HyAxiom Signs Agreement with Shell To Demonstrate Fuel Cell Technology's Ability to Decarbonize Shipping Industry

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EAST HARTFORD, Oct. 11, 2022 - HyAxiom Inc., a leading global fuel cell and hydrogen solutions provider, today signed an agreement with Shell plc (NYSE:SHEL) and other parties to power a deep-sea liquefied natural gas carrier with a HyAxiom-developed solid oxide fuel cell to test the technology's ability to cut carbon emissions from maritime transport, a sector which is vital to trade and economies worldwide but is considered hard-to-abate .

Under the agreement, Shell International Trading and Shipping Company Ltd ("Shell"), Korea Shipbuilding & Offshore Engineering Co., Ltd. ("KSOE"), DNV and Doosan Fuel Cell Co., Ltd ("DFCC"), agreed to launch a vessel powered by a HyAxiom-developed Solid Oxide Fuel Cell (SOFC) in 2025.

This agreement underscores fuel cell technology's potential in decarbonizing the marine transportation industry and the role that HyAxiom can play in helping major industry players achieve their climate goals.

"Fuel cells are a critical technology to cut carbon emissions and help us combat climate change at scale," said Jeff Hyungrak Chung, President & Chief Executive Officer of HyAxiom. "HyAxiom is proud to partner with Shell to demonstrate the viability of solid oxide fuel cells as a low to zero carbon way to power the shipping industry."

Under the agreement (following feasibility studies), HyAxiom will design and develop the SOFC Auxiliary Power Unit (APU) incorporating the 2 x 300 kilowatts (kW) sub-systems for long-range maritime demonstration; DFCC will manufacture, carry out factory tests and deliver the product; Shell will charter the demonstration vessel; KSOE will assist with system integration and technological deployment; and DNV will provide technical and safety expertise.

Once launched, the vessel will operate for one year, during which the parties will collect valuable data on how to further integrate SOFC technology into current vessels and inform how future vessels can be powered by SOFC technology at scale.

Karrie Trauth, SVP Shipping & Maritime at Shell said: "This consortium and the cutting-edge technology we're pioneering could help deliver less carbon-intensive operations in the near term while unlocking a pathway to net-zero through the blending of conventional and alternative fuels until zero-carbon options are available at scale. We're excited to be collaborating with some of the leading names in shipping who share a vision of a zero-emission industry and are working hard to progress shipping decarbonization."

Sam-Hyun Ka, Vice Chair & CEO of KSOE emphasized: "SOFC is expected to be the more prominent and major power sources for the vessels due to its excellent ef?ciency. HHI Group will continue to play a leading role with Shell, HyAxiom, DFCC & DNV for the development of future decarbonizing technology. I believe that we can create unrivalled synergies and we can lead the future technologies in shipping and shipbuilding sectors."

Vidar Dolonen, Regional Manager Korea & Japan, Maritime at DNV also added: "The fuel and technology mix of the future will have to be broad for the maritime sector to reach its Net Zero goal. Solid Oxide Fuel Cells are a promising solution to progress on the decarbonization pathway, and we at DNV are happy to contribute our expertise to such an important demonstration project with leading industry players."

The consortium agreement was signed during a ceremony in Seoul, South Korea. Representatives from

each company included HyAxiom CEO Jeff Hyungrak Chung; DFCC COO Hooseok Che; Shell's SVP and Global Head of Shipping and Maritime, Karrie Trauth; DNV Regional Manager Korea & Japan Vidar Dolonen; and KSOE Vice Chairman Sam-Hyun Ka.

HyAxiom, a Doosan company based in East Hartford, Connecticut, was established in 2014 as a result of Doosan Group's acquisition of the fuel cell business of UTC Power. HyAxiom combines UTC Power's 50 years of experience in hydrogen fuel cell technology development with Doosan Group's engineering and large-scale manufacturing expertise. In addition to its core offering of phosphoric acid fuel cell ("PAFC") units, HyAxiom is developing next-generation technologies, including electrolyzers for clean hydrogen production and additional fuel cell solutions for mobile and stationary applications.

About HyAxiom

HyAxiom is a leading global fuel cell and hydrogen solutions provider, enabling reliable, cost-competitive and carbon-free energy sources for industrial and commercial uses. Combining the legacy of UTC Power's fuel cell development and the expertise of parent Doosan Group, HyAxiom's mission is to accelerate a sustainable energy future by delivering a full spectrum of hydrogen-based solutions for both stationary and mobile power. HyAxiom develops, manufactures and services PureCell, a proprietary phosphoric acid fuel cell ("PAFC") unit. Building upon its expertise in fuel cell technology, HyAxiom is developing next-generation clean hydrogen production technologies and additional clean fuel cell solutions for mobile and stationary applications. More information is available at hyaxiom.com.

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