

CLEARSIGN COMBUSTION CORP
Form 10-K
February 14, 2017

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, 2016

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 001-35521

CLEARSIGN COMBUSTION CORPORATION

(Exact name of registrant as specified in its charter)

WASHINGTON

26-2056298

(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification No.)

12870 Interurban Avenue South

Seattle, Washington 98168

(Address of principal executive offices)

(Zip Code)

(206) 673-4848

(Registrant's telephone number, including area code)

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

<u>Title of each class</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$.0001	The NASDAQ Stock Market LLC

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company.

Large accelerated filer "

Accelerated filer "

Non-accelerated filer "

Smaller reporting company x

(Do not check if a smaller reporting company)

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

State the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter.

As of June 30, 2016, the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the last sale price of the common equity was \$62,000,000.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date.

As of February 14, 2017, the registrant has 15,598,853 shares of common stock, par value \$.0001, issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2017 Annual Meeting of Shareholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31,

2016.

Combustion Corporation

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**SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND OTHER INFORMATION
CONTAINED IN THIS REPORT**

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and the provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements give our current expectations or forecasts of future events. You can identify these statements by the fact that they do not relate strictly to historical or current facts. You can find many (but not all) of these statements by looking for words such as “approximates,” “believes,” “hopes,” “expects,” “anticipates,” “estimates,” “projects,” “intends,” “plans,” “would,” “should,” or other similar expressions in this report. In particular, these include statements relating to future actions; prospective products, applications, customers and technologies; future performance or results of any products; anticipated expenses; and future financial results. These forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from our historical experience and our present expectations or projections. Factors that could cause actual results to differ materially from those discussed in the forward-looking statements include, but are not limited to:

- our limited cash and our history of losses;
- our ability to successfully develop and implement our technology and achieve profitability;
- our limited operating history;
- emerging competition and rapidly advancing technology in our industry that may outpace our technology;
- customer demand for the products and services we develop;
- the impact of competitive or alternative products, technologies and pricing;
- our ability to manufacture any products we design;
- general economic conditions and events and the impact they may have on us and our potential customers;
- our ability to obtain adequate financing in the future;
- our ability to continue as a going concern;
- our success at managing the risks involved in the foregoing items; and
- other factors discussed in this report.

Forward-looking statements may appear throughout this report, including without limitation, the following sections: Item 1 “Business,” Item 1A “Risk Factors,” and Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” The forward-looking statements are based upon management’s beliefs and assumptions and are made as of the date of this report. We undertake no obligation to publicly update or revise any forward-looking statements included in this report. You should not place undue reliance on these forward-looking statements.

Unless otherwise stated or the context otherwise requires, the terms “ClearSign,” “we,” “us,” “our” and the “Company” refer to ClearSign Combustion Corporation.

PART I

ITEM 1: BUSINESS

Introduction

We design and are developing technologies for the purpose of improving key performance characteristics of combustion systems, including emission and operational performance, energy efficiency and overall cost-effectiveness. Our patented Duplex™ and Electrodynamic Combustion Control™ (ECC™) platform technologies enhance the performance of combustion systems in a broad range of markets, including the energy (upstream oil production and down-stream refining), commercial/industrial boiler, chemical, petrochemical, and power industries. Our Duplex technology uses a porous ceramic tile above a standard burner to significantly reduce flame length and achieve very low emissions without the need for external flue gas recirculation, selective catalytic reduction, or excess air systems. Our ECC technology introduces a computer-controlled high voltage electric field into a combustion volume in order to better control gas-phase chemical reactions and improve system performance and cost-effectiveness. To date, our operations have been funded primarily through sales of our securities. We have earned nominal revenue since inception in 2008.

While we have recently begun commercializing our Duplex technologies and our technologies have not been tested or verified by any independent third party, based on the results of our laboratory and field testing as well as our initial commercialized installations in three different applications, we believe that our proprietary technology platforms may improve emissions control performance and operational performance for many types of industrial and commercial combustion systems. As a result, we also believe that our technologies may reduce costs associated with the construction (including refurbishment and upgrade), operation and maintenance of these combustion systems as compared to combustion systems that use no or alternative technology to enhance combustion and control emissions.

Based on the results of our testing, we believe our technologies compare favorably with current industry-standard air pollution control technologies, such as selective catalytic reduction devices, low- and ultra-low NOx burners (which address nitrogen oxides or NOx), excess air systems and other similar technologies. Such systems are used in our current target market segments of petroleum refining and petrochemical process heaters, large-scale once through steam generators (OTSGs), enclosed ground flares, and packaged boilers.

Corporate History

We were incorporated in Washington on January 23, 2008. The address of our corporate headquarters is 12870 Interurban Avenue South, Seattle, Washington 98168 and our telephone number is (206) 673-4848. Our website can be accessed at www.clearsign.com. The information contained on or that may be obtained from our website is not a part of this report. All of our operations are located in the United States.

Our Industry

The combustion and emissions control markets are significant, both in the wide array of industries in which the systems are used and in the amount of money spent in installing and upgrading systems. The Energy Information Administration of the U.S. Department of Energy determined in its 2014 Annual Energy Outlook that the world's industrial sector consumed 165 quadrillion British thermal units (BTUs) of hydrocarbon fuels. These are used to provide heat for all manner of industrial processes, including boilers, furnaces, kilns and turbines. In order to maximize energy efficiency while keeping pace with regulatory guidelines for air pollution emissions, operators of these systems are continually installing, maintaining and upgrading a variety of costly process control, air pollution control and monitoring systems. Although we believe that there are many potential markets for our technologies, to date we have limited the introduction of our technologies to market segments that include petroleum refining process heaters, enclosed ground flares, and OTSGs.

Our Technologies

We are pursuing development of our technologies to enable future sales. These activities entail (i) field development projects in the case of our Duplex technology where we have successfully demonstrated our proprietary technology operating in our field testing with thermal output of up to 52 million BTU/hr, (ii) laboratory research in the case of our ECC technology where we have demonstrated certain attributes of our proprietary technology operating in our research facility with thermal output of up to 2 million BTU/hr, and (iii) business development and marketing activities with established entities that use process heaters, enclosed ground flares, steam generators, boilers, solid fuel burners, and other combustion systems as well as original equipment manufacturers (OEMs). We intend to continue to enter into collaborative arrangements, such as those described below and with OEMs, which would enable us to work closely with established companies in targeted industries to apply solutions developed in our laboratory and field settings.

Field Testing of our Duplex Technology in Once-Through Steam Generators

After performing testing on our Duplex technology in our laboratory furnace with thermal output up to 5 million BTU/hr, we commenced field development work in the fourth quarter of 2014 with an oil field operator in Southern California to demonstrate and test the Duplex technology in an OTSG with a thermal output ranging from 40 to 62.5 million BTU/hr used to facilitate a thermally enhanced oil recovery process in California's San Joaquin Valley. To date, we have tested an OTSG at a rate of 52 million BTU/hr and met the requirements of San Joaquin Valley Air Pollution Control District's Rule 4320, Advance Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater Than 5.0 MMBtu/hr, which prohibits NO_x emissions exceeding 5 ppm (corrected at 3% O₂). These results were achieved without major modifications to the burner or the need for flue gas recirculation (FGR). During testing, the OTSG unit continued to supply steam at the capacity and quality required for oil field operations. Our agreement with this operator includes time-sensitive pricing, delivery and installation terms, if elected, that will apply to future purchases of this Duplex application. In September 2015, this operator placed an order to retrofit a second OTSG unit with our Duplex technology. The retrofit was completed and the sale recorded in the quarter ended December 31, 2016. This customer is considering additional unit sales after conducting additional field testing related to its unique stranded gas fuel supply.

In May 2015, we received an order from an independent Southern California oil producer to retrofit a 25 million BTU/hr OTSG with our Duplex technology. The installation involves an antiquated OTSG and burner with unique installation issues that we do not believe apply to our target markets. Substantial progress was made in 2016 related to this installation and it is expected to be completed in the first quarter of 2017.

In 2016, we completed a design study for a large Canadian operator of OTSGs. We believe that this operator is considering our Duplex technology because it is anticipating, and therefore preparing for, the passage during the next

few years of increased emissions regulations in the locale in which it operates.

Based upon our results to date, we observed a thermal efficiency improvement in OTSGs of approximately 1% when compared to a baseline case with a conventional low NO_x burner without FGR. OTSG systems typically operate with FGR to lower NO_x emissions. FGR, however, penalizes thermal efficiency, increasing fuel and electricity costs. We estimate that Duplex, compared to systems operating with FGR, will provide an overall energy savings of as much as 3-4% which could represent a significant reduction in annual operating expense depending on variables such as the thermal output of the OTSG and the market price for natural gas and electricity. Further, compliance with current emissions standards would eliminate the cost of any fines associated with the retrofitted operations. We continue to conduct testing to address additional performance criteria in order to further validate the environmental and operational benefits of our Duplex technology.

Field Testing of our Duplex Technology in Wellhead Enclosed Flares

In February 2016, we received an order through an intermediary, acting on behalf of a large Southern California oil producer, for installation in wellhead enclosed ground flares for the purpose of evaluating Duplex as a solution to the oil producer's NO_x emissions challenges. The initial retrofit was completed and payment received in the quarter ended September 30, 2016 whereby we recognized \$260,000 of revenue. This was an important milestone because it was our first meaningful product sale and our second completed installation following the non-revenue field development installation in an OTSG. Furthermore, we entered into an agreement to supply this oil producer with 5 additional wellhead enclosed ground flare retrofits for \$900,000. These are expected to be completed over the next six months depending on the availability of the customer's equipment. During the year ended December 31, 2016, we received payments of 40% of the contract amount as an initial payment, which is standard for the industry for this stage of completion.

Field Testing of our Duplex Technology in Refinery Process Heaters

We previously executed two agreements regarding field tests related to process heaters with thermal outputs ranging from 12 to 15 million BTU/hr with two separate petroleum refineries in the San Joaquin Valley. Retrofits for Tricor Refining, LLC and an unnamed California refinery were each completed and accepted by the customers in the quarter ended December 31, 2016. These are important milestones as these two installations have become demonstration sites for other refiners, including super major refiners, which we believe will aid us in expanding our access to this industry. Additionally, the process heater at Tricor had been out of service since 1984. Our Duplex technology retrofit allowed Tricor to bring this obsolete asset back into production and to provide what we believe is another helpful demonstration to refiners.

In August 2015, we executed an agreement with Tesoro Refining & Marketing Company LLC, a subsidiary of Tesoro Corporation, to evaluate our Duplex technology in a multiple-burner process heater located in Tesoro's Los Angeles area refinery. The Duplex technology performance will be evaluated based on several performance criteria, including NOx emission criteria determined by California's South Coast Air Quality Management District. The first phase of the project, involving initial design, was completed under a fixed price agreement in 2015. Tesoro is furthering its design process based on the refinery results observed to date and is formulating a strategy to test Duplex under its environment and supervision.

Testing of our Duplex Plug & Play™ for Refinery Process Heaters

We have recently completed laboratory testing and intend to begin field testing a new burner product for refinery and industrial process heater applications. The Duplex Plug & Play design provides a more simplified, pre-engineered and standardized direct burner replacement for traditional refinery process heaters. We believe that this product will reduce the customized engineering associated with typical retrofits and lend itself to mass production. The product derives its name from the fact that it is designed to allow a heater or furnace to continue operating during installation rather than be shut down. If field testing confirms this design attribute, the ability to install the Duplex Plug & Play while the system is operational will allow customers to avoid down time and shorten the sales cycle often prolonged by annual or semi-annual scheduled maintenance.

In September 2015, we executed an agreement with a refiner in Texas to install our Duplex technology in a process heater located in one of their refineries. The Duplex installation is being installed to eliminate potential flame impingement upon process tubes and reduce maintenance costs and downtime. This will provide the initial field testing site for our Duplex Plug & Play. The refiner's application awaits an appropriate shut-down schedule in the coming months to install and test the product. Field testing at this Texas refinery will provide the last phase of product assessment and allow for operational feedback from this beta site customer. The customer has expressed interest in purchasing additional units if the testing is completed to their satisfaction. We believe that successful launch of this

product could cultivate interest in licensing and potential manufacturing arrangements with OEMs with established manufacturing and distribution capabilities.

We intend to continue field validation of our Duplex technology in order to produce sufficient data to demonstrate product attributes and dependability.

Laboratory Research of our ECC Technology

We continue to conduct solid fuel laboratory testing of our ECC technology. If successful, this would create a basis for further focused laboratory studies prior to any field demonstrations. There is no assurance that additional research funds will be received, terms relating to further research will be reached, or a final agreement for additional research or laboratory studies will be executed.

Technical Components of our Duplex and ECC Technologies

Our Duplex burner technology typically consists of a traditional industrial burner and a porous ceramic tile. When the uncombusted mix of gaseous fuel and air is directed at the tile, hot gas combusts within the tile itself. Because the fuel and air have more time to mix, the NO_x-forming hot spots that are typically produced in an open flame are greatly eliminated and a dramatically shorter flame is produced. NO_x, a regulated pollutant comprised largely of nitrogen oxide and nitrogen dioxide, is greatly reduced without any external fans or associated power, thereby minimizing harmful emissions while improving system efficiency. A shorter flame allows for improved heat transfer and operation of the furnace at a higher capacity since it reduces the possibility of flame impingement and coking in a combustion chamber.

Our ECC technology consists, in its simplest form, of four major components: (a) a computer, (b) standard software delivering proprietary algorithms to (c) a power amplifier (resident outside the combustion chamber) and (d) electrodes inside the combustion chamber. ECC introduces a high voltage electric field into the combustion process to control the resulting flames electrically through the naturally forming ions. The electrodes are optimized in material and shape to best suit the specific geometry of a given installation. We have also demonstrated a technique to apply ECC to a combustion system without requiring an electrode to have physical contact with the flame. Based on our research and demonstrations, we believe ECC to be ideally suited to solid fuel combustion.

The basic components of both systems are either available “off the shelf” or require manufacturing techniques that are well within the current state of the art. Thus, our products are readily available and scalable for high volume demand.

We believe our technologies can be retrofitted to existing combustion systems to improve their performance and have the potential to provide substantial savings in both capital and operating costs, or, for new-builds, can serve as the basis for fundamental improvements in the design, cost and operation of combustion systems.

Research and Development Plan

We have tested aspects of our Duplex and ECC technologies in our laboratory on our 1 million and 5 million BTU/hr research furnaces, our 1 million BTU/hr boiler simulator, and our 1 million BTU/hr solid fuel furnace. We have installed our Duplex technology on a retrofit basis in numerous field test sites. We have completed laboratory testing of the Duplex Plug & Play which, if successful in field applications, could attract interest from OEMs. Our research and development activities include the following:

Scale up to commercially relevant sizes. With regard to our ECC technology, we have designed and built furnaces and burners at what we believe to be a commercially relevant scale. We have identified potential development partners and customers with whom we are engaged in discussions to apply our ECC technology to their particular uses at commercially relevant scales, which can be 1 million BTUs or greater. The solid fuel laboratory testing of our ECC technology is ongoing.

Site demonstration at full scale. We have demonstrated our Duplex technology for burner retrofits at commercial sites firing retrofitted OTSGs up to 52 million BTU/hr and a retrofitted three burner, 12 million BTU/hr petroleum refinery process heater. We anticipate commencement of field demonstration of the Duplex Plug & Play in the second quarter of 2017 to evaluate the product at full scale in an up-fired refinery process heater.

Complete first installation. After completion of site demonstrations that include our Duplex Plug & Play, we anticipate that this demonstration will transition to validation and documentary phases with extended operation periods in the field. This would include validation from prospective customer users and environmental regulatory bodies. With regard to our Duplex retrofit applications, customers continue to validate and document their results. Field development testing of our Duplex retrofit application is ongoing while regulatory bodies consider the results. In December 2015, the South Coast Air Quality Management District governing the greater Los Angeles area designated Duplex as a Best Available Retrofit Control Technology in the field of refinery process heaters and boilers. We believe that such demonstrations, if successful, would provide the impetus for commercial adoption within the applicable industry.

Enhancement of our intellectual property portfolio. We have generated inventions that we believe to be patentable subject matter and for which we have been seeking protection through patent application filings. As of December 31, 2016, we have filed approximately 69 patent applications with the U.S. Patent and Trademark Office (USPTO) and certain foreign regulatory bodies related to our Duplex and ECC technologies, which remain pending. We have been granted 3 patents related to our Duplex technology and 33 patents related to our ECC technology. We cannot predict when our patent applications may result in issued patents, if at all. Further, we may modify a patent application in the future as we develop additional information. As a result, we may create additional patent applications from an existing application, consolidate existing patent applications, abandon applications, or otherwise modify applications based upon our judgment in order to protect our intellectual property in a reasonably cost beneficial manner.

The Combustion Markets

Overview

We compete in the combustion and emissions control markets. These are highly competitive industries that are currently dominated by companies that have both substantially greater financial resources than we do and established products. However, we believe, based on the testing and the field studies done to date, that our technologies offer a unique and powerful ability to improve emissions and operational performance, energy

efficiency and overall cost-effectiveness. We are targeting the following segments of the combustion market:

process heaters for petroleum refining and petrochemical processing,

heating systems in packaged boilers,

enclosed ground flares, and
larger-scale steam generation systems and power boilers.

In each segment, we plan to market solutions with our Duplex technology that we believe could simultaneously improve both pollution control and operational efficiency characteristics through (a) cost-effective retrofitting of our Duplex technology onto existing standard system designs, and (b) new system designs.

Market Entry

We believe that our technologies could be applied to a wide range of systems in which there is a flame. While this implies many potential market opportunities, it also requires that we exercise a disciplined approach in comparatively evaluating those opportunities in order to select and prioritize those applications that are cost effective and afford the

best mix of time and cost required for development relative to revenue potential. We also aim to select applications in which our technologies either offer immediate, clear, meaningful, and measurable advantages relative to competing technologies or address unmet market needs.

We have pursued retrofitting existing systems to improve their performance as we believe that it provides the quickest path to market. This is because (1) the installed base of existing combustion systems is far greater than the annual number of newly built systems, (2) integrating our technology into a retrofit appeared less complex than integrating our technology into a new combustion system designed by an OEM, (3) the design cycle of a retrofit application appeared to be far shorter, and (4) we believed that with the previously challenging economic and energy industry market conditions, less costly retrofits are more attractive to many segments of the energy market than new capital equipment and infrastructure builds to comply with environmental regulations and derive cost efficiencies.

Since we have completed initial retrofit projects in three vertical market installations, we believe that pursuit of new, stand-alone products, such as the Duplex Plug & Play, if successful, will enable us to substantially increase our sales to a meaningful level through licensing or other business arrangements with OEMs. If field installation of the Duplex Plug & Play is successful, we will pursue OEMs or other means to license the product in order to take advantage of the manufacturing and distribution capabilities of more established market participants. We are planning to develop a stand-alone product for application in the packaged boiler market and intend to investigate the value of developing additional stand-alone products.

Sales and Marketing Plan

Partnership Strategy and Field Development. We believe that our technologies have the potential to transform industries that rely on combustion and that our technologies are broadly applicable in large, scalable, global markets.

We intend to form research and development arrangements to develop our technology within targeted segments. Among the types of potential partners with which we will seek to establish relationships in the U.S. and globally will be:

End users of OEM products and services interested in advancing the development of our technology in order to address their operational needs;

Large OEMs interested in our technology;

Industry research groups, whose mission is the development and testing of new technologies for the eventual benefit of their member companies; and

Government entities such as the U.S. Department of Energy, who are chartered with the development of longer-range and potentially disruptive energy technologies.

We currently are pursuing field development programs of our Duplex burner products. These programs are aimed at our target industrial combustion markets.

Pricing Strategy. Our target markets are characterized by well-established competitors in mature businesses. As a result, competitive pricing rather than pricing based on broad product value is the standard for these markets. Since we believe that our technology will provide greater economic value in comparison to our competitors, we plan to price our technology based upon the value that we believe it will provide in reduced air pollution control costs, including fines, and reduced maintenance and operating costs.

Channel Structure and Path to Market. Our path to market could involve any combination of (1) licensing our technologies for either one-time or periodic licensing fees for a period of time within specific fields of use and/or territories, (2) sale of our intellectual property rights within specific fields of use and/or territories, or (3) manufacturing the components required to enable our technologies and/or supplying a complete burner package through strategic subcontracting agreements. Since our solutions consist largely of off-the-shelf components, we do not anticipate that we will require a large manufacturing capacity. To the extent we will require production of specific hardware (electrodes, for example), we plan to rely on outside contract manufacturers, which we believe are widely available and for which a competitive market exists.

Competition and Barriers to Entry

The industry in which we operate is global in scope and is populated by large, established suppliers of burners and post-combustion air pollution control systems, all of whom possess substantially greater resources than we do. Worldwide, suppliers of burners and air pollution control equipment include but are not limited to companies such as UOP, Callidus and Maxon (all three are subsidiaries of Honeywell), John Zink Hamworthy Combustion (a subsidiary of Koch Industries and including Coen), Babcock and Wilcox, Westinghouse, Eclipse, General Electric, Haldor Topsøe, Hitachi, Linde, and Fives North American, among others.

These systems include low NO_x burners, electrostatic precipitators, bag houses, selective catalytic reduction systems and various types of scrubbers. The companies that provide these systems are well established and their combustion and emissions control technologies are based on mature, well-understood technologies that are proven in the market. However, we believe the further development of their technologies will be limited largely to marginal performance improvements. As a consequence of this relatively slow pace of innovation, we believe current technology offerings have become largely commoditized, and differentiation between suppliers is very often based on price.

From a customer's perspective, legacy air pollution control technology is viewed as a cost of doing business, and as a means to operate within regulatory requirements and avoid fines. Unlike most other kinds of capital equipment that provide an economic return through enhanced productivity or efficiency, we believe customers of traditional emissions control equipment do not otherwise expect any positive return on these investments.

As indicated above we are seeking to enter the combustion and emissions control market and to establish ourselves in a highly competitive industry against companies that have both substantially greater financial resources than we do and established products. Because they have been available in the market for many years, our competitors' product offerings may have several advantages. Among these are:

Availability of trained technicians: The number of technicians who are able to specify, install and operate our competitors' products will be greater than those who have been trained on our technology.

Conservative choice: Because our competitors' technologies are well understood and their performance has been proven over time, customers may perceive their offerings as a safe, low-risk choice.

Business relationships: Because our competitors have established long-standing personal relationships with their customers, they may prefer to continue to do business with one another.

However, if we are able to successfully bring our technology to market, we believe that our technology would be an attractive alternative to the products and solutions offered by companies with which we seek to compete. In particular, we believe that our technology could offer a unique cost-effective means to reduce many pollutants at the source while improving operational efficiency. We believe our technology could be capable of reducing the requirement for costly legacy equipment, offering customers the prospect of a positive return on their investment in the form of enhanced efficiency and productivity while reducing emissions to the levels of existing air pollution control technologies such as scrubbers, electrostatic precipitators and fabric filters (bag houses). In particular, we believe our technology could offer the following advantages when compared with the next best alternatives.

Emissions Reduction from Combustion Sources. Current technology reduces emissions by using mechanical mixing aids such as swirlers, staging combustion in two or more zones, or treating emissions such as NO_x after the fact using selective catalytic reduction. In contrast, we believe our technology could:

- enhance mixing with none of the additional pressure drop or power requirements that swirlers demand; and
- reduce NO_x without reducing turndown or narrowing the burner operating window as staged combustion does or requiring expensive post combustion treatments with chemical additives such as catalytic reduction requires.

Improving flame shape. The main goal of virtually all process combustion is to transfer heat to raise steam or enable a chemical reaction, and to do so as efficiently as possible. Conventional technology uses buoyancy (the natural tendency for a flame and heat to rise opposite to the force of gravity) and momentum (fuel mixed with air and forced through a nozzle, as in a torch) as the only tools to shape flames. Unfortunately, momentum effects die out over distance from their source and buoyancy always operates counter to the gravitational field. Moreover, momentum and buoyancy effects often drive wayward flames into process tubes where they cause overheating and potential failure. In contrast, we believe that our technology could allow the use of much stronger body forces that are not limited by orifice diameter and are unaffected by gravitational fields. We believe the result would be better control over flame shape and direction, allowing the process to operate free of the effects of impingement and non-optimal flame structure.

Enhancing heat-transfer and process efficiency. The main objective of industrial combustion in furnaces and boilers is to transfer heat to a process fluid. Conventional combustion techniques do their best to optimize flame shape to achieve this end, but we believe conventional combustion techniques have no additional means for enhancing heat transfer. In contrast, we believe that our technology could enhance heat transfer to the process tube independent of flame shape using electrical current, and that the result could be an increase in process efficiency or throughput, which is a critical goal in the industrial combustion industry.

Compared to the products and solutions of companies with which we seek to compete, we believe our technology could provide our potential customers with a lower total cost of ownership, offering the prospect of a positive economic return on investment to systems operators due to a reduction in their capital and operating expenses, and an increase in energy efficiency.

While we believe that our technology could offer the advantages discussed above, we do not currently represent a significant competitive presence in our industry.

Research and Development Program

Our research and development program consists of bench- and pilot-scale research anticipating future site demonstrations. The experience and industry contacts of our management, board of directors, and consultants with potential customers in the petroleum, petrochemical, and industrial steam applications industries inform our research program. These are supported by field development agreements, research agreements, and memoranda of understanding with potential development partners, customers and research institutions. Our research and development activities make use of employees and consultants that are experts in the areas of industrial combustion, statistical experimental design, gas turbines, fluid mechanics, physics of particles and ions, and electric fields. We spent \$4,831,000 and \$2,932,000 on research and development for the years ended December 31, 2016 and 2015, respectively.

Intellectual Property Protection

We are pursuing an aggressive intellectual property strategy including:

Aggressive invention and ideation. Thus far we have identified numerous specific inventions that we believe to be novel and patentable. We are pursuing a proven ideation process to enhance and continue these discoveries.

Development of a strong patent portfolio. As of December 31, 2016, we have been awarded 3 and 33 patents related to our Duplex and ECC technologies, respectively, and have 69 patent applications pending for Duplex and ECC technologies. We cannot predict when our patent applications may result in issued patents, if at all. Further, we may modify a patent application in the future as we develop additional information. As a result, we may create additional patent applications from an existing application, consolidate existing patent applications, abandon applications, or otherwise modify applications based upon our judgment in order to protect our intellectual property in a reasonably cost beneficial manner.

Government Regulation

Government approval is not required in order for us to sell the principal products or services that we are developing. However, government regulation, particularly environmental regulation, is likely to play an important role in shaping our product mix and offerings. Our Duplex technology includes enhancement of the combustion process and reduction of certain emissions at a lower cost than current air pollution control devices. Field implementation of our technology requires permits from various local, state and federal agencies that regulate mechanical and electrical infrastructure and fire and air pollution control.

We believe that we offer major advances in emissions and efficiency reductions. We believe emissions regulations could enhance market demand for technology if such regulations require a reduction in criteria pollutants such as NO_x, SO_x, and CO, or others such as CO₂, or mercury. In such cases, possible legislation on greenhouse gases, boiler MACT rules, or general reductions in required criteria pollutant levels could serve our business objectives. Although the timing of such regulations is uncertain, the general trend over the last decades continues to be government-mandated reduction for all criteria pollutants and the addition of new emissions to those regulated. Ultimately, it may be possible for our technology to achieve EPA BACT (Best Available Control Technology) designation. Although field development testing of our Duplex technology is ongoing, in December 2015 the South Coast Air Quality Management District governing the greater Los Angeles area designated Duplex as a Best Available Retrofit Control Technology in the field of refinery process heaters and boilers. The availability of our technology, by itself, could accelerate the government's willingness to adopt more stringent environmental regulations. Further, efficiency improvements include enhanced mixing, lower excess air requirements, and improved heat transfer to the process. We believe such efficiency improvements could generate market demand regardless of the existing regulatory framework because they could result in savings to businesses that adopt our technology.

Although the Trump administration has indicated that it plans to pursue the reduction of environmental regulations in order to promote economic activity and to eliminate or reduce perceived needless environmental regulations, the statements to date have primarily referenced elimination of regulations associated with greenhouse gas emissions, an area unrelated to our technologies, and the approval of oil pipelines, a step that may benefit our business and that of our customers in the energy sector. At this time, we are not aware of any current or proposed federal, state or local environmental compliance regulations that would have a material detrimental effect on our business objectives. We do not anticipate any major expenditures to be required in order for our technology to comply with any environmental protection statutes.

Employees

As of February 14, 2017, we had 19 full-time employees and 1 part-time employee. None of these employees are covered by a collective bargaining agreement, and we believe our relationship with our employees is good.

ITEM 1A: RISK FACTORS

We are subject to various risks that may materially harm our business, prospects, financial condition and results of operations. An investment in our common stock is speculative and involves a high degree of risk. In evaluating an investment in shares of our common stock, you should carefully consider the risks described below, together with the other information included in this report.

The risks described below are not the only risks we face. If any of the events described in the following risk factors actually occurs, or if additional risks and uncertainties later materialize that are not presently known to us or that we currently deem immaterial, then our business, prospects, results of operations and financial condition could be materially adversely affected. In that event, the trading price of our common stock could decline, and you may lose all or part of your investment in our shares. The risks discussed below include forward-looking statements, and our actual results may differ substantially from those discussed in these forward-looking statements.

Risks Related to Our Business

We are a company with a limited operating history and our future profitability is uncertain. We anticipate future losses and negative cash flow and we may never be profitable.

We are a company with a limited operating history and limited revenues to date. We have incurred losses since our inception and expect to experience operating losses and negative cash flow for the foreseeable future. As of December 31, 2016, we had a total accumulated deficit of approximately \$40.3 million. We anticipate our losses will continue to increase from current levels because we expect to incur additional costs and expenses related to prototype development, consulting costs, laboratory development costs, marketing and other promotional activities, the addition of engineering and manufacturing personnel, and our continued efforts to form relationships with strategic partners. We may never generate significant revenue and we may never be profitable.

If we do not receive additional financing when and as needed in the future, we may not be able to continue our research and development efforts or commercialization efforts and our business may fail.

Our business is highly capital-intensive, and requires significant capital investments in order for it to develop. Our cash on hand will likely not be sufficient to meet all of our future needs and we will likely require substantial additional funds in excess of our current financial resources for research, development and commercialization of our

technology, to obtain and maintain patents and other intellectual property rights in our technology, and for working capital and other purposes, the timing and amount of which are difficult to ascertain. Until our technology generates revenues sufficient to support our operations, we plan to obtain the necessary working capital for operations through the sale of our securities, but we may not be able to obtain financing in amounts sufficient to fund our business plans. Furthermore, if our target customers are slow to adopt our technology, we may require additional investment capital in order to continue our operations. If we cannot obtain additional funding when and as needed, our business might fail.

Market acceptance of our technology and business is difficult to predict. If our technology does not achieve market acceptance, our business could fail.

We are continuing to develop our technology, which is being tested in the field by various oil producers and refiners. If we are unable to effectively develop and timely promote our technology, gain recognition in our market segment, and develop a critical level of successful sales and product installations, we may not be able to successfully achieve sales revenue and our results of operations and financial condition would then suffer. Our ability to achieve future revenue will depend significantly upon achieving a critical mass of market awareness and sales to potential customers of our products. While we plan to achieve this awareness over time, there can be no assurance that awareness of our company and technology will develop in a manner or pace that is necessary for us to achieve profitability in the near term.

Further we cannot predict the rate of adoption or acceptance of our technology by potential customers. While we may be able to effectively demonstrate the feasibility of our technology, this does not guarantee the industrial combustion and power generation market will accept it, nor can we control the rate at which such acceptance may be achieved. In certain of our market segments, there is a well-established channel with a limited number of companies engaged in reselling to our target customers. Failure to achieve productive relations with a sufficient number of these prospective partners may impede adoption of our technology. Additionally, some potential customers in our target industries are historically risk-averse and have been slow to adopt new technologies. If our technology is not accepted in the industrial combustion and power generation market, we may not earn enough by selling or licensing our technology to support our operations, recover our research and development costs or become profitable and our business could fail.

Our efforts may never demonstrate the feasibility of our product.

Our research and development efforts remain subject to all of the risks associated with the development of new products based on emerging and innovative technologies, including without limitation unanticipated technical or other problems, our ability to scale our technology to large, industrial applications, conditions in the field during installation and the possible insufficiency of funds for completing development of these products. Technical problems, including those specific to customer site implementation, may result in delays and cause us to incur additional expenses that would increase our losses. If we cannot complete, or if we experience significant delays in completing, research and development of our technology for use in potential commercial applications, particularly after incurring significant expenditures, our business may fail.

Changes to environmental regulations could make our technology less desirable.

The negative environmental impacts of industrial activity have given rise to significant environmental regulation in industrialized countries. These regulations are important incentives in the adoption of technologies like ours. To the extent that environmental regulations in the United States and in other industrialized countries are modified in the future, or even relaxed, our technology may not produce the results required, or may even be unnecessary, to comply with the modified regulations. For example, although the Trump administration has indicated that it plans to pursue the reduction of environmental regulations in order to promote economic activity and to eliminate or reduce perceived needless environmental regulations, the administration's statements to date have primarily referenced elimination of regulations associated with greenhouse gas emissions, an area unrelated to our technologies, and the approval of oil pipelines, a step that may benefit our business. However, if the Environmental Protection Agency relaxes the clean air regulations our technologies are designed to address, our business and results of operations could be materially adversely affected.

We may fail to adequately protect our proprietary technology, which would allow our competitors to take advantage of our research and development efforts.

Our long-term success largely depends on our ability to market our technology. We rely on a combination of patent, trade secret and other intellectual property laws, confidentiality and security procedures and contractual provisions to establish and protect our proprietary rights in our technology, products and processes. If we fail to obtain or maintain these protections, we may not be able to prevent third parties from using our proprietary technologies. Our pending or future patent applications may not result in issued patents. In addition, any patents issued to us in the future may not contain claims sufficiently broad to protect us against third parties with similar technologies or products or from third parties infringing such patents or misappropriating our trade secrets or provide us with any competitive advantage. In addition, effective patent and other intellectual property protection may be unenforceable or limited in foreign countries. If a third party initiates litigation regarding the validity of our patents, and is successful, a court could revoke our patents or limit the scope of coverage for those patents.

We also rely upon trade secrets, proprietary know-how and continuing technological innovation to remain competitive. We protect this information with reasonable security measures, including the use of confidentiality and invention assignment agreements with our employees and consultants and confidentiality agreements with strategic partners. It is possible that these agreements may not be sufficient or that these individuals or companies may breach these agreements and that any remedies for a breach will be insufficient to allow us to recover our costs and damages. Furthermore, our trade secrets, know-how and other technology may otherwise become known or be independently discovered by our competitors.

We may incur substantial costs as a result of litigation or other proceedings relating to patent and other intellectual property rights.

A third party may sue us for infringing its intellectual property rights. Likewise, we may need to resort to litigation to enforce our patent rights or to determine the scope and validity of third-party intellectual property rights. The cost to us of any litigation or other proceeding relating to intellectual property rights, even if resolved in our favor, could be substantial, and the litigation would divert our efforts from our business activities. Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. If we do not prevail in this type of litigation, we may be required to pay monetary damages and/or expenses; stop commercial activities relating to our products; obtain one or more licenses in order to secure the rights to continue manufacturing or marketing our products; or attempt to compete in the market with substantially similar products. Uncertainties resulting from the initiation and continuation of any litigation could limit our ability to continue some of our operations.

We cannot guarantee that any research and development partnership we enter into will be successful.

We intend to form research and development arrangements to develop our technology within targeted segments. Collaborative arrangements involve risks that participating parties may disagree on business decisions and strategies. These disagreements could result in delays, additional costs, risks of litigation, and failure of the development of our technology within the combustion market segment. Success of any collaborative arrangements we enter into will depend in part on whether those with whom we collaborate fulfill their contractual obligations satisfactorily. If a party with whom we collaborate fails to perform its contractual obligations satisfactorily, we may be unable to make the additional investments or provide the added services that would be required to compensate for that failure. If we are unable to adequately address any such performance issues, our reputation may be materially adversely affected and we may be exposed to legal liability. Our inability to successfully maintain collaborative relationships, once we enter into them, or to enter into new collaborative arrangements, could have a material adverse effect on our results of operations.

If we are unable to keep up with rapid technological changes, our products may become obsolete.

The market for alternative energy products is characterized by significant and rapid technological change and innovation. Although we intend to employ our technological capabilities to create innovative products and solutions that are practical and competitive in today's marketplace, future research and discoveries by others may make our products and solutions less attractive or even obsolete compared to other alternatives that may emerge.

Our technology and its industrial applications have not yet been safety tested.

There is inherent danger in dealing with the combustion process. There is additional danger in modifying this process in ways that are new and, as yet, untested on a commercial scale. Although we have not yet encountered any areas of risk in the development or testing of our products beyond those already inherent in the combustion process or those particular to an industrial site, the Company may be exposed to liabilities should an industrial accident occur during development, testing, or operation in our laboratory or during field implementation of our technology.

We will depend on approval from various local, state and federal agencies to implement and operate our technology. There is no assurance that these agencies will approve our technology.

Our technology includes enhancement of the combustion process, inclusion of a computer-controlled electric field to selectively promote, suppress, retard or accelerate chemical reactions as desired, and to reduce certain emissions at a lower cost than current air pollution control devices. Field implementation of our technology will therefore require permits from various local, state and federal agencies that regulate mechanical and electrical infrastructure and fire and air pollution control. Our technology may be subject to heightened scrutiny since it will be new to these governing bodies. As such, there may be delays or rejections in applications of portions of or all of our technology in the individual jurisdictions involved.

Because our technology has not yet been fully developed or implemented, we are uncertain of our profit margins and whether such profit margins, if achieved, will be able to sustain our business.

We have not fully developed our products, cost of goods or pricing. As a result, we cannot reliably predict our profit margins. Our operating costs could increase significantly compared to those we currently anticipate due to unanticipated results from the development process, application of our technology to unique or difficult processes, regulatory requirements and particular field implementations. Further, we envision our pricing to be highly dependent on the benefits that our customers believe they will achieve using our products. Accordingly, we cannot predict whether or when we will achieve profitability, and if achieved, the amount of such profit margins.

Many of our potential competitors have greater resources, and it may be difficult to compete against them.

The energy industry is characterized by intense competition. Many of our potential competitors have better name recognition and substantially greater financial, technical, manufacturing, marketing, personnel and/or research capabilities than we do. Although at this time we do not believe that any of our potential competitors has technology similar to ours, if and when we complete the commercialization of products based on our technology, potential competitors may respond by developing and producing similar products. Many firms in the energy industry have made and continue to make substantial investments in improving their technologies and manufacturing processes. In addition, they may be able to price their products below the marginal cost of production in an attempt to establish, retain or increase market share. Because of these circumstances, it may be difficult for us to compete successfully in the energy market.

The loss of the services of our key management and personnel or the failure to attract additional key personnel could adversely affect our ability to operate our business.

A loss of one or more of our current officers or key employees could severely and negatively impact our operations. Of particular note, the loss of services of Stephen E. Pirnat, Chief Executive Officer and President, Dr. Donald W. Kendrick, Chief Technology Officer, Dr. Roberto Ruiz, Chief Operating Officer, or Joseph Colannino, Senior Vice President of Engineering could significantly harm our business. We have no present intention of obtaining key-man life insurance on any of our executive officers or management. Additionally, competition for highly skilled technical, managerial and other personnel is intense. As our business develops, we might not be able to attract, hire, train, retain and motivate the highly skilled executives and employees we need to be successful. If we fail to attract and retain the necessary technical and managerial personnel, our business will suffer and might fail.

Risks Related to Owning Our Common Stock

The public market for our securities is volatile. This may affect not only the ability of our investors to sell their securities, but the price at which they can sell their securities.

We completed the initial public offering of our common stock in April 2012. Since that time, our common stock (CLIR: NASDAQ) has traded as low as \$2.98 per share and as high as \$11.75 per share and day-to-day trading has been volatile at times. Further, in conjunction with a shareholder rights offering we completed on January 25, 2017, we sold warrants (CLIRW: NASDAQ) the day-to-day trading of which has also been volatile to date. This volatility may continue or increase in the future. The market price for the securities may be significantly affected by factors such as progress in the development of our technology, agreements with research facilities or co-development partners, commercialization of our technology, variations in quarterly and yearly operating results, general trends in the alternative energy industry, and changes in state or federal regulations affecting us and our industry. Furthermore, in recent years the stock market has experienced extreme price and volume fluctuations that are unrelated or disproportionate to the operating performance of the affected companies. Such broad market fluctuations may adversely affect the market price of our securities.

We have the right to issue shares of preferred stock. If we were to issue preferred stock, it is likely to have rights, preferences and privileges that may adversely affect the common stock.

We are authorized to issue 2,000,000 shares of “blank check” preferred stock, with such rights, preferences and privileges as may be determined from time-to-time by our board of directors. Our board of directors is empowered, without shareholder approval, to issue preferred stock in one or more series, and to fix for any series the dividend rights, dissolution or liquidation preferences, redemption prices, conversion rights, voting rights, and other rights, preferences and privileges for the preferred stock. No shares of preferred stock are presently issued and outstanding and we have no immediate plans to issue shares of preferred stock. The issuance of shares of preferred stock, depending on the rights, preferences and privileges attributable to the preferred stock, could adversely reduce the voting rights and powers of the common stock and the portion of the Company’s assets allocated for distribution to common stock holders in a liquidation event, and could also result in dilution in the book value per share of our common stock. The preferred stock could also be utilized, under certain circumstances, as a method for raising additional capital or discouraging, delaying or preventing a change in control of the Company, to the detriment of our shareholders. We cannot assure you that the Company will not, under certain circumstances, issue shares of its preferred stock.

We may be required to raise additional financing by issuing new securities, which may have terms or rights superior to those of our shares of common stock, which could adversely affect the market price of our shares of common stock and our business.

We will require additional financing to fund future operations, including expansion, capital costs and the costs of any necessary implementation of technological innovations or alternative technologies. We may not be able to obtain financing on favorable terms, if at all. If we raise additional funds by issuing equity securities, the percentage ownership of our then-current shareholders will be reduced. Further, we may have to offer new investors in our equity securities rights that are superior to the holders of common stock, which could adversely affect the market price and the voting power of shares of our common stock. If we raise additional funds by issuing debt securities, the holders of these debt securities would similarly have some rights senior to those of the holders of shares of common stock, and the terms of these debt securities could impose restrictions on operations and create a significant interest expense for us which could have a materially adverse effect on our business.

We have not paid dividends in the past and have no immediate plans to pay dividends.

We plan to reinvest all of our earnings, to the extent we have earnings, in order to market our products and to cover operating costs and to otherwise become and remain competitive. We do not plan to pay any cash dividends with respect to our securities in the foreseeable future. We cannot assure you that we would, at any time, generate sufficient surplus cash that would be available for distribution to the holders of our common stock as a dividend.

We have a significant number of options and warrants outstanding and we may issue additional options in the future to employees, officers, directors, independent contractors and agents. Sales of the underlying shares of common stock could adversely affect the market price of our common stock.

As of February 14, 2017, we had outstanding options and warrants for the purchase of 882,815 and 2,840,784 shares of common stock, respectively. Under the ClearSign Combustion Corporation 2011 Equity Incentive Plan and the ClearSign Combustion Corporation 2013 Consultant Stock Plan (collectively, the “Plans”), we have the ability to grant awards of shares or options to employees, officers, directors, independent contractors and agents. Furthermore, as of February 14, 2017, we have reserved an additional 132,560 shares of common stock for such awards and the Plans provide that this number may increase quarterly by a collective amount of up to 11% of the number of shares issued by the Company each quarter. Certain holders may sell these shares in the public markets from time to time, without limitations on the timing, amount or method of sale. If our stock price rises, the holders may exercise their warrants and options and sell a large number of shares. This could cause the market price of our common stock to decline.

We have incurred and will incur significant costs as a result of being a public company that reports to the Securities and Exchange Commission and our management is required to devote substantial time to meet compliance obligations.

As a public company reporting to the Securities and Exchange Commission, we incur significant legal, accounting, investor relations, printing, board compensation, and other expenses that we did not incur as a private company. These costs totaled \$939,000 in 2016. We are subject to the reporting requirements of the Securities Exchange Act of 1934 and the Sarbanes-Oxley Act of 2002 (with the exception of the requirement of auditor attestation of internal control over financial reporting from which we are currently excluded as a smaller reporting company and an emerging growth company), as well as rules subsequently implemented by the Commission that impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. In addition, on July 21, 2010, the Dodd-Frank Wall Street Reform and Protection Act was enacted. There are significant corporate governance and executive compensation-related provisions in the Dodd-Frank Act that as we grow could increase our legal and financial compliance costs, make some activities more difficult, time-consuming or costly and may also place undue strain on our personnel, systems and resources. Our management and other personnel continually devote a substantial amount of time to these compliance initiatives. In addition, these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified people to serve on our board of directors, our board committees or as executive officers.

Our charter documents and Washington law may inhibit a takeover that shareholders consider favorable.

Provisions of our Articles of Incorporation and bylaws and applicable provisions of Washington law may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which shareholders might otherwise receive a premium for their shares, or transactions that our shareholders might otherwise deem to be in their best interests. The provisions in our Articles of Incorporation and bylaws:

- authorize our board of directors to issue preferred stock without shareholder approval and to designate the rights, preferences and privileges of each class; if issued, such preferred stock would increase the number of outstanding shares of our capital stock and could include terms that may deter an acquisition of us;
- limit who may call shareholder meetings;
- do not provide for cumulative voting rights; and
- provide that all vacancies may be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum, unless the vacant office is to be held by a director elected by the holders of one or more classes or

series of shares entitled to vote thereon, in which case the vacancy can be filled only by the vote of the holders of such class or series.

In addition, Chapter 23B.19 of the Washington Revised Code generally limits our ability to engage in any business combination with a person who beneficially owns 10% or more of our outstanding voting stock unless certain conditions are satisfied. This restriction lasts for a period of five years following the share acquisition. These provisions may have the effect of entrenching our management team and may deprive you of the opportunity to sell your shares to potential acquirers at a premium over prevailing prices. This potential inability to obtain a control premium could reduce the price of our common stock.

ITEM 1B: UNRESOLVED STAFF COMMENTS.

None.

ITEM 2: PROPERTIES.

Our principal office is located at 12870 Interurban Avenue South, Seattle, Washington with a satellite offices located in Tulsa, Oklahoma and Houston, Texas. At our principal office in Seattle, we currently lease approximately 9,425 square feet of office and laboratory space, which is suitable and adequate for our current operations, under a triple net lease which expires in March 2020. Monthly minimum rent is \$11,789 through February 2017 and \$12,268 thereafter. The Tulsa office agreement for office space terminates in August 2019 with monthly minimum rent of \$2,000.

ITEM 3: LEGAL PROCEEDINGS.

From time to time we may become involved in various lawsuits and legal proceedings which arise in the ordinary course of business. Litigation is subject to inherent uncertainties and an adverse result in these or other matters may arise from time to time that may harm our business. We are currently not aware of any such legal proceedings or claims that we believe will have a material adverse effect on our business, financial condition or operating results.

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.

Our common stock is listed on the NASDAQ Capital Market under the symbol “CLIR”. The range of high and low closing sales prices of our common stock are presented below.

	2016		2015	
	High	Low	High	Low
First quarter	\$4.90	\$2.98	\$7.62	\$4.97
Second quarter	\$5.28	\$3.75	\$5.90	\$4.74
Third quarter	\$6.09	\$4.14	\$7.23	\$3.44
Fourth quarter	\$6.08	\$3.40	\$6.41	\$4.44

On January 25, 2017, the Company completed a rights offering and public offering of units comprised of common stock and warrants at \$4.00 per unit whereby 2,395,471 shares and 2,395,471 warrants were issued. The warrants allow each holder to purchase one share of common stock at an exercise price of \$4.00 per share, are non-callable, expire on January 25, 2019, and are publicly traded on the NASDAQ Capital Market under the symbol “CLIRW”.

According to our transfer agent, as of February 14, 2017 we had approximately 259 shareholders of record and 8 warrant holders of record. These numbers do not include an indeterminate number of holders whose shares or warrants are held by brokers in street name. Our stock transfer agent is VStock Transfer, LLC, 18 Lafayette Place, Woodmere, NY 11598 and their phone number is (212) 828-8436.

Dividends

We have not paid any cash dividends on our common stock since our inception and do not anticipate paying any cash dividends in the foreseeable future. We plan to retain our earnings, if any, to provide funds for the expansion of our business.

Recent Issuances of Unregistered Securities

Not applicable.

Equity Compensation Plan Information

See Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters for information about our equity compensation plans.

ITEM 6: SELECTED FINANCIAL DATA.

As a smaller reporting company, we are not required to provide this information.

ITEM 7: MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with the audited financial statements and related notes included elsewhere in this Annual Report on Form 10-K. In addition to historical information, this discussion and analysis here and throughout this Form 10-K contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements due to a number of factors, including but not limited to, the risks described in the section titled "Risk Factors".

OVERVIEW

We design and are developing technologies for the purpose of improving key performance characteristics of combustion systems, including emission and operational performance, energy efficiency and overall cost-effectiveness. Our patented Duplex™ and Electrodynamic Combustion Control™ (ECC™) platform technologies enhance the performance of combustion systems in a broad range of markets, including the energy (upstream oil production and down-stream refining), commercial/industrial boiler, chemical, petrochemical, and power industries. Our Duplex technology uses a porous ceramic tile above a standard burner to significantly reduce flame length and achieve very low emissions without the need for external flue gas recirculation, selective catalytic reduction, or excess air systems. Our ECC technology introduces a computer-controlled high voltage electric field into a combustion volume in order to better control gas-phase chemical reactions and improve system performance and cost-effectiveness. To date, our operations have been funded primarily through sales of our securities. We have earned limited revenue since inception on January 23, 2008. We are headquartered in Seattle, Washington with offices in Tulsa, Oklahoma and Houston, Texas.

As indicated in the discussion of our business, our initial target markets center on the energy sector, including upstream crude oil production through the use of once through steam generators (OTSGs) and wellhead enclosed flares and downstream oil refineries through the use of process heaters. In recent years, the energy sector has been significantly affected by the volatile market price of crude oil and marginal economic growth. Crude oil prices have stabilized during 2016 and enjoyed end of year appreciation with the general post-election upswing in certain commodities and improved economic outlook. According to the U.S. Energy Information Administration, the spot price of West Texas intermediate crude oil in the last five years has ranged from approximately \$110 per barrel to approximately \$25 per barrel, with 2016 prices reaching a low of \$27 per barrel and finishing the year at approximately \$50+ per barrel. Regardless of the effect of crude oil prices, based upon our experience and feedback from current and prospective customers, we believe that the market continues to validate the appeal of our Duplex technology to the energy sector due to the technology's ability to lower emissions and maintain certain operational efficiencies.

We believe that operators in all of our target markets are under intense pressure to meet current and proposed federal, state and local emissions standards. The standards applicable to our target markets have been developed over the past 50 years with broad political input. We expect these standards to continue to become more stringent regardless of political leadership. As a result, we believe that these standards are a significant driver in our development and sales efforts and that our Duplex technology can provide a unique, cost-effective pollution control solution for operators in comparison to competing products.

Emissions standards largely emanate from the Clean Air Act, which is administered by the Environmental Protection Agency (EPA) and regulates six common criteria air pollutants, including ground-level ozone. These regulations are enforced by state and local air quality districts as part of their compliance plans. As a precursor to ground-level ozone, nitrogen oxides (NO_x) are regulated emissions by local air quality districts in order to achieve the EPA limits. The 8-hour ground-level ozone regulations have been reduced from 84 parts per billion (ppb) in 1997, to 75 ppb in 2008, and 70 ppb in 2015, with the requirement of realizing these levels approximately 25 years following the year of legislation. The areas of non-attainment related to this 1997 limit of 84 ppb are depicted below in the map on the left and the projected areas of non-attainment related to the 2015 limit of 70 ppb are depicted below in the map on the right.

*Non-attainment areas under the 1997 limit of 84
ppb*

Source: EPA, August 2016

*Projected non-attainment areas under the 2015 limit of 70
ppb*

Source: URS, August 2015

We have noted that local air quality districts in EPA designated “severe non-attainment zones” in California are uncertain as to how they will achieve the 2015 standard. As such, we believe that local regulators are in search of additional means beyond those included in the current regulations to comply with the impending standards. For example, although NOx emissions from refineries and other oil production and processing operations are highly regulated since they are historically a significant source of stationary NOx emissions, enclosed ground flares have not historically been viewed as a source requiring the same level of regulation. We believe that our Duplex technology is uniquely able to address the emissions challenges being faced by oil producers and other industries as those challenges relate to both current and reasonably predictable future local air emission standards.

We reported our first meaningful product sales of \$621,000 during 2016 from the installation of our Duplex technology through retrofits in a wellhead enclosed flare for a major California oil producer, an enhanced oil recovery OTSG, and two refinery process heater projects. Furthermore, we entered into an agreement to supply the oil producer with 5 additional wellhead enclosed flare retrofits for \$900,000. We believe that the successful completion of these field development projects, which resulted from years of research and development work, are fundamental to the commercialization of our Duplex product. In the process of attempting to develop our ECC technology beyond laboratory scale for a potential process heater design in 2013, we developed Duplex, which is a simplified gaseous fuel application. While we continued to pursue development of our ECC technology through laboratory testing, in 2014 we began to pursue field development and conditional sales of our Duplex technology. We engaged in a number of field development projects in which we successfully demonstrated the technology operating with thermal output of up to 52 million BTU/hr. and pursued business development and marketing activities with established entities that use steam generators, process heaters, enclosed flares, boilers, and other combustion systems as well as original equipment manufacturers.

Product Applications of Duplex

We have to date applied our Duplex technology through retrofits of existing burners. These often involve engineering around an existing burner architecture that can complicate the Duplex installation. Because of this, we believe that the retrofit market is best suited for larger projects and larger applications of Duplex.

We have recently completed laboratory testing and intend to begin field testing a new burner product for refinery and industrial process heater applications. The Duplex Plug & Play design provides a more simplified, pre-engineered and standardized direct burner replacement for traditional refinery process heaters. We believe that this product will reduce the customized engineering associated with typical retrofits and lend itself to mass production. The product

derives its name from the fact that it is designed to allow a heater or furnace to continue operating during installation rather than be shut down. If field testing confirms this design attribute, the ability to install the Duplex Plug & Play while the system is operational will allow customers to avoid down time and shorten the sales cycle often prolonged by annual or semi-annual scheduled maintenance. As described below, we plan to begin field testing at a Texas oil refinery this spring. If successful, we believe that this product, ClearSign's first complete burner product, will be suitable for licensing and potential manufacturing arrangements with OEMs with established manufacturing and distribution capabilities.

We have numerous field test projects in three target markets using our Duplex technology: one related to wellhead enclosed flares, four related to process heaters in the oil refining industry, and three related to OTSGs in the enhanced oil recovery industry . The current status of these projects is as follows:

Wellhead Enclosed Ground Flares - The wellhead enclosed ground flare retrofit project for a major California oil producer was completed and payment received in the third quarter of 2016 whereby we recognized \$260,000 of revenue. This was an important milestone because it was our first meaningful product sale and our second completed installation following the non-revenue field development installation in an OTSG. Furthermore, we entered into an agreement to supply this oil producer with 5 additional wellhead enclosed flare retrofits for \$900,000. These are expected to be completed over the next six months depending on the availability of the customer's equipment. During the year ended December 31, 2016, we received 40% of the contract amount as an initial payment, which is standard for the industry for this stage of completion. Under the completed contract method of accounting, these funds, net of costs through quarter end, are reflected as a liability on our balance sheet. These sales will be recognized as each of the five units are installed and accepted by the customer. Our expectation is that our Duplex retrofit sales will normalize over time to gross margins approximating 50%.

Process Heaters in the Oil Refining Industry – We have four test projects involving process heaters:

Duplex Retrofits - Retrofits for Tricor Refining, LLC and an unnamed California refinery were each completed and accepted by the customers in the quarter ended December 31, 2016. These are important milestones as these two installations have become demonstration sites for other refiners, including super major refiners, which we believe will aid us in expanding our access to this industry. Additionally, the process heater at Tricor had been out of service since 1984. Our Duplex technology retrofit allowed Tricor to bring this obsolete asset back into production and to provide what we believe is another helpful demonstration to refiners. Because this work was completed under conditional sales contracts and the conditions had not been met in prior quarters, \$477,000 of project costs, including design and start-up costs associated with unique aspects of this market vertical, were previously expensed. Costs of \$262,000 incurred in the third and fourth quarters were reflected as costs against the revenue of \$260,000.

Duplex Plug & Play - A Texas based refiner will provide the initial field testing site for the Duplex Plug & Play. This refiner's application awaits an appropriate shut-down schedule in the coming months to install and test the product. Field testing at this Texas refinery will provide the last phase of product assessment and allow for operational feedback from this beta site customer. The customer has expressed interest in purchasing additional units if the testing is completed to their satisfaction. We believe that successful launch of this product could cultivate interest in licensing and potential manufacturing arrangements with OEMs with established manufacturing and distribution capabilities.

Tesoro Refining & Marketing Company LLC is furthering its design process based on the refinery results observed to date and is formulating a strategy to test Duplex under its environment and supervision.

OTSGs in Enhanced Oil Recovery Industry – There are three OTSG projects in the enhanced oil recovery industry: two unit installations in Southern California and one design contract for a Canadian operator. One of the Southern California units was completed and accepted by our original OTSG customer, a major Southern California oil producer, and the Canadian design project was completed during the year ended December 31, 2016. Because the unit installed in the fourth quarter was completed under a conditional sales contract and the conditions had not been met in prior quarters, \$89,000 of project costs, including unique start-up costs associated with this unit, were previously expensed. Costs of \$140,000 incurred in the third quarter and fourth quarters was reflected as costs against the recording of revenue of \$101,000 in the fourth quarter. The design work for the unnamed Canadian oil producer was completed and the \$75,000 partial reimbursement of costs was realized in the third and fourth quarters. The final field project is nearing completion and involves an antiquated OTSG and burner with unique installation issues that we do not believe apply to our target markets.

We have now achieved emission results which exceeded current local Best Available Control Technology (BACT) levels in four installations in California related to our three target industries. We intend to continue to demonstrate Duplex capabilities through (i) operating in place units, (ii) engineering and testing with new customers and applications, (iii) pursuing additional lab research and development of new applications (e.g. packaged boilers) and next generation improvements to Duplex design and standardization, including the pursuit of more complete systems, similar to the Duplex Plug and Play, for application in other vertical markets, and (iv) assisting our customers in making emission results available for designation as BACT by local regulatory bodies.

We are pursuing development of our ECC technology through laboratory research where we have demonstrated certain attributes of our proprietary technology operating in our research facility with thermal output of up to 2 million BTU/hr. ECC appears to be appropriate for established entities that use solid fuel burners or related combustion systems. We intend to continue our laboratory research and to enter into collaborative arrangements which would enable us to work closely with established companies in targeted industries to apply solutions developed in our laboratory.

Our business plan contemplates licensing our technology after we prove commercial viability and generate interest from original equipment manufacturers (OEMs). Licensing would significantly change the makeup of our sales mix, sales recognition, and margins. Licensing our technology within one or an array of selected vertical markets (e.g. burners for refinery process heaters or packaged boilers) could dramatically accelerate the global sales and market adoption rate of our technology. However, in order to create channel flexibility and meet end user demand, we intend to continue to pursue end user customers through direct sales, sub-contractors, or channel partners. While we are currently pursuing various licensing arrangements, we have no agreements at this time and do not anticipate entering into any such agreements prior to completing the field development projects discussed above and completing a meaningful number of installations and sales. We believe that the continuing development of Duplex, the completion of sales and an increase in end-users will enhance our ability to license our technology.

The success we experienced in recording revenues in the wellhead enclosed flare and oil refining sectors along with the demonstration success in the enhanced oil recovery sector and the \$900,000 of sales contracts currently in process has allowed us to refocus our personnel and resources to enhance our sales and business development efforts, capitalize on our recent successful product development results, and generate revenue. To that end, we opened a Houston sales location, enhanced our operations engineering and project management capabilities, and restructured certain senior personnel. We appointed Donald Kendrick, Ph.D. as our new Chief Technology Officer (CTO) and reassigned our former CTO, Joe Colannino, to the new position of Sr. VP – Engineering supporting business development, sales, and operations. We also decided to significantly reduce the number of patents we pursue. As more fully described in the Results of Operations, in 2016 we reduced by 66 the number of patents pending so that, as of December 31, 2016, we had remaining 69 patents pending and 36 issued patents. We believe that this will reduce our future patent costs without meaningfully degrading the quality of the remaining intellectual property portfolio.

Historically, we have funded our operations through the sale of our securities, including the following:

In April and May 2012, we completed an initial public offering (IPO) of our common stock whereby we sold 3,450,000 shares of common stock at \$4.00 per share, which included the exercise of the underwriter's overallotment option, resulting in gross proceeds of \$13.8 million and, after deducting certain costs paid with common stock, net proceeds of approximately \$11.6 million.

In March 2014, we completed a registered direct offering of our common stock whereby we sold 812,500 shares of common stock at \$8.00 per share resulting in gross proceeds of \$6.5 million and net proceeds of approximately \$5.8 million.

In February 2015, we completed an underwritten public offering of our common stock whereby we sold 2,990,000 shares of common stock at \$5.85 per share resulting in gross proceeds of \$17.5 million and net proceeds of approximately \$16.3 million.

In January 2017, we completed a rights offering pursuant to which we sold 2,395,471 units for \$4.00 per unit consisting of one share of common stock and one warrant to purchase one share of common stock for \$4.00 per share resulting in gross proceeds of \$9.6 million and net proceeds of approximately \$8.7 million.

Our costs include employee salaries and benefits, compensation paid to consultants, materials and supplies for research, costs associated with development activities including materials, sub-contractors, travel and administration, legal expenses, sales and marketing costs, general and administrative expenses, and other costs associated with an early stage, publicly-traded technology company. We currently have 19 full-time employees and 1 part-time employee. We anticipate increasing the number of employees required to support our activities in the areas of research and development, sales and marketing, and general and administrative functions. We expect to incur consulting expenses related to technology development commensurate with our current levels and we expect to incur increasing expenses to protect our intellectual property.

The amount that we spend for any specific purpose may vary significantly, and could depend on a number of factors including, but not limited to, the pace of progress of our commercialization and development efforts, actual needs with respect to product testing, development and research, market conditions, and changes in or revisions to our marketing strategies.

Research, development, and commercial acceptance of new technologies are, by their nature, unpredictable. Although we will undertake development and commercialization efforts with reasonable diligence, there can be no assurance that the net proceeds from our securities offerings will be sufficient to enable us to develop our technology to the extent needed to create future sales to sustain operations. If the net proceeds from these offerings are insufficient for this purpose, we will consider other options to continue our path to commercialization, including, but not limited to, additional financing through follow-on equity offerings, debt financing, co-development agreements, sale or licensing of developed intellectual or other property, or other alternatives.

We cannot assure that our technology will be accepted, that we will ever earn revenues sufficient to support our operations, or that we will ever be profitable. Furthermore, we have no committed source of financing and we cannot assure that we will be able to raise money as and when we need it to continue our operations. If we cannot raise funds as and when we need them, we may be required to scale back our development plans by reducing expenditures for employees, consultants, business development and marketing efforts or to otherwise severely curtail, or even to cease, our operations.

Critical Accounting Policies

The following discussion and analysis of financial condition and results of operations is based upon our financial statements, which have been prepared in conformity with accounting principles generally accepted in the United States of America. Certain accounting policies and estimates are particularly important to the understanding of our financial position and results of operations and require the application of significant judgment by our management or can be materially affected by changes from period to period in economic factors or conditions that are outside of our control. As a result, they are subject to an inherent degree of uncertainty. In applying these policies, our management

uses their judgment to determine the appropriate assumptions to be used in the determination of certain estimates. Those estimates are based on our historical operations, our future business plans and projected financial results, the terms of existing contracts, our observance of trends in the industry, information provided by our customers and information available from other outside sources, as appropriate. See Note 2 to our audited financial statements for a more complete description of our significant accounting policies.

Revenue Recognition and Cost of Goods Sold. Revenues from design and installation of the Company's products are recognized on the completed contract method. Revenues from contracts and related costs of goods sold are recognized once the contract is completed or substantially completed. Contract costs include all direct material and labor costs and those indirect costs related to contract performance, such as indirect labor, supplies, and depreciation costs. Provisions for estimated losses on uncompleted contracts are made in the period in which such losses are determined.

Product Warranties. The Company warrants all installed products against defects in materials and workmanship for a period specified in each contract by replacing failed parts. Accruals for product warranties are based on historical warranty experience and current product performance trends, and are recorded at the time revenue is recognized as a component of cost of sales. The warranty liabilities are reduced by material and labor costs used to replace parts over the warranty period in the periods in which the costs are incurred. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary and such adjustments could be material in the future if estimates differ significantly from actual warranty expense. The warranty liabilities are included in accrued liabilities in the balance sheets.

Research and Development. The cost of research and development is expensed as incurred. Research and development costs consist of salaries, benefits, share based compensation, consulting fees, rent, utilities, depreciation, and consumables.

Stock-Based Compensation. The costs of all employee stock options, as well as other equity-based compensation arrangements, are reflected in the financial statements based on the estimated fair value of the awards on the grant date. That cost is recognized over the period during which an employee is required to provide service in exchange for the award. Stock compensation for stock granted to non-employees is determined as the fair value of the consideration received or the fair value of equity instruments issued, whichever is more reliably measured.

Fair Value of Financial Instruments. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Assets and liabilities measured at fair value are categorized based on whether or not the inputs are observable in the market and the degree that the inputs are observable. The categorization of financial assets and liabilities within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The Company's financial instruments primarily consist of cash and cash equivalents, accounts payable and accrued expenses. As of the balance sheet dates, the estimated fair values of the financial instruments were not materially different from their carrying values as presented on the balance sheets. This is primarily attributed to the short maturities of these instruments. The Company did not identify any other non-recurring assets and liabilities that are required to be presented in the balance sheets at fair value.

Results of Operations

Comparison of the Years Ended December 31, 2016 and 2015

Revenue, Cost of Goods Sold, and Gross Profit. The Company reported its first meaningful annual revenue of \$621,000 in 2016 earned from the completion of four conditional contracts with customers that were evaluating our Duplex technology for their applications. The revenue resulted in a gross profit of \$136,000 and a gross margin of 22%. These initial projects were more costly than expected due to a number of reasons that we believe are related to start-up. We anticipate gross margins will normalize in the range of 50%. 2015 revenue was \$61,000.

Operating Expenses. Operating expenses increased by \$3,388,000 to \$11,341,000 in 2016 compared to \$7,953,000 in operating expenses in 2015, an increase of approximately 43%. The Company increased its research and development (R&D) expenses by \$1,899,000 to \$4,831,000 for 2016 compared to \$2,932,000 for 2015. R&D expenses rose due primarily to a \$1,127,000 increase in field testing costs related to the evaluation of our Duplex technology, laboratory, and related costs, all of which totaled \$1,921,000 in 2016 as compared to \$794,000 in 2015. R&D expenses in 2016 also included the addition of personnel hired to support increased research activities, resulting in an increase in compensation expense of \$990,000, to \$2,469,000. G&A expenses increased by \$1,489,000 to \$6,510,000 for 2016 compared to \$5,021,000 for 2015. This increase resulted primarily from increased impairment losses of \$1,378,000 on capitalized patents pending, increases to consulting costs of \$404,000, and an increase of \$111,000 to the costs attributable to being a public company. These expenses were offset in 2016 by decreases in overall G&A compensation of \$430,000.

Loss from Operations. Due to the increase in operating expenses, our loss from operations increased during 2016 by \$3,263,000 to \$11,205,000, compared to \$7,942,000 during 2015, an increase of approximately 41%.

Net Loss. Primarily as a result of the increase in operating expenses, our net loss for 2016 was \$11,173,000 as compared to a net loss of \$7,898,000 for 2015, resulting in a \$3,275,000 increase in the net loss or approximately 41%.

Liquidity and Capital Resources

At December 31, 2016, our cash and cash equivalent balance totaled \$1,259,000 compared to \$10,985,000 at December 31, 2015. Although we are pursuing sales and co-development agreements, there is no assurance that they will be adequate to fund our operations and to commercialize our technology. To the extent sales and co-development agreement funding is insufficient for these purposes, we may undertake offerings of our securities, debt financing, selling or licensing our developed intellectual or other property, or other alternatives. As detailed in Note 14 to our audited financial statements, on January 25, 2017 the Company completed a rights offering of 2,395,417 units at a price of \$4.00 per unit. Each unit consisted of one share of common stock and one warrant to acquire one share of common stock for \$4.00 per share. We received net proceeds of approximately \$8,700,000 from the rights offering which we believe will be adequate to support our operations for at least the next 12 months. The Company filed a Form S-3 shelf registration statement with the Securities and Exchange Commission on December 29, 2015 that was declared effective on January 7, 2016. The registration statement allows the Company to offer common stock, preferred stock, warrants or units from time to time as market conditions permit. This information does not constitute an offer of any securities for sale.

At December 31, 2016, our current assets were in excess of current liabilities resulting in working capital of \$355,000 compared to \$9,564,000 at December 31, 2015. The decrease in working capital resulted primarily from the \$11.2 million net loss in 2016.

Operating activities for 2016 resulted in cash outflows of \$8,672,000 which were due primarily to the loss for the period of \$11,173,000, offset by share based compensation from the Company's employee and consultant equity plans of \$645,000, abandonment of capitalized pending patents of \$1,971,000, services and compensation paid with common stock of \$194,000, and depreciation and amortization expense of \$208,000. Operating activities for 2015 resulted in cash outflows of \$6,261,000 which were due primarily to the loss for the period of \$7,898,000, offset by share based compensation from the Company's employee and consultant equity plans of \$797,000, abandonment of capitalized pending patents of \$593,000, services and compensation paid with common stock of \$157,000, and depreciation and amortization expense of \$200,000.

Investing activities for 2016 and 2015 resulted in cash outflows of \$1,054,000 and \$1,162,000, respectively. Development of capitalized patents and other intangible assets for 2016 and 2015 resulted in cash outflows of \$917,000 and \$1,113,000, respectively. Acquisition of fixed assets for 2016 and 2015, primarily research and development equipment, resulted in cash outflows of \$137,000 and \$49,000, respectively.

There were no financing activities in 2016. Financing activities for 2015 resulted in \$16,563,000 of cash inflows, which resulted primarily from the issuance of 2,990,000 shares of common stock at \$5.85 per share for gross proceeds of \$17,500,000 and net cash proceeds of \$16,279,000. Additionally, we raised \$284,000 through the exercise of stock options.

Off-Balance Sheet Transactions

We do not have any off-balance sheet transactions.

ITEM 7A: QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

As a smaller reporting company we are not required to provide this information.

ITEM 8: FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

ClearSign Combustion Corporation

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders
of ClearSign Combustion Corporation

We have audited the accompanying balance sheets of ClearSign Combustion Corporation (the “Company”) as of December 31, 2016 and 2015, and the related statements of operations, stockholders’ equity, and cash flows for each of the years in the two-year period ended December 31, 2016. The Company’s management is responsible for these financial statements. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2016 and 2015, and the results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America.

/s/ GUMBINER SAVETT INC.

February 14, 2017

Santa Monica, California

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ClearSign Combustion Corporation

Balance Sheets

	December 31,	
	2016	2015
<u>ASSETS</u>		
Current Assets:		
Cash and cash equivalents	\$ 1,259,000	\$ 10,985,000
Prepaid expenses	535,000	203,000
Accounts Receivable	103,000	-
Total current assets	1,897,000	11,188,000
Fixed assets, net		
Patents and other intangible assets, net	144,000	123,000
Other assets	1,735,000	2,881,000
Total Assets	10,000	10,000
	\$ 3,786,000	\$ 14,202,000
<u>LIABILITIES AND STOCKHOLDERS' EQUITY</u>		
Current Liabilities:		
Accounts payable and accrued liabilities	\$ 755,000	\$ 495,000
Accrued compensation and taxes	669,000	1,109,000
Deferred rent	3,000	20,000
Billings on uncompleted contracts in excess of costs	115,000	-
Total current liabilities	1,542,000	1,624,000
Commitments		
Stockholders' Equity:		
Preferred stock, \$0.0001 par value, zero shares issued and outstanding	-	-
Common stock, \$0.0001 par value, 12,983,938 and 12,868,943 shares issued and outstanding at December 31, 2016 and 2015, respectively	1,000	1,000
Additional paid-in capital	42,574,000	41,735,000
Accumulated deficit	(40,331,000)	(29,158,000)
Total stockholders' equity	2,244,000	12,578,000
Total Liabilities and Stockholders' Equity	\$ 3,786,000	\$ 14,202,000

The accompanying notes are an integral part of these financial statements.

ClearSign Combustion Corporation

Statements of Operations

	For the Years Ended December 31,	
	2016	2015
Sales	\$621,000	\$61,000
Cost of goods sold	485,000	50,000
Gross profit	136,000	11,000
Operating expenses:		
Research and development	4,831,000	2,932,000
General and administrative	6,510,000	5,021,000
Total operating expenses	11,341,000	7,953,000
Loss from operations	(11,205,000)	(7,942,000)
Other income:		
Interest income	32,000	44,000
Net Loss	\$(11,173,000)	\$(7,898,000)
Net Loss per share - basic and fully diluted	\$(0.86)	\$(0.63)
Weighted average number of shares outstanding - basic and fully diluted	12,928,715	12,461,515

The accompanying notes are an integral part of these financial statements.

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ClearSign Combustion Corporation

Statement of Stockholders' Equity

For the Years Ended December 31, 2016 and 2015

	Common Stock		Additional	Accumulated	Total
	Shares	Amount	Paid-In Capital	Deficit	Stockholder Equity
Balances at January 1, 2015	9,681,476	\$1,000	24,218,000	\$(21,260,000)	\$2,959,000
Shares issued in underwritten offering (\$5.85 per share)	2,990,000	-	17,491,000	-	17,491,000
Issuance costs of underwritten offering	-	-	(1,212,000)	-	(1,212,000)
Shares issued for services (\$5.97 per share)	23,034	-	137,000	-	137,000
Shares issued for services (\$3.96 per share)	5,000	-	20,000	-	20,000
Shares issued upon exercise of options (\$2.20 per share)	166,536	-	284,000	-	284,000
Shares issued upon exercise of options (\$4.88 per share)	2,813	-	-	-	-
Shares issued upon exercise of options (\$5.21 per share)	84	-	-	-	-
Share based compensation	-	-	797,000	-	797,000
Net loss	-	-	-	(7,898,000)	(7,898,000)
Balances at December 31, 2015	12,868,943	\$1,000	\$41,735,000	\$(29,158,000)	\$12,578,000
Shares issued for services (\$3.40 per share)	44,112	-	150,000	-	150,000
Shares issued for services (\$3.96 per share)	5,000	-	20,000	-	20,000
Shares issued for services (\$4.85 per share)	5,000	-	24,000	-	24,000
Shares issued upon exercise of warrants (\$2.20 per share)	60,883	-	-	-	-
Share based compensation	-	-	645,000	-	645,000
Net loss	-	-	-	(11,173,000)	(11,173,000)
Balances at December 31, 2016	12,983,938	\$1,000	\$42,574,000	\$(40,331,000)	\$2,244,000

The accompanying notes are an integral part of these financial statements.

ClearSign Combustion Corporation

Statements of Cash Flows

	For the Years Ended December 31,	
	2016	2015
Cash flows from operating activities:		
Net loss	\$ (11,173,000)	\$ (7,898,000)
Adjustments to reconcile net loss to net cash used in operating activities:		
Common stock issued for services	194,000	157,000
Share based payments	645,000	797,000
Depreciation and amortization	208,000	200,000
Abandonment and impairment of capitalized patents pending	1,971,000	593,000
Deferred rent	(17,000)	(13,000)
Change in operating assets and liabilities:		
Accounts Receivables	(103,000)	-
Prepaid expenses	(332,000)	(94,000)
Accounts payable	260,000	242,000
Accrued compensation	(440,000)	(245,000)
Billings on uncompleted contracts in excess of costs	115,000	-
Net cash used in operating activities	(8,672,000)	(6,261,000)
Cash flows from investing activities:		
Acquisition of fixed assets	(137,000)	(49,000)
Disbursements for patents and other intangible assets	(917,000)	(1,113,000)
Net cash used in investing activities	(1,054,000)	(1,162,000)
Cash flows from financing activities:		
Proceeds from issuance of common stock for cash, net of offering costs	-	16,279,000
Proceeds from exercise of stock options	-	284,000
Net cash provided by financing activities	-	16,563,000
Net increase (decrease) in cash and cash equivalents	(9,726,000)	9,140,000
Cash and cash equivalents, beginning of period	10,985,000	1,845,000
Cash and cash equivalents, end of period	\$ 1,259,000	\$ 10,985,000

Supplemental disclosure of non-cash operating and financing activities:

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During the year ended December 31, 2016, the Company issued 60,883 shares of common stock through net settlement cashless exercises of warrants to purchase 118,959 shares at \$2.20 per share when the closing prices on the date of exercises were a weighted average of \$4.51 per share.

During the year ended December 31, 2015, the Company issued 40,371 shares of common stock through net settlement cashless exercises of stock options to purchase 83,775 shares from \$2.20 to \$5.21 per share when the closing prices on the date of exercises was a weighted average of \$5.90 per share.

The accompanying notes are an integral part of these financial statements.

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ClearSign Combustion Corporation

Notes to Financial Statements

Note 1 – Organization and Description of Business

ClearSign Combustion Corporation (ClearSign or the Company) designs and is developing technologies for the purpose of improving key performance characteristics of combustion systems, including emission and operational performance, energy efficiency and overall cost-effectiveness. The Company's primary technologies include its Duplex technology, which achieves very low emissions without the need of external flue gas recirculation, selective catalytic reduction, or higher excess air operation, and its Electrodynamic Combustion Control or ECC technology, which introduces a computer-controlled electric field into the combustion region that may better control gas-phase chemical reactions and improve system performance and cost-effectiveness. The Company is headquartered in Seattle, Washington and was incorporated in the state of Washington in 2008.

Development Status

The Company's technologies are currently in field development and have generated nominal revenues from operations to date to meet operating expenses. In order to generate meaningful revenues, the technologies must be fully developed, gain market recognition and acceptance, and develop a critical level of successful sales and product installations. The Company has historically financed its operations primarily through issuances of equity securities, including the \$9.6 million in gross proceeds from the rights offering completed on January 25, 2017 as described in Note 14. The Company has incurred losses since its inception totaling \$40,331,000 and expects to experience operating losses and negative cash flow for the foreseeable future. Management believes that the successful growth and operation of the Company's business is dependent upon its ability to obtain adequate sources of funding through co-development agreements, strategic partnering agreements, or equity or debt financing to adequately support research and development efforts, protect intellectual property, form relationships with strategic partners, and provide for working capital and general corporate purposes. There can be no assurance that the Company will be successful in achieving its long-term plans as set forth above, or that such plans, if consummated, will enable the Company to obtain profitable operations or continue in the long-term as a going concern.

Note 2 – Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Revenue Recognition and Cost of Goods Sold

Revenues from design and installation of the Company's products are recognized on the completed contract method. Revenues from contracts and related costs of goods sold are recognized once the contract is completed or substantially completed. Contract costs include all direct material and labor costs and those indirect costs related to contract performance, such as indirect labor, supplies, and depreciation costs. Provisions for estimated losses on uncompleted contracts are made in the period in which such losses are determined.

Product Warranties

The Company warrants all installed products against defects in materials and workmanship for a period specified in each contract by replacing failed parts. Accruals for product warranties are based on historical warranty experience and current product performance trends, and are recorded at the time revenue is recognized as a component of cost of sales. The warranty liabilities are reduced by material and labor costs used to replace parts over the warranty period in the periods in which the costs are incurred. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary, and such adjustments could be material in the future if estimates differ significantly from actual warranty expense. The warranty liabilities are included in accrued liabilities in the balance sheets.

Cash and Cash Equivalents

Highly liquid investments purchased with an original maturity of three months or less are considered cash equivalents. Cash is maintained with a commercial bank where accounts are generally guaranteed by the Federal Deposit Insurance Corporation up to \$250,000. The Company's deposits may at times exceed this limit. The Company has not experienced losses in such accounts and believes it is not exposed to any significant credit risk on cash and cash equivalents.

Fixed Assets

Fixed assets are recorded at cost. Depreciation is computed using the straight-line method over the estimated useful lives of the respective assets. Leasehold improvements are depreciated over the life of the lease or their useful life, whichever is shorter. All other fixed assets are depreciated over two to four years. Maintenance and repairs are expensed as incurred.

Patents and Trademarks

Patents and trademarks are recorded at cost. Amortization is computed using the straight-line method over the estimated useful lives of the assets once they are awarded.

Impairment of Long-Lived Assets

The Company tests long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable through the estimated undiscounted cash flows expected to result from the use and eventual disposition of the assets. In that event, a loss is recognized based on the amount by which the carrying amount exceeds the fair value of the long-lived assets. Fair value is determined based on the present value of estimated expected cash flows using a discount rate commensurate with the risks involved, quoted market prices, or appraised values depending upon the nature of the assets. Loss on long-lived assets to be disposed of is determined in a similar manner, except that fair values are reduced for the cost of disposal.

Fair Value of Financial Instruments

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Assets and liabilities measured at fair value are categorized based on whether or not the inputs are observable in the market and the degree that the inputs are observable. The categorization of financial assets and liabilities within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The Company's financial instruments primarily consist of cash and cash equivalents, accounts payable and accrued expenses. As of the balance sheet dates, the estimated fair values of the financial instruments were not materially different from their carrying values as presented on the balance sheets. This is primarily attributed to the short term maturities of these instruments. The Company did not identify any other non-recurring assets and liabilities that are required to be presented in the balance sheets at fair value.

Research and Development

The cost of research and development is expensed as incurred. Research and development costs consist of salaries, benefits, share based compensation, consulting fees, rent, utilities, depreciation, and consumables used in laboratory and field testing. In 2016 and 2015, the Company received \$75,000 and \$15,000, respectively, to partially fund certain laboratory research activities. Since these funds were provided without expectation of reciprocation except notification of the research results, the Company recognized these funds when they were received and recorded them as an offset to research and development expense.

Deferred Rent

Operating lease agreements which contain provisions for future rent increases or periods in which rent payments are reduced or abated are recorded in monthly rent expense in the amount of the total payments over the lease term divided by the number of months of the lease term. The difference between rent expense recorded and the amount paid is credited or charged to deferred rent which is reflected on the accompanying balance sheets.

Income Taxes

The Company accounts for income taxes using an asset and liability approach which allows for the recognition and measurement of deferred tax assets based upon the likelihood of realization of tax benefits in future years. Under the asset and liability approach, deferred taxes are provided for the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. A valuation allowance is provided for deferred tax assets if it is more likely than not these items will either expire before the Company is able to realize their benefits, or that future deductibility is uncertain. Tax benefits from an uncertain tax position are recognized only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than 50 percent likelihood of being realized upon ultimate resolution.

Stock-Based Compensation

The costs of all employee stock options, as well as other equity-based compensation arrangements, are reflected in the financial statements based on the estimated fair value of the awards on the grant date. That cost is recognized over the period during which an employee is required to provide service in exchange for the award. Stock compensation for stock granted to non-employees is determined as the fair value of the consideration received or the fair value of equity instruments issued, whichever is more reliably measured.

Net Loss per Common Share

Basic loss per share is computed by dividing loss available to common stockholders by the weighted-average number of common shares outstanding. Diluted loss per share is computed similar to basic loss per share except that the denominator is increased to include additional common shares available upon exercise of stock options and warrants using the treasury stock method, except for periods for which no common share equivalents are included because their effect would be anti-dilutive. At December 31, 2016 and 2015, potentially dilutive shares outstanding amounted to 1,328,128 and 1,287,672, respectively.

Recently Adopted Standards

In August 2014, the Financial Accounting Standards Board issued Accounting Standards Update No. 2014-15 titled *Presentation of Financial Statements – Going Concern*. In connection with preparing financial statements for each annual and interim reporting period, the new standard requires an entity's management to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the entity's ability to continue as a going concern within one year after the date that the financial statements are issued. The Company adopted this standard in December 2016.

Recently Issued Accounting Pronouncements

In February 2016, the Financial Accounting Standards Board issued Accounting Standards Update No. 2016-02 regarding leases. The new standard requires lessee recognition on the balance sheet of a right-of-use asset and a lease liability, initially measured at the present value of the lease payments. It further requires recognition in the income statement of a single lease cost, calculated so that the cost of the lease is allocated over the lease term on a generally straight-line basis. Finally, it requires classification of all cash payments within operating activities in the statement of

cash flows. It is effective January 1, 2019 and early adoption is permitted. Management is reviewing this standard to determine its effect on the financial statements.

In September 2014, the Financial Accounting Standards Board issued Accounting Standards Update No. 2014-09 regarding revenue recognition. The new standard provides authoritative guidance clarifying the principles for recognizing revenue and developing a common revenue standard for U.S. generally accepted accounting principles. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods and services to customers in an amount that reflects the consideration to which the entity expects to be entitled in the exchange for those goods or services. Additionally, the guidance requires improved disclosure to help users of financial statements better understand the nature, amount, timing, and uncertainty of revenue that is recognized. It is effective January 1, 2018 and early adoption is permitted. Management is reviewing this standard to determine its effect on the financial statements.

Management does not believe that any other recently issued, but not yet effective, authoritative guidance, if currently adopted, would have a material impact on the Company's financial statement presentation or disclosures.

Emerging Growth Company

The Company is an emerging growth company as defined under the Jumpstart Our Business Startups Act of 2012 (JOBS Act). An emerging growth company may delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. The Company will remain an emerging growth company until December 31, 2017, although it will lose that status sooner if its revenues exceed \$1 billion, if it issues more than \$1 billion in non-convertible debt in a three year period, or if the market value of its common stock that is held by non-affiliates exceeds \$700 million as of any June 30. At June 30, 2016, the market value of the Company's common stock held by non-affiliates totaled \$62 million.

Note 3 – Fixed Assets

Fixed assets are summarized as follows:

	December 31, 2016	December 31, 2015
Machinery and equipment	\$ 662,000	\$ 639,000
Office furniture and equipment	141,000	115,000
Leasehold improvements	134,000	130,000
Accumulated depreciation and amortization	(876,000)	(761,000)
	61,000	123,000
Construction in progress	83,000	-
	\$ 144,000	\$ 123,000

Note 4 – Patents and Other Intangible Assets

Patents and other intangible assets are summarized as follows:

	December 31, 2016	December 31, 2015
Patents		
Patents pending	\$ 1,040,000	\$ 2,730,000
Issued patents	747,000	115,000
	1,787,000	2,845,000
Trademarks		
Trademarks pending	23,000	18,000
Registered trademarks	23,000	23,000
	46,000	41,000
Other	8,000	8,000
	1,841,000	2,894,000
Accumulated amortization	(106,000)	(13,000)
	\$ 1,735,000	\$ 2,881,000

In 2016, the Company reassessed its patent portfolio in order to ensure that both the cost-effectiveness and the value created through the intellectual property portfolio were maximized and to focus resources on its most promising patents. Those patents considered to be the most beneficial were retained and those pending patents projected to be

unnecessarily costly that could be disposed of without meaningfully degrading the quality of the remaining intellectual property portfolio were abandoned. Further, an impairment loss was recorded for certain other patents pending which are believed to be of diminished value, but in the judgment of management remain worthwhile to continue to pursue until the product attributes and related reasonable patent protection can be better determined. As a result, during the years ended December 31, 2016 and 2015, the Company recorded impairment losses of \$1,971,000 and \$593,000 respectively, of capitalized patents pending.

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A reconciliation of patent activity for the years ended December 31, 2016 and 2015 is summarized as follows:

	Duplex	ECC	Total
Balance at January 1, 2015	\$481,000	\$1,848,000	\$2,329,000
Abandonments and impairments	(19,000)	(574,000)	(593,000)
Additions	669,000	440,000	1,109,000
Balance at December 31, 2015	1,131,000	1,714,000	2,845,000
Abandonments and impairments	(757,000)	(1,214,000)	(1,971,000)
Additions	546,000	367,000	913,000
Balance at December 31, 2016	\$920,000	\$867,000	\$1,787,000

Future amortization expense associated with awarded patents and registered trademarks as of December 31, 2016 is estimated as follows:

2017	\$179,000
2018	179,000
2019	157,000
2020	91,000
2021	30,000
Thereafter	28,000
	\$664,000

Note 5 – Sales, Billings, and Costs on Uncompleted Contracts

In the quarter ended March 31, 2016, the Company entered into a contract with a third party contractor to supply its Duplex technology to a major California oil producer to retrofit its enclosed wellhead ground flare. Payment for this installation was conditioned upon successful completion and acceptance of the unit by the oil producer customer. This unit was accepted and payment of the \$260,000 contract amount was received in the quarter ended September 30, 2016. Since payment was conditional, all costs of this project through June 30, 2016, which totaled \$144,000, were expensed as research and development costs. Costs incurred subsequent to June 30, 2016, which totaled \$64,000, are reflected as cost of goods sold in the statement of operations resulting in a gross profit of \$196,000. The gross profit would have totaled \$52,000 if this contract was not conditional.

Following the acceptance of the first unit the Company entered into a multi-flare contract with the same customer to supply additional Duplex units. This contract is valued at approximately \$900,000 and is expected to be completed over the next six months depending on the oil producer customer's schedule. In accordance with the completed contract method of accounting, billings to date of \$360,000 at December 31, 2016 exceeded costs by \$115,000 and are

reflected on the balance sheet as billings on uncompleted contracts in excess of costs.

Over the course of prior years, the Company had entered into contracts to supply its Duplex technology with customer payments to be received upon completion. Several of these developmental units were accepted in the year ended December 31, 2016. Since payments aggregating \$361,000 were conditional, all costs of these projects through June 30, 2016, which totaled \$566,000, were expensed as research and development costs. Costs incurred subsequent to June 30, 2016, which totaled \$421,000, are reflected as cost of goods sold in the statement of operations resulting in a gross loss of \$60,000. The net loss would have totaled \$626,000 if these contracts were not conditional.

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Note 6 – Product Warranties

A summary of the Company's warranty liability activity, which is included in accrued liabilities in the accompanying balance sheet as of December 31, 2016 is as follows:

	2016
Warranty liability, beginning of year	\$-
Accruals	283,000
Payments	(70,000)
Adjustments and other	-
Warranty liability, end of year	\$213,000

There was no accrued warranty liability at December 31, 2015.

Note 7 – Termination of Employment Agreement

The Company and its former Chief Executive Officer, Richard F. Rutkowski, entered into an agreement in December 2014 terminating a prior employment agreement. Under this agreement, Mr. Rutkowski was paid his annual salary of \$359,000 through December 31, 2016, was paid a bonus of \$60,000 in 2015, received employee benefits through December 2015, and received accelerated vesting on 15,625 stock options with an exercise price of \$4.88 per share and 14,219 stock options with an exercise price of \$9.90 per share. The options were not exercised prior to March 2015; therefore, pursuant to the terms of the option agreements and the ClearSign Combustion Company 2011 Equity Incentive Plan, the right to exercise the options terminated.

The following weighted-average assumptions were utilized in the calculation of the fair value of the modified stock options:

Expected life	0.25 years
Weighted average volatility	68%
Forfeiture rate	46%
Weighted average risk-free interest rate	0.04%
Expected dividend rate	-

The liability incurred under this agreement totaled \$943,000 which was recognized in general and administrative expense in 2014 and included a fair value of \$50,000 attributable to the stock option provisions. At December 31, 2015, the remaining liability totaled \$372,000 and was paid in 2016.

Note 8 – Income Taxes

Through December 31, 2016, the Company incurred net operating losses for federal tax purposes of approximately \$38,500,000. The net operating loss carry forwards may be used to reduce taxable income through the years 2028 to 2036. The availability of the Company's net operating loss carry forwards is subject to limitation if there is a change in the ownership of the Company's stock of 50% or more.

A reconciliation of the expected tax computed at the statutory federal income tax rate to the provision for income taxes is as follows:

	2016	2015
Expected tax benefit at 34%	\$(3,799,000)	\$(2,685,000)
Change in valuation allowance	3,590,000	2,420,000
Other	209,000	265,000
Provision for income taxes	\$-	\$-

The net deferred tax asset at December 31, 2016 and 2015 was \$13,090,000 and \$9,500,000, respectively. In assessing the potential realization of these deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the Company attaining future taxable income during the periods in which those temporary differences become deductible. At December 31, 2016 and 2015, management was unable to determine if it is more likely than not that the Company's deferred tax assets will be realized and has therefore recorded an appropriate valuation allowance against deferred tax assets at such dates. Significant components of the deferred tax assets (liabilities), computed at the statutory federal tax rate of 34%, are approximately as follows:

	2016	2015
Net operating loss carry forwards	\$13,100,000	\$9,650,000
Accrued liabilities	250,000	140,000
Stock compensation		