ZEROAVIA AND VERNE TO EXPLORE CRYO-COMPRESSED HYDROGEN FOR AIRPORTS AND AIRCRAFT

News / Manufacturer

ZeroAvia and Verne signed an MOU to jointly evaluate the opportunities for using cryo-compressed hydrogen (CcH2) on-board aircraft and for conducting CcH2 refueling from gaseous hydrogen (GH2) and liquid hydrogen (LH2) sources. According to analysis by Verne, cryo-compressed hydrogen can achieve 40 percent greater usable hydrogen density than liquid hydrogen and 200 percent greater usable hydrogen density than 350 bar gaseous hydrogen. Additionally, the application of cryo-compressed hydrogen promises to significantly reduce cost of densification and refueling time, increase dormancy time relative to LH2 systems, and potentially eliminate venting for pressure management.

ZeroAvia and Verne will assess the potential benefits of scaling CcH2 storage and refueling infrastructure at airports across the world, as hydrogen-electric propulsion scales to support larger and larger aircraft. The two companies will also work together to develop a model for initial airport locations in California.

Verne has developed large hydrogen storage systems exhibiting 4 MWh of storage. Recently, Verne and Lawrence Livermore National Laboratory announced the demonstration of Verne's 1 MWh CcH2 storage prototype. Verne has received federal grants for the development of its technology, including from ARPA-E. Verne is backed by Amazon's Climate Pledge Fund,

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Caterpillar Venture Capital, Collaborative Fund, and other leading investors. As well as rapid work to develop its propulsion technology, ZeroAvia has been active in demonstrating hydrogen airport infrastructure.

Sergey Kiselev, Chief Business Officer, ZeroAvia, commented: “With our engines just a few years from flying passengers and cargo, it is important for us that we find the optimal solutions to support airport hydrogen ecosystems. Increasing storage capacity and refueling speed using novel technologies is an important avenue for scaling up hydrogen aviation, and we’re delighted to work with Verne on assessing the role of cryo-compressed hydrogen.”

Ted McKlveen, Chief Executive Officer & Co-Founder, Verne, said: “Aviation is a massive potential market for Verne, as it becomes clear that hydrogen is critical to tackling the industry’s climate impact. Airports can be centers of hydrogen activity, with co-located hydrogen demand for aircraft, airport ground operations, and on-road commercial transportation. Cryo-compressed hydrogen has a key role in optimizing this ecosystem.”

ZeroAvia is already testing its ZA600 hydrogen-electric engine aboard a Dornier 228 aircraft at its UK base, and is working to retrofit a prototype of its ZA2000 to a 76 seat Dash 8 400 in the U.S. Hydrogen-electric engines use hydrogen in fuel cells to generate electricity, which is then used to power electric motors to turn the aircraft’s propellers. The only emission is water.

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