Plug Power and Washington State University Partner to Implement State-Of-The-Art Cryogenic Hydrogen Sub-Cooling Technology

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Will solve existing logistical issues and allow liquid hydrogen fuel to be delivered at scale to meet the growing needs of the on-road market

LATHAM, N.Y., Oct. 10, 2019 (GLOBE NEWSWIRE) -- Plug Power Inc. (NASDAQ: PLUG), a leading provider of hydrogen engines and fueling solutions enabling e-mobility, today showcases a partnership with Washington State University’s (WSU) Hydrogen Properties for Energy Research (HYPER) Labs to develop cryogenic hydrogen cooling technology to focus on one of the largest logistical issues of delivering hydrogen at scale: efficient storage and transfer. This is yet another innovation that will enable hydrogen to be used as a fuel in on-road mobility fuel cell applications.

The proposed sub-cooling solution will enable improvements to the transportation and storage of liquid hydrogen to fueling stations. It will allow Plug Power’s fleet vehicle customers, including material handling lift truck fleets, to achieve lower fuel costs due to lower back-end costs of transportation and storage. In the future, this innovation will improve the operational efficiency of GenFuel liquid hydrogen architecture, which is critical for the high-volume hydrogen fueling needed to support the burgeoning on-road fuel cell electric vehicle (FCV) market.

The technology being developed allows compressed hydrogen to swirl in a vortex, where a catalytic reaction unique to hydrogen causes cooling at cryogenic temperatures. Optimizing the reaction to operate with supercritical hydrogen has the potential to reduce the cost and efficiency of small, distributed liquid hydrogen systems as well as aid in low boil-off and heat mitigation challenges relevant to Plug Power and its customers.

Plug Power and WSU’s project comes in three phases. The project is currently in its first phase, during which the teams must advance the fundamental understanding of the technology at cryogenic temperatures. WSU is uniquely
positioned to conduct this research due to the university's cryogenic hydrogen lab. The next phase will also take place at the lab, where analytical modeling will be developed and validated to ensure the design is optimized for Plug Power's cryogenic hydrogen applications. Finally, a field test will take place on full scale Plug Power hydrogen storage systems to validate operational performance improvements.

“In the near future, demand from the fast-growing FCV market will outpace the current hydrogen fuel supply because of issues related to transportation, infrastructure, and storage. That's why Plug Power is taking the necessary action to develop the technology that will address these future issues now,” said Andy Marsh, CEO at Plug Power. “This important research will also play a part in advancing the on-road FCV market adoption by lowering operational costs, which make FCVs not only clean and efficient, but affordable for organizations as well.”

According to research from KPMG, FCVs have replaced battery electric vehicles as 2018's number one key trend until 2025. Statistics such as these highlight the increasing need for advanced liquid hydrogen fueling stations, as demand for hydrogen fuel increases. The cryogenic cooling technology is a crucial step toward the modern hydrogen infrastructure needed in today's rapidly advancing technological world.

“Plug Power is the leading consumer of liquid hydrogen in North America, which is one of many reasons why we're so excited to improve the efficiency of their liquid hydrogen systems,” said Dr. Jacob Leachman, director of the HYPER laboratory at Washington State University.

The HYPER laboratory is currently the only university research laboratory in the U.S. with a focus on cryogenic hydrogen, making them an ideal partner for a company like Plug Power to make the world cleaner and more efficient through the use of hydrogen.

About Plug Power Inc.
The architect of modern hydrogen and fuel cell technology, Plug Power is the innovator that has taken hydrogen and fuel cell technology from concept to commercialization. Plug Power has revolutionized the material handling industry with its full-service GenKey solution, which is designed to increase productivity, lower operating costs and reduce carbon footprints in a reliable, cost-effective way. The Company's GenKey solution couples together all the necessary elements to power, fuel and serve a customer. With proven hydrogen and fuel cell products, Plug Power replaces lead acid batteries to power electric industrial vehicles, such as the lift trucks customers use in their distribution centers.

Extending its reach into the on-road electric vehicle market, Plug Power's ProGen platform of modular fuel cell engines empowers OEMs and system integrators to rapidly adopt hydrogen fuel cell technology. ProGen engines are proven today, with thousands in service, supporting some of the most rugged operations in the world. Plug Power is the partner that customers trust to take their businesses into the future. Learn more at
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filings with the SEC including, the "Risk Factors" section of PLUG's Annual Report on Form 10-K for the year ended December 31, 2018. You should consider these factors in evaluating the forward-looking statements included in this presentation and not place undue reliance on such statements. The forward-looking statements are made as of the date hereof, and PLUG undertakes no obligation to update such statements as a result of new information.

SOURCE: PLUG POWER

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