U.S. Hydrogen Infrastructure Solutions Leader GenH2 Signs Agreement with Univ. of Melbourne to Deploy Cryostat CS500

Leading Australian University to Use Advanced GenH2 Test Platform for Research & Development

GenH2

TITUSVILLE, FL, UNITED STATES, January 18, 2024 /EINPresswire.com/ -- GenH2, a leader in hydrogen infrastructure solutions, announced today that it has signed an agreement with the University of Melbourne, a world-class institution of higher learning, to provide the GenH2 Cryostat CS500 simulation test platform for cryogenic and hydrogen research and development projects at the university. The Cryostat CS500, which is part of GenH2's NASA-licensed cryostat family of products, is a platform for testing a wide range of thermal insulation systems, materials, composites, or panels under both cryogenic-vacuum conditions and real-world conditions.

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"We are very excited about this international partnership that will help advance the adoption of hydrogen across the globe," said Greg Gosnell, CEO of GenH2. "The University of Melbourne is well-respected for its focus on research impact and relevance, and we are thrilled that they will utilize the GenH2 Cryostat CS500 to further their innovations in hydrogen solutions."

The CS500 is a flat plate absolute type instrument, according to ASTM C1774 Annex A3 (Standard Guide for Thermal Performance Testing of Cryogenic Insulation Systems). Using the measurement basis of boiloff calorimetry, the CS500 provides a direct measurement of the heat flow rate through a test specimen. The most commonly used test medium is liquid nitrogen (LN2) at the normal boiling point (NBP) of approximately 77 K. The primary components of the CS500 include a vacuum chamber assembly, vacuum chamber lid assembly, cold mass assembly (with both a test chamber and a guard chamber), heater plate assembly, cold mass suspension assembly, two cryogenic feedthrough assemblies, heater control system, and advanced software for data monitoring, analysis, and reporting.

“We are delighted to have the instrument in-house after years of advanced materials collaborative research work with James Fesmire, GenH2’s Executive Vice President and Chief Architect and founder of the Cryogenics Test Laboratory of NASA Kennedy Space Center,” stated Dr. Shanaka Kristombu Baduge, PhD-Fellow Department of Infrastructure Engineering at the University of Melbourne. “The GenH2 Cryostat CS500 will allow us to take our research endeavors to the next level by testing materials needed for future clean energy infrastructure.”


Greg Gosnell GenH2 CEO

Additionally, the testing and research completed with the CS500 will be the foundation for further collaboration between GenH2 and the University of Melbourne. Future collaboration will include developing large-scale liquid hydrogen infrastructure.

The GenH2 CS500 is uniquely designed for performance in key areas, including:

· Test Specimens: The nominal test specimen diameter is 200 mm. The thickness of a test specimen can be up to 40 mm. Material configurations can be single materials, stack-ups of different materials, composites, powders, blankets, flat panels, sheets, multilayer insulation (MLI) blankets, or other forms.

· Operating Conditions: The usual cold boundary temperature (CBT) is 77 K. The typical warm boundary temperature (WBT) is 293 K, but temperature of up to 373 K can be applied. The test environment, or cold vacuum pressure (CVP), capability is from 1x10-5 torr to 760 torr. Different residual gases can be supplied to the vacuum chamber to simulate real-world environments.

· Thermal Performance Results: From the mass flow rate (boiloff rate) from the test chamber, thermal performance test results are calculated in the following parameters: heat flow rate (Q) in W, heat flux (q) in W/m2, and effective thermal conductivity (ke) in mW/m-K (according to ASTM C1774). The approximate capability range of the CS500 is a heat flux from 0.4 to 400 W/m2 and an effective thermal conductivity from 0.1 to 120 mW/m-K.

The University of Melbourne has been proactive in several research projects advancing clean

energy. Recently, Dr Baduge and team received funding for the CS500 cryostat to test novel materials for advancing clean energy infrastructure. He has also received the prestigious Sir Winston Churchill Fellowship focusing on “Design and Construction of Next Generation Hydrogen Storage Infrastructure”. The Churchill Fellowship will support Dr Baduge’s efforts to investigate new technologies and materials to store hydrogen economically and safely. This research will support Australia’s National Hydrogen Strategy to use Australia's energy resources for the hydrogen economy to decarbonize our energy market, enhance the economy, and create new jobs through energy exports.

Additional researchers at the University of Melbourne were recently lauded for their work on the prototype of a device that produces hydrogen without consuming freshwater resources. The technology, which was published in Nature Communications, is called Direct Air Electrolyser (DAE) and works by draining water directly from the air before then going through the standard electrolysis process.

For more information, please visit www.DiscoverHydrogen.com

About GenH2
GenH2 is a technology leader in hydrogen infrastructure systems for advanced clean energy. GenH2 solutions provide safe and effective liquefaction, storage, transfer, and distribution of liquid hydrogen. The company focuses on standardized industrial equipment to speed infrastructure buildout and make hydrogen accessible for everyday use around the globe. The Titusville, Florida-headquartered technology team includes former NASA researchers and developers who possess decades of experience researching, engineering, and building liquid hydrogen solutions. Learn more about GenH2 at www.DiscoverHydrogen.com

About University of Melbourne
The University of Melbourne is a public research university located in Melbourne Australia. Founded in 1853, it is Australia's second oldest university and provides accommodation for students and faculty, and academic, sporting and cultural programs. It is widely respected as an institution where world-class researchers choose to study and work in an environment focused on research impact and relevance. For more information, please visit www.unimelb.edu.au.

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