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Verne and Lawrence Livermore National Laboratory tripled previous records for cryo-compressed hydrogen storage, achieving the first demonstration of a CcH₂ system large enough to meet the energy storage needs of semi-trucks

Livermore, California, December 12, 2023 -- Verne and Lawrence Livermore National Laboratory (LLNL) demonstrated a single cryo-compressed hydrogen (CcH₂) system with a capacity of 29 kilograms, close to three times greater capacity than previously known examples. This system is the first CcH₂ system large enough for use in heavy-duty transportation systems. For example, two such systems can be frame-mounted to a Class 8 truck, and enable a range of over 500 miles, according to Verne analysis.

Verne and LLNL have worked together for the past two years to test Verne's hydrogen-storage systems, building on early CcH₂ research at LLNL that was started over 25 years ago by Dr. Salvador Aceves. In this test, Verne implemented a test manifold that enables the testing of multiple components at once. This allows Verne to test and validate various types of safety valves, operating valves, and sensors.

Verne's CcH₂ system is compact enough that it can fit where diesel tanks are typically installed on a Class 8 truck, on the side of the truck between the wheels. Verne has received interest in their CcH₂ systems from a variety of industry stakeholders, including Amazon, an investor in Verne.

Verne was founded in 2020 to develop the required high-density hydrogen platform for heavy-duty transportation. Verne's platform can unlock zero-emission operations in sectors including mining, aviation, port vehicles and hydrogen distribution. Verne is financially supported by leading commercial entities, including Amazon's Climate Pledge Fund, Caterpillar Venture Capital, and Collaborative Fund. Verne is also supported by Breakthrough Energy Fellows, the Department of Energy's ARPA-E, and other agencies. For more information, visit [verneh2](#)

San Francisco, California & Odelzhausen, Germany, November 7th, 2024 -- Verne and Rheonik announced a technical collaboration to develop mass flow meters for cryo-compressed hydrogen applications. Verne and Rheonik will collaborate to adapt the Rheonik Omega Coriolis mass meter to support the growing demand for cryo-compressed hydrogen in the distribution and mobility markets.

Verne and Rheonik's partnership aims to establish a reliable supply of proven flow metering to enable commercial CcH₂ filling of hydrogen distribution trailers and heavy-duty vehicles. Rheonik is a leading developer of mass flow solutions for extreme applications with devices already being used in approximately 2,000 hydrogen filling stations, and in oil & gas, marine, petrochemical and many other applications.

In 2023, Verne completed drive testing of a CcH₂ storage system onboard a vehicle and demonstrated a

world-record 29 kg storage tank at Lawrence Livermore National Laboratory, validating the high-densities of cryo-compressed hydrogen. Verne recently announced the completion of the world-first CcH2 Class 8 truck, with drive testing set to take place later this year. Verne is also working with leading hydrogen distributors and vehicle manufacturers to pilot the technology starting in 2025.

"The hydrogen industry is in desperate need of an efficient hydrogen distribution method. Cryo-compressed hydrogen distribution will meet this critical industry need, and reliable mass flow meters will be critical for commercial roll-out of CcH2 filling stations for distribution trailers and vehicles," said Bav Roy, Verne Co-founder & COO. "Rheonik"s decades of experience making high-quality mass flow meters makes them the perfect partner."

"Accurate mass measurement of CcH2 in the distribution channel is an essential step in the implementation of CcH2 filling stations. The unique design of Rheonik's Omega Coriolis metering platform offers the perfect solution to the challenges of CcH2 measurement. In partnership with Verne, we will be able to specifically optimize our flow meters for this application," said Maximilian Weber, Application Engineering Manager at Rheonik.

Rheonik was founded in 1986 to develop a mass flow meter based on the new Coriolis measuring principle. Since returning to private ownership in 2014, the Rheonik Omega metering platform has been significantly updated and enhanced. Rheonik"s state-of-the-art product range has been met with great acceptance in the market and has opened many new business areas for the company.

Rheonik is recognized as the global leader in the supply of Coriolis flow meters for hydrogen metering applications. As a pioneer in hydrogen flow measurement, Rheonik is constantly developing technical innovations for new applications in this field. For more information, visit

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Web: <https://www.sumthingtasty.co.za/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

