



H3 DYNAMICS AND HYLIIUM INDUSTRIES JOIN FORCES TO PROGRESS LIQUID HYDROGEN-ELECTRIC FLIGHT CAPABILITIES

News / Manufacturer



H3 Dynamics and Hyluum Industries have joined forces to boost the performance of zero emission hydrogen-electric flight, by combining the strengths of Hyluum liquid hydrogen storage and liquification solutions, and H3 Dynamics distributed hydrogen-electric propulsion nacelles, ultra-light fuel cells, and new hydrogen drone refueling stations. Moving to liquid hydrogen represents a significant capability leap for small electric-powered unmanned systems. Cryogenic (liquid) hydrogen stores 3 times more energy as compressed gas in the same given volume. This means delivery drones will be able to fly further, mapping and ISR missions could be done on a much bigger scale.

To illustrate the jump in performance, the same 25kg hydrogen-electric propulsion UAV demonstrated by H3 Dynamics last July in France, will be able to fly over 900km with a single fill. With pressurized hydrogen, that range reduces to 400km, which is still 3 times more than a battery-powered equivalent.

Taras Wankewycz, CEO H3 Dynamics commented: "When combined, our global best-in-class solutions achieve the global performance limit for low-altitude electric powered flight. We are proud to be working with Hyluum to move hydrogen-electric flight propulsion to the next level"

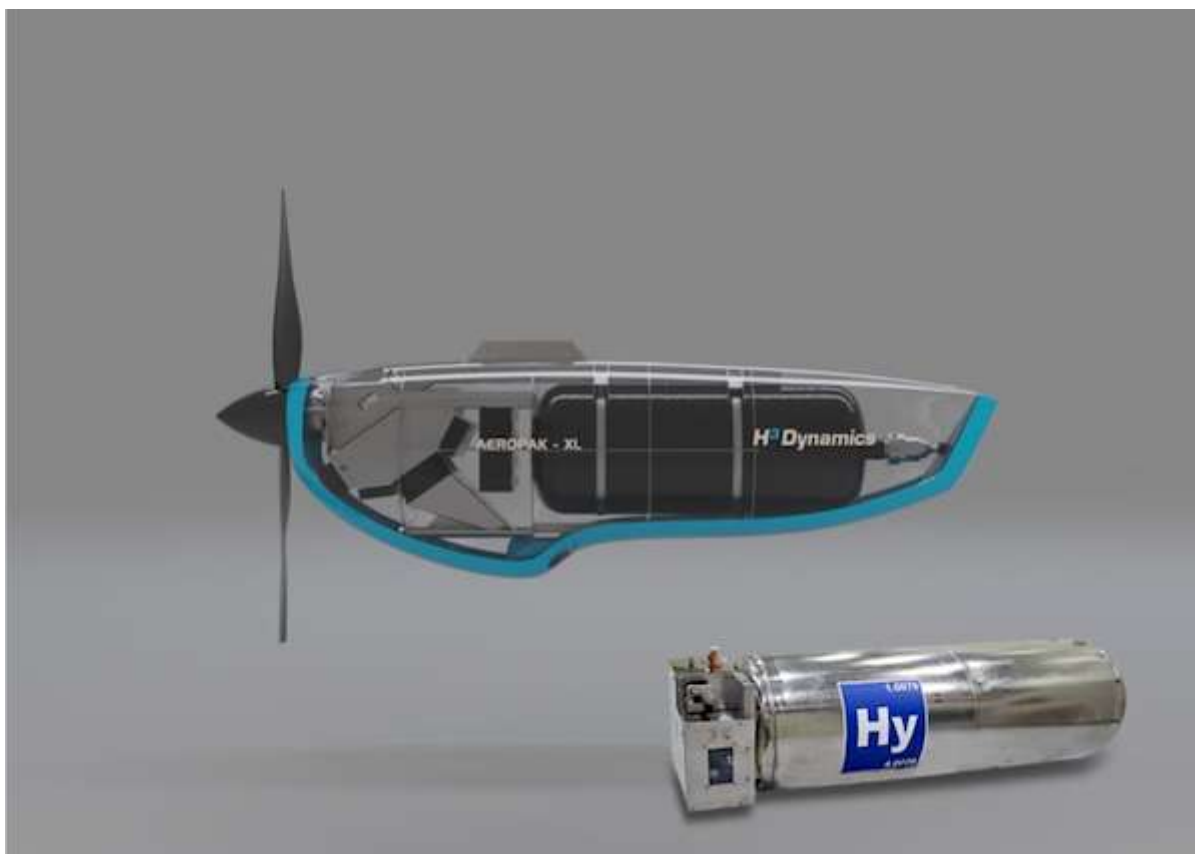
Now all the various forms of hydrogen drones and UAVs powered by H3 Dynamics including hydrogen airships, multi-rotors, vertical take-off and landing (VTOL), have a way to further boost flight durations by another factor of 3 over pressurized hydrogen systems, or a factor of 10 compared to batteries.

H3 Dynamics also recently announced a first hydrogen production, and automated hydrogen refueling mobile station for hydrogen UAV operations. Named H2FIELD the mobile station produces hydrogen from water and delivers compressed hydrogen gas tanks to the operator with little human intervention and no required hydrogen expertise. H3 Dynamics and Hylium's partnership will upgrade the station so that it can fill liquid hydrogen tanks.

Developed in South Korea, Hylium's breakthrough technology provides one of the most advanced solutions and has already been proven in a number of applications. South Korea is also leading the development for LH2 standardisation. One local proposal was accepted as a draft standard by a global ISO committee.

Hylium and H3 Dynamics technologies are currently being integrated to attempt a 3,300km crossing of the South Atlantic, in a program led by ISAE SUPAERO Toulouse, one of the world's leading aerospace engineering schools. H3 Dynamics' team developed a special fuselage design that can store a small LH2 tank and manage the thermal behavior of all the propulsion sub-systems.

LH2 technology will also be a next step in H3 Dynamics' hydrogen-electric propulsor nacelles roadmap. A first twin engine cargo drone powered by these self-contained nacelles took off in the sky of Paris during the summer 2022, using 2 compressed hydrogen tanks – one in each nacelle. The goal now will be to switch them out for liquid hydrogen tanks with a lighter construction and a higher fuel capacity.



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