

## **ClearSign Technologies Corporation Provides Updates on Ongoing Projects**

SEATTLE, Jan. 31, 2020 /PRNewswire/ -- ClearSign Technologies Corporation (Nasdaq: CLIR) ("ClearSign" or the "Company"), an emerging leader in industrial combustion and sensing technologies that improve energy, operational efficiency and safety while dramatically reducing emissions, provides updates on its operations in China and the demonstration project at the World Oil site in California.

With the continuing outbreak of the Corona virus, the Company anticipates possible delays to the two boiler demonstration projects in China. While at present the Company anticipates that both projects will be completed this year, the recent extension of the Chinese New Year holiday period and the travel restrictions on the local work force are impacting the project schedules. To date, based on ClearSign's measurements, the modifications made this past year to the water tube boiler project have performed well, achieving up to 95% of the design capacity with NOx levels within the aggressive project specification. The burner hardware is currently undergoing an engineering modification to prepare it for final automation, formal testing and ongoing operation. This will resume as soon as the situation in China allows.

The testing of the fire tube boiler has been relocated to a different site. The new site is not restricted by the schedule of the heating season, and will allow for testing after the heating season is over, if required. The testing will also now take place in a boiler that is not in use for facility heating, which allows more flexibility in the timing of the installation, optimization and testing.

"At this time, given the performance we have observed of our water tube burner technology and having found an alternative host for our fire tube burner technology, we have planned for and intend that both projects will be completed this season. However, the situation in China does create challenges, particularly to the water tube project that is restricted to the Chinese heating season," said Jim Deller Ph.D., Chief Executive Officer of ClearSign. "We are continuing to monitor the situation in China, balancing the concern for safety of our employees with eagerness to proceed and will adapt accordingly."

The initial test firing of the ClearSign burners at the World Oil site in California was undertaken this past week. The burners demonstrated an operating range from below minimum to exceeding their design firing capacity while consistently limiting NOx emissions to less than 4ppm based on ClearSign measurements. In this initial testing some interaction was experienced between the burners creating problematic flame behavior that ultimately led to a joint decision between World Oil and ClearSign to remove the burners so that the anomaly could be addressed without disrupting the production of the refinery through the peak mid-year production season.

"While we would obviously have liked the burners to work perfectly right out of the box, this is the first time we have had the opportunity to install ClearSign Core burners in a multiburner heater and both the operating flexibility and the NOx emissions demonstrated are very encouraging. Given its unique physical structure and operating demands this particular heater would be a challenging application for any burner. Nevertheless, we believe that we can not only demonstrate full production for the World Oil refinery but do it in an easy-to-use manner. Given the critical role of this heater to refinery operations the decision to undertake further refinement of the burner technology outside of the production restraints was prudent. We have every intention that the installation will meet all requirements later this year," said Jim Deller Ph.D., Chief Executive Officer of ClearSign. "The development of our burner technology for highly fired multi burner heaters is part of our business development plan, and we believe that what we learn from this installation and the product improvements that will result will ultimately lead to a more robust burner technology and to greater adoption of our product in the market."

The purpose of the project with World Oil is to demonstrate ClearSign Core™ process burner technology as a Best Available Control Technology (BACT) candidate to achieve sub 5 ppm NOx emissions levels in refinery process heaters and other types of fired equipment. The project involves a retrofit installation of five Plug & Play™ burners on a process heater within the California refinery as a demonstration of the technology for the South Coast Air Quality Management District and refiner World Oil. Based on preliminary estimates, if successful, the project is expected to result in a reduction of over 15 tons of NOx emissions compared to current operations, without the utilization of catalysts, chemicals, utility consumption or other inefficient requirements of established technologies.

### **About ClearSign Technologies Corporation**

ClearSign Technologies Corporation designs and develops products and technologies for the purpose of improving key performance characteristics of industrial and commercial systems, including operational performance, energy efficiency, emission reduction, safety and overall cost-effectiveness. Our patented

technologies, embedded in established OEM products as ClearSign Core™, and ClearSign Eye™ and other sensing configurations, enhance the performance of combustion systems and fuel safety systems in a broad range of markets, including the energy (upstream oil production and down-stream refining), commercial/industrial boiler, chemical, petrochemical, transport and power industries. For more information, please visit [www.clearsign.com](http://www.clearsign.com).

### **Cautionary note on forward-looking statements**

All statements in this press release that are not based on historical fact are "forward-looking statements." 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," "could," "may," "will" or other similar expressions. While management has based any forward-looking statements included in this press release on its current expectations, the information on which such expectations were based may change. These forward-looking statements rely on a number of assumptions concerning future events and are subject to a number of risks, uncertainties and other factors, many of which are outside of our control, that could cause actual results to materially differ from such statements. Such risks, uncertainties and other factors include, but are not limited to, general business and economic conditions, the performance of management and our employees, the performance of our products, our ability to obtain financing, competition, whether our technology will be accepted and adopted and other factors identified in our Annual Report on Form 10-K filed with the Securities and Exchange Commission and available at [www.sec.gov](http://www.sec.gov) and other factors that are detailed in our periodic and current reports available for review at [www.sec.gov](http://www.sec.gov). Furthermore, we operate in a competitive environment where new and unanticipated risks may arise. Accordingly, investors should not place any reliance on forward-looking statements as a prediction of actual results. We disclaim any intention to, and undertake no obligation to, update or revise forward-looking statements to reflect events or circumstances that subsequently occur or of which we hereafter become aware.

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