CLEARSIGN COMBUSTION CORP
Form S-1/A
December 28, 2011

As filed with the Securities and Exchange Commission on December 28, 2011
Registration No. 333-177946

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

PRE-EFFECTIVE AMENDMENT NO. 1

TO

FORM S-1
REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

CLEARSIGN COMBUSTION CORPORATION
(Exact Name of Registrant as Specified in Its Charter)

Washington	3823	26-2056298
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification No.)

12870 Interurban Avenue South
Seattle, Washington 98168
(206) 673-4848
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Richard Rutkowski
Chief Executive Officer
ClearSign Combustion Corporation
12870 Interurban Avenue South
Seattle, Washington 98168
(206) 673-4848
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Kevin Friedmann, Esq.
Edgar D. Park, Esq.
Richardson & Patel, LLP
750 Third Avenue, 9th Floor
New York, New York 10017
Telephone: (212) 561-5559
Fax: (917) 591-6898

Andrew Hudders, Esq.
Carl Van Demark, Esq.
Golenbock Eiseman Assor Bell & Peskoe LLP
437 Madison Avenue
New York, New York
Telephone: (212) 907-7300
Fax: (212) 754-0330

As soon as practicable after the effective date of this Registration Statement.
(Approximate date of commencement of proposed sale to the public)

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box. x

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

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

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

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered (1)	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee	
Common Stock, $0.0001 par value per share(2)	3,450,000	$ 4.00	$ 13,800,000	$ 1,581.48	
Underwriter Warrant (3)(4)	1	$ —	$ 100	$ —	
Common Stock underlying Underwriter's Warrant	345,000	$ 4.00	$ 1,380,000	$ 158.15	
Common Stock, $0.0001 par value per share (5)	1,912,960	$ 4.00	$ 7,651,840	$ 876.90	
Total	5,707,960	$ 4.00	$ 22,831,840	$ 0.00	(6)

(1) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended, for the public offering and Rule 457(a) for the offering by selling security holders.

(2) Offered pursuant to the registrant’s initial public offering, including 450,000 shares of our common stock representing 15% of the shares offered to the public that the underwriter has the option to purchase to cover over-allotments, if any.

(3) No registration fee required pursuant to Rule 457(g) under the Securities Act of 1933.

(4) Represents a warrant granted to the underwriter to purchase shares of common stock in an amount up to 10% of the number of shares sold to the public in this offering.

(5) Represents shares of the registrant’s common stock being offered for resale by the selling security holders named in this registration statement.

(6) On November 14, 2011 the registrant paid a filing fee of $3,365.02.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until this Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This registration statement contains two forms of prospectus, as set forth below.

- Public Offering Prospectus. A prospectus to be used for the initial public offering by the registrant of 3,000,000 shares of common stock, not including the over-allotment option (the "Public Offering Prospectus"), through the underwriter named on the cover page of the Public Offering Prospectus.

- Selling Security Holder Prospectus. A prospectus to be used in connection with the potential resale by certain selling security holders of up to an aggregate of 1,912,960 shares of the registrant's common stock (the "Selling Security Holder Prospectus").

The Public Offering Prospectus and the Selling Security Holder Prospectus will be identical in all respects except for the following principal points:

- they contain different front covers;
- they contain different tables of contents;
- the summary of The Offering is deleted from the Selling Security Holder Prospectus;
- they contain different Use of Proceeds sections;
- a Shares Registered for Resale section is included in the Selling Security Holder Prospectus;
- the Underwriting section from the Public Offering Prospectus is deleted from the Selling Security Holder Prospectus and a Plan of Distribution section is inserted in its place;
- the Legal Matters section in the Selling Security Holder Prospectus deletes the reference to counsel for the underwriter; and
- they contain different back covers.

The registrant has included in this registration statement, after the financial statements, a set of alternate pages to reflect the foregoing differences between the Selling Security Holder Prospectus and the Public Offering Prospectus.

THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED. THESE SECURITIES MAY NOT BE SOLD UNTIL THE REGISTRATION STATEMENT FILED WITH THE SECURITIES AND EXCHANGE COMMISSION IS EFFECTIVE. THIS PROSPECTUS IS NOT AN OFFER TO SELL THESE SECURITIES AND WE ARE NOT SOLICITING AN OFFER TO BUY THESE SECURITIES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

SUBJECT TO COMPLETION, DATED DECEMBER 28, 2011

PRELIMINARY PROSPECTUS

3,000,000 Shares of Common Stock

ClearSign Combustion Corporation is offering 3,000,000 shares of its common stock, $0.0001 par value.

This is an initial public offering of our common stock. We expect the public offering price to be $4.00 per share. There is presently no public market for our common stock. We intend to apply for listing of our common stock on The Nasdaq Capital Market under the symbol “CLIR”, which listing we expect to occur upon consummation of this offering. No assurance can be given that our application will be approved. If the application is not approved, we will not complete this offering.

Concurrent with the public offering, certain holders of our securities may sell up to an aggregate of 1,912,960 shares of our common stock. Although a specific price cannot be determined at this time, we have estimated an initial price for the sale of these shares to be $4.00. If we are successful in listing our shares on The Nasdaq Capital Market, the selling security holders may sell at prevailing market prices or privately negotiated prices. We will not receive any of the proceeds from the sale of shares to be offered by the selling security holders.

Investing in our common stock involves a high degree of risk. See “Risk Factors” beginning on page 7 for a discussion of information that should be considered in connection with an investment in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

MDB Capital Group LLC is the underwriter for our initial public offering. MDB Capital Group LLC has provided placement agency services and consulting services to us in the past. If we sell all of the common stock we are offering, we will pay to MDB Capital Group LLC approximately $[_____], or [___]%, of the gross proceeds of this offering and non-accountable expenses equal to $160,000. MDB Capital Group LLC and its associated persons collectively hold directly 1,003,506 shares of our common stock, representing 19.5% of the outstanding shares. Therefore, we have engaged [_____] as a "qualified independent underwriter," to which we will pay a fee of $[_____]. For a more complete discussion of the compensation we will pay to the underwriter, please see the section of this prospectus titled "Underwriting". MDB Capital Group LLC is also a selling security holder in the offering by selling security holders described above. In connection with this offering, we have also agreed to issue to MDB Capital Group LLC a warrant to purchase shares of our common stock in an amount up to 10% of the shares of common stock sold in the public offering, with an exercise price equal to 125% of the per-share public offering price.

	Per Share	Total
Public offering price	$	$

Underwriting discounts and commissions	$	$
Proceeds to us (before expenses)(1)	$	$

(1) Does not include a non-accountable expense allowance equal to $160,000 payable to MDB Capital Group LLC, the underwriter. See “Underwriting” for a description of compensation payable to the underwriter.

The underwriter also may purchase an additional 450,000 shares of our common stock amounting to 15% of the number of shares offered to the public, within 45 days of the date of this prospectus, to cover over-allotments, if any, on the same terms set forth above.

The underwriter expects to deliver the shares on or about _____, 2012.

MDB Capital Group LLC

The date of this prospectus is _____, 2012.

TABLE OF CONTENTS

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

You should rely only on the information contained in this prospectus. We have not authorized anyone to provide you with additional or different information. The information contained in this prospectus is accurate only as of the date on the front cover of this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

No dealer, salesperson or any other person is authorized in connection with this offering to give any information or make any representations about us, the securities offered hereby or any matter discussed in this prospectus, other than those contained in this prospectus and, if given or made, the information or representations must not be relied upon as having been authorized by us. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any security other than the securities offered by this prospectus, or an offer to sell or a solicitation of an offer to buy any securities by anyone in any circumstance in which the offer or solicitation is not authorized or is unlawful.

Prospectus Summary

This summary highlights selected information contained elsewhere in this prospectus and does not contain all the information that you need to consider in making your investment decision. You should carefully read this entire prospectus, as well as the information to which we refer you, before deciding whether to invest in our common stock. You should pay special attention to the "Risk Factors" section of this prospectus to determine whether an investment in our common stock is appropriate for you.

This registration statement, including the exhibits and schedules thereto, contains additional relevant information about us and our securities. With respect to the statements contained in this prospectus regarding the contents of any agreement or any other document, in each instance, the statement is qualified in all respects by the complete text of the agreement or document, a copy of which has been filed or incorporated by reference as an exhibit to the registration statement.

About ClearSign Combustion Corporation

We are a development stage company. We design and develop technologies that aim to improve key performance characteristics of combustion systems including energy efficiency, emissions control, fuel flexibility and overall cost effectiveness. Our Electrodynamic Combustion Control™ (ECC™) technology introduces a computer-controlled electric field into the combustion zone to improve control of flame shape and heat transfer. This same technique can also be used to optimize the complex chemical reactions that occur during combustion in order to minimize harmful emissions while maximizing system efficiency.

We have designed and built 3 prototypes. We have not yet developed products using our technology or applied our technology to existing products. Based on our research and testing, we believe that our technology can be applied at any scale and that the potential cost savings and economic benefits to owners and operators of large-scale combustion systems, in particular, such as those used to provide heat for industrial processes or to generate electric power, could be considerable. We believe that our technology will allow owners and operators of such systems to benefit from substantially reduced costs associated with the construction (including refurbishment and upgrade), operation and maintenance of these systems, as compared to combustion systems that use currently available technology. We believe that our technology may also substantially reduce the cost of compliance with air quality regulations as compared to the current generation of air pollution control (APC) technologies. Our Electrodynamic Combustion Control™ technology is, to our knowledge, the only combustion technology that exists today that has the ability to simultaneously improve emissions control performance and meet regulatory standards, while yielding a significant increase in energy efficiency. Our technology can be adapted to various fuel types and multiple system sizes and configurations, and can be deployed on both a retrofit and new-build basis.

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.clearsigncombustion.com. The information contained on or that may be obtained from our website is not, and shall not be deemed to be, a part of this prospectus.

The Industry

Nearly two-thirds of the world's total energy consumption is accounted for by combustion of hydrocarbon and other fuels in boilers, furnaces, kilns and turbines. These are used to generate electrical power, to provide heat for all manner of industrial processes and for building heat. The combined value of these capital assets in the United States alone is in the trillions of dollars and they consume and produce more than 50 quadrillion British thermal units (Btus) of energy annually in the U.S. 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. In its December 2010 Air Pollution Management Report, The McIlvaine Company projected that just under $42 billion will be invested globally in equipment to reduce air pollution in 2011. In its August 2011 report, The McIlvaine Company further projected this market will grow at an average rate of 6% per year over the next decade.

Our Proprietary Technology

Overview. While we have not deployed our technology commercially, if the results we have observed in our testing can be replicated on a commercial scale, we believe our proprietary technology platform may increase energy efficiency and improve fuel flexibility and environmental performance for most types of industrial and commercial combustion systems. We believe our technology will compare favorably with current industry-standard air pollution control and efficiency technologies, including electrostatic precipitators, fabric filters, selective catalytic reduction devices, low- and ultra-low NOx burners, excess air systems and other such technologies. These systems account for the majority of energy utilization worldwide, and include those used in:

- electrical power generation,
- the hydrocarbon and chemical processing industries,
- petroleum refining, and
- all manner of industrial and commercial steam generation and industrial process heat.

Technical requirements. Our technology consists, in its simplest form, of four major components: (a) a computer, (b) software delivering proprietary algorithms to (c) a power amplifier (resident outside the combustion chamber) and (d) electrode(s) (inside the combustion chamber). The electrodes are designed to best suit the specific geometry of a given installation. Because the system's basic components are available 'off the shelf', or require manufacturing techniques that are well within the current state of the art, ClearSign does not depend on any third-party external technology that has not yet been developed.

ClearSign's Electrodynamic Combustion Control™ technology makes use of computer-controlled high-voltage electric fields to manipulate the movement of electrically charged molecules (ions) that are a natural product of the combustion process. The pulsed field creates very powerful electrostatic forces (body forces) within the flame and the surrounding gas cloud. These forces can be manipulated to precisely control flame shape and the transfer of heat to, through, or away from a surface as desired. Because we can selectively target and mobilize specific charged molecules, our technology provides an unprecedented level of precision for optimizing combustion chemistry to suppress formation of pollutants at the flame source.

This approach enables multiple effects to be applied individually or in combination, including the following:

- Better combustion – less unburned fuel and better fuel/air mixing increases efficiency and reduces pollutant formation.
- Superior flame quality – optimizes flame shape and flame stability to maximize energy efficiency.
- Precision control of heat transfer – increases thermal efficiency and therefore, fuel efficiency.
- Control over combustion reaction chemistry – enables control over flame chemistry, which can selectively promote, suppress, retard or accelerate chemical reactions as desired to minimize formation of pollutants and enhance pollution abatement.
- Agglomeration of particulate – particulate matter in exhaust is formed into large, more easily removed clusters, which are much more efficiently removed compared to particulate generated by existing technologies.

The gain in energy efficiency provided by our technology in boilers, kilns, furnaces and turbines stems in part from our ability to precisely control the flow of hot gases within a gas volume. In most cases, efficiency is increased by increasing heat flux onto targeted surfaces and reducing heat loss from other surfaces. Additionally, because the formation of pollutants is greatly reduced at the source, the 'load' placed on downstream pollution control equipment is also reduced, lowering both capital and operating expense and yielding a positive return on investment for system operators.

2

Intellectual Property. Our background research has not identified any public information, such as patents or published articles, relating to our technology that would affect our freedom to operate. To date, ClearSign has conceived and recorded, and is diligently working toward filing patent applications on or constructing more than 100 inventions that we believe represent proprietary, patentable subject matter. To date, we have filed eleven patent applications and plan to prepare and file more. See “Intellectual Property Protection” for additional information. We primarily rely on a combination of patent laws, confidentiality procedures and contractual restrictions with our employees and others to establish and protect our intellectual property rights. However, the steps we take to protect our intellectual property rights may be inadequate or we may be unable to secure patents and intellectual property protection for all of our technology. Moreover, others may independently develop technologies that are competitive with ours or infringe our intellectual property. Our success and ability to compete will depend, in large part, upon our intellectual property and our ability to protect it.

Prototypes and Our Experimental Data. We have designed and built 3 prototype systems: a small “bench-top” configuration of 5,000 Btu/hour, a larger system of 25,000 Btu/hour and a scale reactor of 250,000 to 1,000,000 Btu/hour to demonstrate our technology with both pre-mixed and diffusion flames. This reactor can accommodate a variety of fuel types and can be up-, down-, or side-fired. We have conducted over 400 experiments using a variety of analytical and measurement tools. Examples of the analytical equipment used in our tests include calorimetry to record data relating to heat transfer, thermocouple arrays to map heat distribution, EPA-certified methods and NBS-certified calibration gases to measure pollutant formation, videography, and visible and Schlieren photography to measure flame shape. Our technology's ability to control and improve both flame chemistry and heat transfer in configurations for multiple fuels suggests a wide range of potential commercial scale applications.

Our tests with coal, tire-derived-fuel (TDF) and wood have shown reductions in visible particulate matter (PM) of over 90% (using EPA test Method 9, a measure of visible opacity at timed intervals), with significant, simultaneous reductions in carbon monoxide (CO) and exit gas temperature (indicative of superior heat transfer to the process). In testing we have achieved such reductions in unburned carbon, CO, and particulates without increased NOX emissions. We have also demonstrated the ability to selectively and precisely control flame shape, heat transfer and heat distribution.

Our experiments and designs also suggest improvements in flame stability and that our technology could be retrofitted to or even replace Low and Ultra-Low NOX burners. We believe this may result in potential efficiency increases in the range of 20% to 30% for a large number of industrial gas-fired boilers.

Our technology has not been tested or verified by any independent third party.

Key technical challenges. As with any new industrial technology, scaling our technology from lab prototype to a field-operating unit will require deliberate staging from the initial retrofit installation of systems of a “meaningful but manageable” scale, to progressively larger and more complex systems. We are currently beginning testing a system with a 1,000,000 Btu/hr burner, which is similar in size to the wall-fired burners used in some configurations of steam methane reformers (SMR) used in the production of hydrogen. Because of the large numbers, wide variety and varying capacities of combustion systems, we believe we will be able to identify and target progressively larger systems without requiring significant ‘step-function’ increases in scale.

The Combustion Markets

Overview. We believe that both the industrial combustion and power generation segments offer enormous opportunity for us. In its December 2010 Air Pollution Management Report, The McIlvaine Company projected that just under $42 billion will be invested globally in equipment to reduce air pollution in 2011. Based on our own internal estimates, we believe the total addressable market for ClearSign ECC is between $5.4 billion and $12.8 billion in the

United States alone. Each segment, however, has significantly different design-build and sales cycles. The power generation opportunity is characterized by large individual installations (ranging into the billions of dollars), with longer times to revenue. Industrial combustion systems are generally smaller, much more numerous, and tend to be represented by a manageable number of design variations. For this reason, we intend to target the retrofit of industrial combustion systems as an early market entry point, using techniques developed from these early installations to inform the design of systems for larger utility boilers.

Partnership Strategy. We intend to form research and development partnerships in order to further develop and commercialize our technology. While we have commenced seeking such partners and have engaged in discussions with several companies and personnel with certain government agencies, we have not yet entered into any definitive partnership or sponsorship agreements. Among the types of partners ClearSign will seek to establish relationships with are:

- Industry research groups, whose mission is the development and testing of new technologies for the eventual benefit of their member companies;
- Government entities such as the U.S. Department of Energy, that are chartered with the development of longer-range and potentially disruptive energy technologies;
- Engineering and Construction (E&C) companies interested in differentiating their offerings while increasing profitability;
- Large OEMs interested in the competitive advantage ClearSign's technology might provide.

ClearSign plans to initially market solutions that will enable cost-effective retrofitting of our technology onto existing, standard system designs to simultaneously improve both their energy efficiency and pollution control characteristics. ClearSign also believes that, as a next-stage development effort, our technology will form the basis of completely redesigned, next-generation combustion systems with disruptive performance characteristics, offering benefits to operators which are not possible using conventional system designs.