

Colorado State University, The Energy Institute, & Steelhead Composites Team Develop Low-Cost Hydrogen Pressure Booster

CSU mechanical engineering seniors successfully prove use of pressure accumulators to boost filling pressures for more rapid fueling at hydrogen stations.

GOLDEN, COLORADO, UNITED STATES, February 7, 2023 /EINPresswire.com/ -- [Steelhead Composites](#) announces the successful completion of a bench-scale project with Colorado State University's Mechanical Engineering Department and [The Energy Institute](#) to boost pressures at hydrogen filling stations. The team included CSU senior mechanical engineering students Jake Van Dorfy, Seth Dry, Barak Farhi, and Steelhead Composites intern, Sam Floyd.



Pilot project using Steelhead Composites Pressure Accumulator to boost filling pressures at hydrogen filling stations

Tasked with a feasibility study to increase filling speeds of hydrogen stations through innovative compression methods, the team designed, modeled, studied, and eventually built a bench-scale model of a pressure-boosting system using Steelhead Composites accumulators, an off-the-shelf hydraulic pump, and hydrogen gas from the CSU Energy Campus's Powerhouse Hydrogen Lab.

Small-scale model tests were conducted with rigorous monitoring of material capabilities, gas flows and temperatures, and hydrogen safety protocols. Both CSU Department of Mechanical Engineering faculty and Steelhead managers considered the study and project a success as hydrogen gas was significantly boosted in pressure and stored from low pressure to 350 bar. The project yielded a close correlation between predicted and achieved results — increasing confidence for full-scale deployment.

As Steelhead continues to scale its hydrogen storage-related product offerings beyond type III and IV pressure vessels and break new ground into the emerging technology of hydrogen management, the results of the study proved a valuable element.



This embodies the goals of the capstone project and we are grateful to Steelhead Composites for their sponsorship.”

Dr. Daniel Wise, Professor at CSU's Mechanical Engineering Dept.

“This project achieved the ideal outcome: useful and valuable results for the sponsor achieved while affording meaningful professional engineering experience for the students,” says Dr. Daniel B. Olsen, Mechanical Engineering Professor at CSU’s Powerhouse Energy Campus. “This embodies the goals of the capstone project and we are grateful to Steelhead Composites for their sponsorship. We look forward to the opportunity to work together in the future,” adds Dr. Daniel Wise, Professor of Practice at CSU’s Department of Mechanical Engineering.

“We’re excited to be on the forefront of clean, green energy technology, and to have other institutions who share our values right here in Colorado,” said Andrew Coors, CEO of Steelhead Composites. “Colorado State University is a leader in clean energy technology and we’re proud to be able to continue to work alongside them to make the world a better place,” he continued. Steelhead plans to continue the work in collaboration with CSU and other respected institutions.

About Steelhead Composites

Located in Golden, Colorado (USA), Steelhead Composites is dedicated to a cleaner earth through the manufacturing of lightweight, highly durable compressed hydrogen storage solutions. The company leads the industry in designing, manufacturing, testing, certification, and deploying hydrogen storage solutions for the clean energy transition. Steelhead hydrogen storage vessels and systems are certified and deployed in aerospace, stationary, mobility, and maritime applications. For more information, visit steelheadcomposites.com

About The Energy Institute

The Colorado State University Energy Institute’s mission is to develop energy and carbon solutions at-scale that achieve a positive global impact. The entity conducts research and development across a wide range of disciplines on a host of energy and carbon solution topics spanning fundamental science to deployment. For more information about The Energy Institute, please visit www.energy.colostate.edu

About [CSU Mechanical Engineering](http://www.engr.colostate.edu/me/) Department

For more information about Colorado State University Department of Mechanical Engineering, please visit <https://www.engr.colostate.edu/me/>

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