, the Company had unrecognized tax benefits of \$1.0 million, of which \$0.5 million, if recognized, would affect the Company's effective tax rate.

The Company adopted the accounting policy that interest and penalties are classified as part of its income taxes. As of December 31, 2019, there were no accrued interest or penalties associated with any unrecognized tax benefits.

There are currently no examinations by Federal, California, and foreign tax authorities. The Company believes that, as of December 31, 2019, the gross unrecognized tax benefits will not materially change in the next twelve months. The Company believes that it has adequately provided for any reasonably foreseeable outcomes related to any tax audits and that any settlement will not have a material adverse effect on the consolidated financial position or results of operations. However, there can be no assurances as to the possible outcomes.

Note 10 — Stockholder's Equity

Preferred Stock

The Company has the authority to issue 10,000,000 shares of preferred stock with a par value of \$0.001 per share. The Board of Directors has the authority, without action by the Company's stockholders, to designate and issue shares of preferred stock in one or more series. The Board of Directors is also authorized to designate the rights, preferences, and voting powers of each series of preferred stock, any or all of which may be greater than the rights of the common stock including restrictions of dividends on the common stock, dilution of the voting power of the common stock, reduction of the liquidation rights of the common stock, and delaying or preventing a change in control of the Company without further action by the Company's stockholders. To date, the Board of Directors has not designated any rights, preferences, or powers of any preferred stock, and as of December 31, 2019 and 2018, no shares of preferred stock were issued or outstanding.

Common Stock

The Company has the authority to issue 200,000,000 shares of common stock with a par value of \$0.001 per share. Subject to the preferred rights of the holders of shares of any class or series of preferred stock as provided by the Board of Directors with respect to any such class or series of preferred stock, the holders of the common stock shall be entitled to receive dividends, as and when declared by the Board of Directors. In the event of any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary, after the distribution or payment to the holders of shares of any class or series of preferred stock as provided by the Board of Directors with respect to any such class or series of preferred stock, the remaining assets of the Company available for distribution to stockholders shall be distributed among and paid to the holders of common stock ratably in proportion to the number of shares common stock held by them.

ENERGY RECOVERY, INC.
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The follow table presents the Company's common shares issued and outstanding as of December 31, 2019 and 2018.

	December 31, 2019	December 31, 2018
Issued	60,717,702	59,396,020
Outstanding	55,261,767	53,940,085

Stock Repurchase Program

On March 7, 2018, the Board of Directors authorized a stock repurchase program under which the Company, at the discretion of management, may repurchase up to \$10.0 million in aggregate cost of the Company's outstanding common stock (the "March 2018 Authorization"). Under the March 2018 Authorization, purchases of shares of common stock may be made through September 30, 2018, from time to time in the open market, or in privately negotiated transactions, in compliance with applicable state and federal securities laws. The timing and amounts of any purchases will be based on market conditions and other factors including price, regulatory requirements, and capital availability. The March 2018 Authorization does not obligate the Company to acquire any specific number of shares in any period, and may be expanded, extended, modified or discontinued at any time without prior notice. Under the March 2018 Authorization, as of September 30, 2018, the Company repurchased 1,193,102 shares at an aggregate cost of \$10.0 million. The March 2018 Authorization expired in September 2018. The Company accounts for stock repurchases using the cost method. The aggregate cost includes fees charged in connection with acquiring the outstanding common stock.

Note 11 — Stock-based Compensation

Stock Option Plans

In June 2016, the stockholders approved the 2016 Incentive Plan (the "2016 Plan"), that permits the grant of stock options, stock appreciation rights ("SARs"), restricted stock ("RS"), restricted stock awards (RSAs), or RSUs, performance units, performance shares, and other stock-based awards to employees, officers, directors, and consultants. Prior to the approval of the 2016 Plan, the Company maintained the Amended and Restated 2008 Equity Incentive Plan (the "2008 Plan"). Subject to adjustments, as provided in the 2016 Plan, the number of shares of common stock initially authorized for issuance under the 2016 Plan was 4,441,083 shares (which consist of 3,830,000 new share awards plus 611,083 share awards that were authorized and unissued under the 2008 Plan) plus up to 7,635,410 shares that were set aside for awards granted under the 2008 Plan that are subsequently forfeited. The 2016 Plan supersedes all previously issued stock incentive plans (including the 2008 Plan) and is currently the only available plan from which awards may be granted.

Shares available for grant under the 2016 Plan were 2,250,197 shares and 2,603,183 shares at December 31, 2019 and 2018, respectively.

Stock Options

Stock options granted under the 2016 Plan and the 2008 Plan, generally vest over 4 years and expire no more than 10 years after the date of grant.

Restricted Stock Awards

There were no RSAs outstanding as of December 31, 2019.

Restricted Stock Units

RSUs awarded in fiscal year 2016 vest 25% on the first anniversary of the grant date and 1/48th monthly thereafter dependent upon continued employment. RSUs awarded in fiscal year 2017 and thereafter generally vest 25% annually over the 4 years from date of grant and are dependent upon continued employment. As RSUs vest, the units will be settled in shares of common stock based on a one-to-one ratio. The units were valued based on the market price on the date of grant.

ENERGY RECOVERY, INC.
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Fair Value Assumptions**Stock Options**

The fair value of stock options granted to employees is based on the Black-Scholes option pricing model. To determine the inputs for the Black-Scholes option pricing model, the Company is required to develop several assumptions, which are highly subjective. The Company determines these assumptions as follows:

Expected Term: The Company uses its historical data to determine the expected term of options based on historical exercise data. As there was no historical exercise data for non-employee directors, the Company determines the expected term based on the simplified method.

Expected Volatility: The Company determines expected volatility based on its historical data and the corresponding expected term that was determined using the Company's historical exercise data.

Risk-Free Interest Rate: The risk-free rate is based on U.S. Treasury issues with remaining terms similar to the expected term on the stock options granted.

Dividend Yield: The Company has never declared or paid any cash dividends and does not plan to pay cash dividends in the foreseeable future; therefore, the Company uses an expected dividend yield of zero in the valuation model.

The following table presents assumptions used in the Black-Scholes option pricing model to determine the estimated grant date fair values of stock options granted to employees.

	For years ended December 31,		
	2019	2018	2017
Weighted average expected life (years)	4.58	4.19	4.50
Weighted average expected volatility	75.9%	67.4%	80.2%
Risk-free interest rate	1.55% – 2.57%	2.48% – 3.01%	1.64% – 1.99%
Weighted average dividend yield	—%	—%	—%

Restricted Stock Units

The fair value of RSUs granted to employees is based on the Company's common stock price on the date of grant.

ENERGY RECOVERY, INC.
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Stock-based Compensation Expense

The following table presents the stock-based compensation expense related to the fair value measurement of awards granted to employees by expense category and by type of award. All stock-based payment awards are amortized on a straight-line basis over the requisite service periods of the awards, generally the vesting periods.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Stock-based compensation expense charged to:			
Product cost of revenue	\$ 130	\$ 87	\$ 158
General and administrative ⁽¹⁾	3,090	3,266	2,218
Sales and marketing	836	694	821
Research and development	1,625	1,193	890
Total stock-based compensation expense	<u>\$ 5,681</u>	<u>\$ 5,240</u>	<u>\$ 4,087</u>
Stock-based compensation expense by type of award:			
Options ⁽¹⁾	\$ 3,940	\$ 3,873	\$ 3,331
RSUs ⁽¹⁾	1,741	1,367	756
Total stock-based compensation expense	<u>\$ 5,681</u>	<u>\$ 5,240</u>	<u>\$ 4,087</u>

⁽¹⁾ Includes modification of equity awards. See "Modifications of Equity Awards" below.

Forfeitures

The Company estimates forfeitures at the time of grant and revises those estimates periodically in subsequent periods if actual forfeitures differ from those estimates. The Company uses historical data to estimate pre-vesting option forfeitures and records stock-based compensation expense only for those awards that are expected to vest. If the Company's actual forfeiture rate is materially different from its estimate, the stock-based compensation expense could be significantly different from what the Company has recorded in the current period.

The following table presents the estimated forfeiture rates used in determining the expense in the stock-based compensation expense table above.

	For years ended December 31,		
	2019	2018	2017
Stock options and RSUs vested over 4-years	11.6%	14.9%	16.3%

Unamortized Stock-Based Compensation Costs

Stock-based compensation costs related to unvested stock options and RSUs will generally be amortized on a straight-line basis over the remaining average service period of each award. The following table presents the unamortized compensation costs and weighted average service period of all unvested outstanding awards as of December 31, 2019.

	Unamortized Compensation Costs	Weighted Average Service Period
	<i>(In thousands)</i>	<i>(In years)</i>
Stock options	\$ 4,031	2.3
RSUs	2,952	2.7
Total unamortized compensation costs, net of adjusted forfeitures	<u>\$ 6,983</u>	

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Modifications of Equity Awards

During the year ended December 31, 2019, the Company recorded additional stock-based compensation expense of \$0.6 million related to the modification of certain equity awards resulting from the Company's former Chairman of the Board's retirement from service, on June 13, 2019, in consideration for his entering into a Settlement Agreement and Release, and the Company's former President and Chief Executive Officer's resignation, on November 1, 2019, in consideration for his entering into a Settlement Agreement and Release.

During the year ended December 31, 2018, the Company recorded additional stock-based compensation expense of \$0.9 million primarily related to the modification of certain equity awards resulting from the Company's former President and Chief Executive Officer's resignation, on February 24, 2018, in consideration for his entering into a Settlement Agreement and Release.

Stock Option Activities

The following table presents the stock option activities under the Company's 2016 Incentive Plan ("2016 Plan") and Amended and Restated 2008 Equity Incentive Plan.

	Number of Shares <i>(In thousands)</i>	Weighted Average Exercise Price <i>(Per share)</i>	Weighted Average Remaining Contractual Life <i>(In years)</i>	Aggregate Intrinsic Value ⁽¹⁾ <i>(In thousands)</i>
Balance, December 31, 2016	5,883	\$ 4.81		
Granted	677	9.57		
Exercised	(1,226)	4.49		\$ 6,798
Forfeited	(242)	6.60		
Balance, December 31, 2017	5,092	5.43		
Granted	1,232	7.96		
Exercised	(1,160)	3.73		4,735
Forfeited	(182)	3.98		
Balance, December 31, 2018	4,982	6.36		
Granted	568	8.31		
Exercised	(1,133)	5.36		4,781
Forfeited	(490)	8.49		
Balance, December 31, 2019	3,927	\$ 6.66	6.0	\$ 12,497
Vested and exercisable as of December 31, 2019	2,866	\$ 6.01	5.1	\$ 10,955
Vested and exercisable as of December 31, 2019 and expected to vest thereafter	3,807	\$ 6.61	5.9	\$ 12,303

⁽¹⁾ The aggregate intrinsic value of an exercised option is calculated as the difference between the exercise price of the underlying option and the fair value of the Company's common stock at the time of exercise. The aggregate intrinsic value at December 31, 2019 is calculated as the difference between the exercise price of the underlying outstanding options and the fair value of the Company's common stock as of December 31, 2019 or the last trading day prior to December 31, 2019.

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Restricted Stock Unit Activities

The following table presents the RSU activities under the 2016 Plan and includes the RSUs granted under previous plans.

	Number of Shares	Weighted Average Grant-Date Fair Value
	<i>(In thousands)</i>	<i>(Per share)</i>
Balance, December 31, 2016	214	\$ 8.65
Awarded	162	10.14
Vested	(91)	8.65
Forfeited	(11)	8.52
Balance, December 31, 2017	274	9.54
Awarded	279	7.74
Vested	(90)	9.33
Balance, December 31, 2018	463	8.49
Awarded	415	7.80
Vested	(201)	8.62
Forfeited	(133)	8.37
Balance, December 31, 2019	544	7.95

Vested Stock Options and RSUs

The following table presents the total grant date fair value of stock options and RSUs vested during the period.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Stock options	\$ 4,025	\$ 3,607	\$ 3,375
RSUs	1,733	841	783
Total grant date fair value of stock options and RSUs vested during the period	\$ 5,758	\$ 4,448	\$ 4,158

Note 12 — Business Segment**Business Segments**

The Company's chief operating decision-maker ("CODM") is the chief executive officer. The Company's reportable segments consist of the Water segment and the Oil & Gas segment. These segments are based on the industries in which the products are sold, the type of products sold and the related products and services. The Water segment consists of revenue associated with products sold for use in reverse osmosis desalination as well as the related identifiable expenses. The Oil & Gas segment consists of revenue associated with products sold for use in gas processing, chemical processing and hydraulic fracturing as well as license and development revenue associated therewith. Operating income (loss) for each segment excludes other income and expenses and certain corporate expenses managed outside the operating segment such as income taxes and other separately managed general and administrative expenses not related to the identified segments. Assets and liabilities are reviewed at the consolidated level by the CODM and are not accounted for by segment. The CODM allocates resources to and assesses the performance of each operating segment using information about its revenue and operating income (loss).

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The following table presents a summary of the Company's financial information by segment.

	Year Ended December 31, 2019			Year Ended December 31, 2018			Year Ended December 31, 2017		
	Water	Oil & Gas	Total	Water	Oil & Gas	Total	Water	Oil & Gas	Total
	<i>(In thousands)</i>								
Product revenue	\$ 72,730	\$ 104	\$ 72,834	\$ 60,512	\$ 513	\$ 61,025	\$ 54,301	\$ 3,722	\$ 58,023
Product cost of revenue	20,148	187	20,335	17,211	662	17,873	16,032	3,029	19,061
Product gross profit (loss)	52,582	(83)	52,499	43,301	(149)	43,152	38,269	693	38,962
License and development revenue	—	14,108	14,108	—	13,490	13,490	—	11,106	11,106
Operating expenses									
General and administrative	1,501	1,576	3,077	2,078	1,771	3,849	1,401	1,565	2,966
Sales and marketing	7,072	741	7,813	5,783	1,264	7,047	5,787	2,228	8,015
Research and development	3,825	19,085	22,910	1,711	15,276	16,987	1,064	12,217	13,281
Amortization of intangibles	575	—	575	629	—	629	631	—	631
Total operating expenses	12,973	21,402	34,375	10,201	18,311	28,512	8,883	16,010	24,893
Operating income (loss)	\$ 39,609	\$ (7,377)	32,232	\$ 33,100	\$ (4,970)	28,130	\$ 29,386	\$ (4,211)	25,175
Less: Corporate operating expenses			21,868			18,152			15,926
Income from operations			10,364			9,978			9,249
Other income, net			1,892			1,462			680
Income before income taxes			\$ 12,256			\$ 11,440			\$ 9,929

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table presents depreciation and amortization expense by segment.

	Years Ended December 31,		
	2019	2018	2017
	<i>(In thousands)</i>		
Water	\$ 1,824	\$ 2,060	\$ 2,723
Oil & Gas	2,251	1,377	448
Corporate	320	432	495
Total depreciation and amortization	<u>\$ 4,395</u>	<u>\$ 3,869</u>	<u>\$ 3,666</u>

Note 13 — Concentrations**Product Revenue by Geographic Location**

The following table presents the Company's product revenue by geographic locations. The geographic information includes product revenue from our domestic and international customers based on the customers' requested delivery locations, except for certain cases in which the customer directed the Company to deliver its products to a location that differs from the known ultimate location of use. In such cases, the ultimate location of use rather than the delivery location is reflected in the table.

	Years Ended December 31,		
	2019	2018	2017
Product revenue by geographic location:			
United States	2 %	3 %	3 %
International	98 %	97 %	97 %
Total product revenue	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>
Product revenue by country: ⁽¹⁾			
Saudi Arabia	29 %	31 %	13 %
United Arab Emirates	10 %	**	**
Egypt	**	17 %	15 %
Others ⁽²⁾	61 %	52 %	72 %
Total	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>

⁽¹⁾ Countries representing more than 10% of product revenues for the periods presented.

⁽²⁾ Countries in the aggregate, individually representing less than 10% of product revenues for the periods presented.

** Zero or less than 10%.

Product Revenue

The following table presents customers accounting for 10% or more of the Company's product revenue by segment.

	Segment	Years Ended December 31,		
		2019	2018	2017
Customer A	Water	19%	**	**
Customer B	Water	**	15%	**
Customer C	Water	**	11%	**

** Zero or less than 10%.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

License and Development Revenue

One international Oil & Gas segment customer accounted for 100% of the Company's license and development revenue for each of the years ended December 31, 2019, 2018 and 2017.

Accounts Receivable

The following table presents customers accounting for 10% or more of the Company's combined accounts receivable by segment.

	Segment	December 31, 2019	December 31, 2018
Customer A	Water	30%	**
Customer F	Oil & Gas	**	26%
Customer E	Water	**	20%
Customer D	Water	**	11%

** Zero or less than 10%.

Long-lived Assets

All of the Company's long-lived assets were located in the United States at December 31, 2019 and 2018.

Major Supply Vendors

The following table presents the major supply vendors accounting for 10% or more of the Company's consolidated supply and manufacturing costs purchases during the years ended December 31, 2019 and 2018.

	Years Ended December 31,	
	2019	2018
Vendor A	22%	18%
Vendor B	13%	10%

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 14 — VorTeq Partnership and License Agreement

The Company's VorTeq technology enables oilfield service hydraulic fracturing operators to isolate their high-pressure hydraulic fracturing pumps from fracturing fluid thereby reducing operating and capital costs. In 2014, the Company entered into a strategic partnership with Liberty Oil Field Services ("Liberty") to pilot and conduct field trials with the VorTeq. Through this agreement, Liberty has the rights to lease up to twenty VorTeq Missiles (defined below) for a period of up to five years following commercialization.

On October 14, 2015, the Company and the VorTeq Licensee entered into the VorTeq License Agreement, which provides the VorTeq Licensee with exclusive worldwide rights to the Company's VorTeq technology for use in hydraulic fracturing onshore applications. The VorTeq License Agreement provides an exception for Liberty's contractual rights to utilize the VorTeq. In performing the obligations under the agreement, the Company provides research and development services to commercialize the technology in accordance with the KPIs, defined in the VorTeq License Agreement. After commercialization is achieved, royalty payments will be received for the supply and servicing of cartridges. All payments are non-refundable.

The VorTeq is made up of Pressure Exchanger cartridges, housed in a high-pressure manifold (the "Missile") through which a motive fluid is used to pressurize hydraulic fracturing fluid, which is processed and sent down the well bore. The VorTeq License Agreement includes up to \$125.0 million in upfront consideration paid in stages: (i) a \$75.0 million non-refundable upfront exclusivity payment; and (ii) two milestone payments of \$25.0 million each upon achievement of successful tests in accord with KPIs specified in the VorTeq License Agreement ("Milestone Payment 1 and 2"). Milestone Payment 1 of \$25.0 million is payable upon a successful five stage yard test at the VorTeq Licensee's test facility. The Milestone Payment 2 of \$25.0 million is payable upon a successful twenty stage hydraulic fracturing at one of the VorTeq Licensee's customer's live wells. The achievement of each milestone and the receipt of each of the related payments are subject to a high degree of uncertainty.

After initial commercialization, the VorTeq Licensee will begin paying ongoing recurring royalty fees to the Company for supply and service of the cartridges based on the number of VorTeqs in operation which is subject to the greater of a minimum adoption curve or the adoption rate of the technology. During the period, from initial commercialization to full commercialization, the technology will be deployed commercially; and through continuous improvement and cost refinement, the efficiency and effectiveness of the product will fully stabilize. The exclusive nature of the agreement terminates if the VorTeq Licensee does not meet the specified minimum adoption curves. In the event the Company is not able to achieve full commercialization under the terms of the VorTeq License Agreement, the exclusivity right of the VorTeq Licensee under the VorTeq License Agreement continues throughout the term.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 15 — Supplementary Data – Quarterly Financial Data (unaudited)

The following tables present certain unaudited consolidated quarterly financial information for each of the four fiscal quarters in the periods ended December 31, 2019 and 2018. This quarterly information has been prepared on the same basis as the audited Consolidated Financial Statements and includes all adjustments, consisting only of normal recurring adjustments, necessary for a fair presentation of the information for the periods presented. The results for these quarterly periods are not necessarily indicative of the operating results for a full year or any future period.

2019 QUARTERLY FINANCIAL DATA ⁽¹⁾
(unaudited)

	Three Months Ended			
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
	<i>(In thousands, except per share amounts)</i>			
Product revenue	\$ 16,072	\$ 19,226	\$ 21,752	\$ 15,784
Product cost of revenue	4,935	5,483	5,425	4,492
Product gross profit	11,137	13,743	16,327	11,292
License and development revenue	3,723	3,570	3,098	3,717
Operating expenses:				
General and administrative	5,579	5,500	5,711	6,042
Sales and marketing	2,162	2,181	2,367	2,724
Research and development	4,254	5,480	6,620	7,048
Amortization of intangible assets	156	157	156	106
Total operating expenses	12,151	13,318	14,854	15,920
Income (loss) from operations	\$ 2,709	\$ 3,995	\$ 4,571	\$ (911)
Provision for (benefit from) income taxes	\$ 554	\$ 756	\$ (83)	\$ 116
Net income (loss)	\$ 2,654	\$ 3,719	\$ 5,149	\$ (609)
Earnings (deficit) per share:				
Basic	\$ 0.05	\$ 0.07	\$ 0.09	\$ (0.01)
Diluted	\$ 0.05	\$ 0.07	\$ 0.09	\$ (0.01)

⁽¹⁾ Quarterly results may not add up to annual results due to rounding.

ENERGY RECOVERY, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

2018 QUARTERLY FINANCIAL DATA ⁽¹⁾
(unaudited)

	Three Months Ended			
	March 31, 2018	June 30, 2018(2)	September 30, 2018	December 31, 2018
	<i>(In thousands, except per share amounts)</i>			
Product revenue	\$ 11,058	\$ 17,406	\$ 18,578	\$ 13,983
Product cost of revenue	3,314	5,976	5,022	3,561
Product gross profit	7,744	11,430	13,556	10,422
License and development revenue	2,749	3,358	3,661	3,723
Operating expenses:				
General and administrative	5,837	4,927	5,266	5,446
Sales and marketing	1,912	1,858	1,873	1,903
Research and development	3,917	3,605	4,270	5,220
Amortization of intangible assets	158	158	158	156
Total operating expenses	11,824	10,548	11,567	12,725
Income (loss) from operations	\$ (1,331)	\$ 4,240	\$ 5,650	\$ 1,420
Provision for (benefit from) income taxes (2)	\$ (357)	\$ (11,122)	\$ 1,339	\$ (516)
Net income (loss)	\$ (726)	\$ 15,743	\$ 4,658	\$ 2,421
Earnings (deficit) per share:				
Basic	\$ (0.01)	\$ 0.29	\$ 0.09	\$ 0.04
Diluted	\$ (0.01)	\$ 0.28	\$ 0.08	\$ 0.04

(1) Quarterly results may not add up to annual results due to rounding.

(2) During second quarter of 2018, the Company recognized an income tax benefit of \$11.1 million, which included a \$12.1 million discrete tax benefit. This discrete tax benefit includes an \$11.9 million tax benefit related to the income tax effects of a tax election related to a change to the Company's international tax structure in Ireland.

Item 9 — Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A — Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management has evaluated, with the participation of our Chief Executive Officer and Chief Financial Officer, the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, or “Exchange Act”) as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of such date, our disclosure controls and procedures were effective to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms and that such information is accumulated and communicated to management as appropriate to allow for timely decisions regarding required disclosure.

Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their objectives, and our Chief Executive Officer and Chief Financial Officer have concluded that these controls and procedures are effective at the “reasonable assurance” level. Our management, including the Chief Executive Officer and Chief Financial Officer, believes that a control system, no matter how well designed and operated, cannot provide absolute assurance that the objectives of the control system are met, and that no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within a company have been detected.

Management’s Annual Report on Internal Control Over Financial Reporting and Attestation Report of the Registered Public Accounting Firm

Management’s Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over the Company’s financial reporting. Management assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2019. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control — Integrated Framework (2013)*. Based on the assessment using those criteria, management concluded that, as of December 31, 2019, our internal control over financial reporting was effective.

Attestation Report of the Registered Public Accounting Firm

The Company’s independent registered public accountants, Deloitte & Touche, LLP, audited the Consolidated Financial Statements included in this Annual Report on Form 10-K and have issued an audit report on the Company’s internal control over financial reporting. The report on the audit of internal control over financial reporting appears in Part II, Item 8, “Financial Statements and Supplementary Data,” in this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during our most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B — Other Information

None.

PART III

Item 10 — Directors, Executive Officers and Corporate Governance

The information required by this Item is included in and incorporated by reference from our definitive proxy statement (the “Proxy Statement”) which will be filed with the Securities and Exchange Commission prior to April 30, 2020. The Proxy Statement is for our Annual Meeting of Stockholders which will be held on June 12, 2020.

Item 11 — Executive Compensation

The information required by this Item is included in and incorporated by reference from the Proxy Statement under the captions “Election of Directors,” “Director Compensation,” “Compensation Discussion and Analysis” and “Report of the Compensation Committee of the Board of Directors on Executive Compensation.”

Item 12 — Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The following table sets forth equity compensation plan information as of December 31, 2019.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants, and Rights	Weighted-Average Exercise Price of Outstanding Options, Warrants, and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in the First Column)
Equity compensation plans approved by security holders ⁽¹⁾	4,470,166	\$ 6.66	2,250,197
Equity compensation plans not approved by security holders	None	Not applicable	Not applicable

⁽¹⁾ Represents shares of our common stock issuable upon exercise of options outstanding under the following equity compensation plans: the 2006 Stock Option/Stock Issuance Plan, the 2008 Equity Incentive Plan, the Amended and Restated 2008 Equity Incentive Plan, and the 2016 Incentive Plan.

The information under the caption “Security Ownership of Certain Beneficial Owners and Management” in the Proxy Statement is incorporated herein by reference.

Item 13 — Certain Relationships and Related Transactions and Director Independence

The information required by this Item is included in and incorporated by reference from the Proxy Statement under the caption “Related Person Policies and Transactions.”

Item 14 — Principal Accounting Fees and Services

The information required by this item is included in and incorporated by reference from the Proxy Statement under the caption “Principal Accountant Fees and Services.”

With the exception of the information specifically incorporated by reference in Part III to this Annual Report on Form 10-K from the Proxy Statement, the Proxy Statement shall not be deemed to be filed as part of this report.

PART IV

Item 15 — Exhibits and Financial Statement Schedules

Financial Statements

- (a) The following documents are included as part of this Annual Report on Form 10-K:
- (1) *Financial Statements*. The financial statements included in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K.
 - (2) *Financial Statement Schedule*. See Note 4, “Other Financial Information-Allowance for Doubtful Accounts,” of the Notes to Consolidated Financial Statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K. Schedules not listed have been omitted because information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.
- (b) *Financial Statement Schedules*. All financial statement schedules are omitted because they are not applicable, not required, or because the required information is included in the Consolidated Financial Statements, the Notes thereto, or in the Exhibits listed under Item 15(a)(2).
- (c) Exhibits required by Item 601 of Regulation S-K.

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation, as filed with the Delaware Secretary of State on July 7, 2008.	10-K	001-34112	3.1	3/27/2009	
3.2	Amended and Restated Bylaws, effective as of July 8, 2008.	10-K	001-34112	3.2	3/27/2009	
4.1	Description of Securities					X
10.1*	Form of Indemnification Agreement between the Company and its directors and officers.	S-1/A	333-150007	10.1	5/12/2008	
10.2*	2006 Stock Option/Stock Issuance Plan of the Company and forms of Stock Option and Stock Purchase Agreements thereunder.	S-1	333-150007	10.5	4/1/2008	
10.3*	Amendment to 2006 Stock Option/Stock Issuance Plan of the Company.	S-1	333-150007	10.5.1	4/1/2008	
10.4*	Second Amendment to 2006 Stock Option/Stock Issuance Plan of the Company.	S-1	333-150007	10.5.2	4/1/2008	
10.5*	2008 Equity Incentive Plan of the Company and form of Stock Option Agreement thereunder.	S-1/A	333-150007	10.6	5/12/2008	
10.6*	Energy Recovery Inc. Amended and Restated 2008 Equity Incentive Plan.	DEF14A	001-34112	Appendix A	4/27/2012	
10.7	Modified Industrial Gross Lease Agreement dated November 25, 2008, between the Company and Doolittle Williams, LLC.	10-K	001-34112	10.17	3/27/2009	
10.8	First Amendment to Modified Industrial Gross Lease dated May 28, 2009, between the Company and Doolittle Williams, LLC.	10-Q	001-34112	10.17.1	8/7/2009	
10.9	Second Amendment to Modified Industrial Gross Lease dated June 26, 2009, between the Company and Doolittle Williams, LLC.	10-Q	001-34112	10.17.2	8/7/2009	
10.10	Third Amendment to Modified Industrial Gross Lease dated November 10, 2010 between the Company and Doolittle Williams, LLC.	10-K	001-34112	10.14	3/12/2013	
10.11	Control Agreement dated July 7, 2011, between the Company, Citibank, N.A., Citigroup Global Markets Inc., and Morgan Stanley Smith Barney LLC.	10-Q	001-34112	10.43	8/8/2011	

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Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.12*	Energy Recovery, Inc. Change in Control Severance Plan dated March 5, 2012.	8-K	001-34112	10.1	3/9/2012	
10.13	Loan Agreement dated June 5, 2012 between Company and HSBC Bank, USA, National Association.	8-K	001-34112	10.1	6/11/2012	
10.14*	Energy Recovery, Inc. Annual Incentive Plan dated January 1, 2014.	8-K	001-34112	10.1	4/30/2014	
10.15*	Offer Letter dated June 26, 2014, to Mr. Joel Gay.	8-K/A	001-34112	99.2	7/8/2014	
10.16*	Draft Consulting Agreement with Thomas S. Rooney, Jr.	8-K	001-34112	10.2	1/13/2015	
10.17*	Energy Recovery, Inc. 2015 Annual Incentive Plan.	8-K	001-34112	10.1	4/29/2015	
10.18*	Offer Letter dated April 22, 2015 to Mr. Joel Gay.	8-K	001-34112	99.2	4/29/2015	
10.19*	Promotion Letter dated April 30, 2015 to Ms. Sharon Smith-Lenox.	8-K	001-34112	99.1	5/1/2015	
10.20*	Offer Letter dated May 5, 2015 to Mr. Eric Siebert.	10-K	001-34112	10.25	3/4/2016	
10.21	Settlement and Mutual Release Agreement.	8-K	001-34112	99.1	5/13/2015	
10.22*	Offer Letter dated May 13, 2015 to Mr. Chris Gannon.	8-K	001-34112	99.1	5/15/2015	
10.23	Second Amendment to Loan Agreement with HSBC Bank USA, National Association.	10-Q	001-34112	10.7	8/6/2015	
10.24*	Offer Letter dated September 17, 2015 to Ms. Emily Smith.	10-K	001-34112	10.30	3/4/2016	
10.25**	License Agreement by and between ERI Energy Recovery Ireland, Ltd. and Schlumberger Technology Corporation.	10-K	001-34112	10.31	3/4/2016	
10.26*	Energy Recovery, Inc. Annual Incentive Plan effective as of January 1, 2016.	8-K	001-34112	10.1	3/2/2016	
10.27*	Transition and Separation Agreement dated March 15, 2016 by and between Energy Recovery, Inc. and Mr. Juan Otero.	8-K	001-34112	99.1	3/21/2016	
10.28*	Energy Recovery, Inc. 2016 Incentive Plan.	DEF14A	001-34112	Appendix A	4/27/2016	
10.29*	Offer Letter dated May 27, 2016 to Mr. William Yeung.	8-K	001-34112	99.1	6/22/2016	
10.30	Loan and Pledge Agreement between Energy Recovery, Inc. as Borrower, and Citibank, N.A. as Lender.	10-K	001-34112	10.34	3/10/2017	
10.31	First Amendment to Loan and Pledge Agreement by and between Energy Recovery, Inc. and Citibank, N.A.	10-Q	001-34112	10.1	5/4/2017	
10.32	1717 Doolittle Lease Agreement.	8-K	001-34112	10.1	4/18/2018	
10.33	Settlement Agreement and Release, dated as of April 18, 2018 by and between Energy Recovery, Inc., and Joel Gay.	8-K	001-34112	10.1	4/24/2018	
10.34	First Amendment to Loan and Pledge Agreement by and between Energy Recovery, Inc. and Citibank, N.A.	10-Q	001-34112	10.1	5/3/2018	
10.35	Offer of Promotion to President and Chief Executive Officer.	8-K	001-34112	10.1	5/8/2018	
10.36	Offer Letter to Mr. Joshua Ballard.	8-K	001-34112	2.2	8/15/2018	
10.37	Employment Agreement with Mr. Eric Siebert.	8-K	001-34112	10.1	8/27/2018	
10.38	Employment Agreement with Mr. Nocair Bensalah.	8-K	001-34112	10.2	8/27/2018	
10.39	Employment Agreement with Mr. Rodney Clemente.	8-K	001-34112	10.3	8/27/2018	
10.40	Third Amendment to Loan and Pledge Agreement by and between Energy Recovery, Inc. and Citibank N.A.	10-Q	001-34112	10.5	11/1/2018	
10.41	Lease Agreement, dated as of January 10, 2019, by and between Energy Recovery, Inc. and FS Clay, LLC	8-K	001-34112	10.1	1/16/2019	
10.42	Fourth Amendment to Loan and Pledge Agreement by and between Energy Recovery, Inc. and Citibank N.A.	10-Q	001-34112	10.1	5/2/2019	
10.43	Fifth Amendment to Loan and Pledge Agreement by and between Energy Recovery, Inc. and Citibank N.A.	10-Q	001-34112	10.2	5/2/2019	

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Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.44	Sixth Amendment to Loan and Pledge Agreement by and between Energy Recovery, Inc. and Citibank N.A.	10-Q	001-34112	10.1	8/2/2019	
10.45	Settlement Agreement and Release, dated as of November 15, 2019, by and between Energy Recovery, Inc., and Chris Gannon.	8-K/A	001-34112	10.1	11/19/2019	
14.1	Code of Ethics of Energy Recovery, Inc. Additional Conduct and Ethics Policies for the Chief Executive Officer and Senior Financial Officers.	10-K	001-34112	14.1	3/27/2009	
18.1	BDO USA, LLP, Letter re Change in Method of Accounting for Inventory Valuation.	10-Q	001-34112	18.1	5/8/2014	
21.1	List of subsidiaries of the Company.					X
23.1	Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm.					X
23.2	Consent of BDO USA, LLP, Independent Registered Public Accounting Firm.					X
31.1	Certification of Principal Executive Officer, pursuant to Exchange Act Rule 13a-14(a) or 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
31.2	Certification of Principal Financial Officer, pursuant to Exchange Act Rule 13a-14(a) or 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
32.1	Certification of Principal Executive Officer and Principal Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
101	Inline XBRL Document Set for the consolidated financial statements and accompanying notes in Part II, Item 8, "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.					X
104	Inline XBRL for the cover page of this Annual Report on Form 10-K, included in the Exhibit 101 Inline XBRL Document Set.					X

* Indicates management compensatory plan, contract or arrangement.

** Portions of this exhibit have been omitted based on a request for Confidential Treatment submitted to the Securities and Exchange Commission (the "SEC"). The omitted information has been filed separately with the SEC as a part of the confidential treatment request. In the event that the SEC should deny such request in whole or in part, the relevant, previously omitted portions of this exhibit shall be publicly filed.

Item 16 — Form 10-K Summary

None

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Leandro, State of California, on the 6th day of March 2020.

ENERGY RECOVERY, INC.

/s/ ROBERT YU LANG MAO

Robert Yu Lang Mao
Interim President and Chief Executive Officer

Pursuant to the requirements of the Securities and Exchange Act of 1934, this Report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ ROBERT YU LANG MAO</u> Robert Yu Lang Mao	Chairman of the Board, Director and Interim President and Chief Executive Officer <i>(Principal Executive Officer)</i>	March 6, 2020
<u>/s/ JOSHUA BALLARD</u> Joshua Ballard	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	March 6, 2020
<u>/s/ ALEXANDER J. BUEHLER</u> Alexander J. Buehler	Director	March 6, 2020
<u>/s/ OLAV FJELL</u> Olav Fjell	Director	March 6, 2020
<u>/s/ SHERIF FODA</u> Sherif Foda	Director	March 6, 2020
<u>/s/ ARVE HANSTVEIT</u> Arve Hanstveit	Director	March 6, 2020
<u>/s/ OLE PETER LORENTZEN</u> Ole Peter Lorentzen	Director	March 6, 2020
<u>/s/ PAMELA TONDREAU</u> Pamela Tondreau	Director	March 6, 2020

**DESCRIPTION OF THE REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES
EXCHANGE ACT OF 1934**

Energy Recovery, Inc. (the "Company", "Energy Recovery", "we", "our" and "us") has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"): our common stock.

General

Energy Recovery is authorized to issue up to 200,000,000 shares of common stock, \$0.001 par value per share, or common stock, and 10,000,000 shares of preferred stock, \$0.001 par value per share, or preferred stock. Only shares of our common stock and no shares of our preferred stock are outstanding.

The following summary description is based on the provisions of our certificate of incorporation, our amended and restated bylaws and the applicable provisions of the Delaware General Corporation Law. This information may not be complete in all respects and is qualified entirely by reference to the provisions of our certificate of incorporation, our amended and restated bylaws and the Delaware General Corporation Law. Our certificate of incorporation and our amended and restated bylaws are filed as exhibits to this Annual Report on Form 10-K to which this Description of Capital Stock is an exhibit.

Common Stock

General. The following is a description of our common stock, which is the only security of the Company registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Dividend rights. Subject to preferences that may apply to shares of preferred stock outstanding at the time, the holders of outstanding shares of our common stock are entitled to receive dividends out of funds legally available if our board of directors, in its discretion, determines to declare dividends and then only at the times and in the amounts that our board of directors may determine.

Voting rights. Each holder of common stock is entitled to one vote for each share of common stock held on all matters submitted to a vote of stockholders. Our certificate of incorporation does not provide for the right of stockholders to cumulate votes for the election of directors. Our certificate of incorporation establishes a classified board of directors, which is divided into three classes with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. These provisions in our amended and restated certificate of incorporation could discourage potential takeover attempts. See "Anti-Takeover Effects of Delaware Law and Our Charter Documents" below.

No preemptive or similar rights. Our common stock is not entitled to preemptive rights and is not subject to conversion or redemption provisions. The rights, preferences and privileges of the holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of any series of our preferred stock that we may designate and issue in the future.

Right to receive liquidation distributions. Upon our dissolution, liquidation or winding-up, the assets legally available for distribution to our stockholders are distributable ratably among the holders of our common stock, subject to prior satisfaction of all outstanding debt and liabilities and the preferential rights and payment of liquidation preferences, if any, on any outstanding shares of preferred stock.

The rights of the holders of our common stock are subject to, and may be adversely affected by, the rights of holders of shares of any preferred stock that we may designate and issue in the future.

Anti-Takeover Effects of Delaware Law and Our Charter Documents

Certificate of Incorporation and Bylaws. Our certificate of incorporation and bylaws include provisions that:

- authorize the board of directors to issue, without further action by the stockholders, up to 10,000,000 shares of undesignated preferred stock;
 - require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
-

- specify that special meetings of our stockholders can be called only by the board of directors, the chairman of the board of directors, the chief executive officer or the president;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to the board of directors;
- provide that directors may be removed only for cause;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- establish that our board of directors is divided into three classes, Class I, Class II and Class III with each class serving staggered terms;
- specify that no stockholder is permitted to cumulate votes at any election of directors;
- and
- require a super-majority of votes to amend certain of the above-mentioned provisions.

Delaware Anti-Takeover Statute. Some of the provisions of Delaware law may have the effect of delaying, deferring, discouraging or preventing another person from acquiring control of the Company.

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

- before such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon closing of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned by (1) persons who are directors and also officers and (2) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines business combination to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loss, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines an “interested stockholder” as an entity or person who, together with the person’s affiliates and associates, beneficially owns, or within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

A Delaware corporation may “opt out” of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or bylaws resulting from a stockholders’ amendment approved by at least a majority of the outstanding voting shares. We have not elected to “opt out” of these provisions. The statute could prohibit or delay mergers or other takeover or change in control attempts and, accordingly, may discourage attempts to acquire us. Certain provisions in our certificate of incorporation and our amended and restated bylaws could have an effect of delaying, deferring or preventing a change in control.

Choice of Forum

Our certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty owed by any director, officer or employee to us or our stockholders, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law or any action asserting a claim against us that is governed by the internal affairs doctrine. However, several lawsuits involving other companies have been brought challenging the validity of choice of forum provisions in certificates of incorporation, and it is possible that a court could rule that such provision is inapplicable or unenforceable.

Transfer Agent and Registrar

American Stock Transfer & Trust Company, LLC is the transfer agent and registrar for our common stock. American Stock Transfer & Trust Company, LLC's address is 6201 15th Ave, Brooklyn, New York, USA 11219.

Listing

Our common stock is listed on The Nasdaq Stock Market LLC under the symbol "ERII".

Energy Recovery, Inc.

List of Subsidiaries

Company Name	Country/State of Incorporation/Formation
ERI Energy Recovery Holdings Ireland Limited	Ireland
ERI Energy Recovery Ireland Limited	Ireland
Energy Recovery Iberia, S.L.	Spain
Energy Recovery Canada, Corp.	Canada

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement No. 333-233730 on Form S-3 and Registration Statement No. 333-152142, 333-165559, 333-180076, and 333-212707 on Form S-8 of our reports dated March 6, 2020, relating to (1) the 2019 financial statements of Energy Recovery, Inc., and (2) the effectiveness of Energy Recovery, Inc.'s internal control over financial reporting as of December 31, 2019, appearing in this Annual Report on Form 10-K of Energy Recovery, Inc. for the year ended December 31, 2019.

/s/ DELOITTE & TOUCHE LLP

March 6, 2020

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Energy Recovery, Inc.
San Leandro, California

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-233730) and Form S-8 (Nos. 333-152142, 333-165559, 333-180076, and 333-212707) of Energy Recovery, Inc. of our report dated March 8, 2018, relating to the consolidated financial statements as of and for the year ended December 31, 2017 (before the retrospective adjustments to the consolidated financial statements for the adoption of *Revenue from Contracts with Customers (Topic 606)*, ASU No. 2016-02, *Leases (Topic 842)* and ASU 2016-18, *Statement of Cash Flows (Topic 230)*), which appears in this Form 10-K.

/s/ BDO USA, LLP
San Jose, California

March 6, 2020

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a) OR 15d-14(a), AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES OXLEY ACT OF 2002**

I, Robert Yu Lang Mao, certify that:

1. I have reviewed this Annual Report on Form 10-K of Energy Recovery, Inc. for the period ended December 31, 2019;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. I have disclosed, based on my most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 6, 2020

/s/ ROBERT YU LANG MAO

Name: Robert Yu Lang Mao

Title: Interim President and Chief Executive Officer
(Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a) OR 15d-14(a), AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES OXLEY ACT OF 2002**

I, Joshua Ballard, certify that:

1. I have reviewed this Annual Report on Form 10-K of Energy Recovery, Inc. for the period ended December 31, 2019;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. I have disclosed, based on my most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 6, 2020

/s/ JOSHUA BALLARD

Name: Joshua Ballard
Title: Chief Financial Officer
(Principal Financial Officer)

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER,
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE
SARBANES-OXLEY ACT OF 2002***

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities and Exchange Act of 1934, as amended (the "Exchange Act"), and Section 1350 of Chapter 63 of Title 18 of the United States Code, Robert Yu Lang Mao, Interim President and Chief Executive Officer of Energy Recovery, Inc., and Joshua Ballard, Chief Financial Officer of Energy Recovery, Inc., each hereby certify that, to the best of his knowledge:

1. The Company's Annual Report on Form 10-K for the period ended December 31, 2019, to which this Certification is attached as Exhibit 32.1 (the "Annual Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act, and
2. The information contained in the Annual Report fairly presents, in all material respects, the financial condition of the Company at the end of the period covered by the Annual Report and results of operations of the Company for the period covered by the Annual Report.

IN WITNESS WHEREOF, the undersigned has set his hand hereto:

Date: March 6, 2020

/s/ ROBERT YU LANG MAO

Robert Yu Lang Mao

Interim President and Chief Executive Officer

Date: March 6, 2020

/s/ JOSHUA BALLARD

Joshua Ballard

Chief Financial Officer

* This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Energy Recovery, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.