



# UNIVERSAL HYDROGEN SUCCESSFULLY COMPLETES FIRST FLIGHT OF HYDROGEN REGIONAL AIRLINER

News / Manufacturer



**Universal Hydrogen flew a 40-passenger regional airliner using hydrogen fuel cell propulsion. The airplane, nicknamed Lightning McClean, took off at 8:41am PST from Grant County International Airport (KMWH) and flew for 15 minutes, reaching an altitude of 3,500 MSL. The flight, conducted under an FAA Special Airworthiness Certificate, was the first in a two-year flight test campaign expected to culminate in 2025 with entry into passenger service of ATR 72 regional aircraft converted to run on hydrogen. Representatives from Connect Airlines and Amelia, the US and European launch customers for the hydrogen airplanes, respectively, were on hand to witness the historic flight. The company has growing order book, today totaling 247 aircraft conversions from 16 customers worldwide, totaling over \$1 billion in conversions backlog and over \$2 billion in fuel services over the first ten years of operation.**

John Thomas, CEO of Connect Airlines, commented: "Today will go down in the history books as the true start to the decarbonization of the global airline industry and we at Connect Airlines are extremely proud of the role that we, as the first US operator, will play in leading the way with Universal Hydrogen. We have committed to being North America's first zero-emission airline and this historic flight, taking hydrogen, which can be made with nothing but sunshine and emitting only water, is a key milestone on our journey."

Connect will begin regional turboprop service this spring, has placed a first-position US order with Universal Hydrogen to convert 75 ATR 72-600 regional airplanes to hydrogen powertrains with purchase rights for 25 additional aircraft conversions. Deliveries will start in 2025.

Alain Regourd, President of Amelia, said: "With this technology, and the improvement of government positive regulations I am confident that we can turn the tide of public sentiment and once again make aviation a shining beacon of technological optimism."

In this first test flight, one of the airplane's turbine engines was replaced with Universal Hydrogen's fuel cell-electric, megawatt-class powertrain. The other remained a conventional engine for safety of flight. The flight was piloted by Alex Kroll, an experienced former U.S. Air Force test pilot and the company's chief test pilot. "During the second circuit over the airport, we were comfortable with the performance of the hydrogen powertrain, so we were able to throttle back the fossil fuel turbine engine to demonstrate cruise principally on hydrogen power," said Kroll. "The airplane handled beautifully, and the noise and vibrations from the fuel cell powertrain are significantly lower than from the conventional turbine engine."

The company's powertrain is built around Plug Power's ProGen family of fuel cells specially modified for aviation use. One of the unique aspects of the design is that the powertrain does not use a battery—the fuel cells drive the electric motor directly—drastically reducing weight and cost. The motor, a modified magni650 electric propulsion unit, and power electronics were supplied by Everett-based magniX. Seattle-based AeroTEC assisted with engineering efforts, including design of the modified nacelle structure, aircraft systems design and integration, as well as aircraft modifications and installation of the Universal Hydrogen powertrain onto the flight test aircraft, accomplished in less than 12 months.

The test flight comes on the back of successful demonstrations in December 2022 of Universal Hydrogen's modular hydrogen logistics system conducted at the company's engineering center in Toulouse, France.

Paul Eremenko, co-founder and CEO of Universal Hydrogen commented: "Our business model resolves the chicken-and-egg problem between hydrogen airplanes and hydrogen infrastructure by developing both in parallel and with a uniquely low-cost approach. The airplanes are converted to hydrogen using an aftermarket retrofit conversion kit, tackling the existing fleet rather than developing a brand new airplane. And hydrogen fueling uses modular capsules compatible with existing freight networks and airport cargo handling equipment, making every airport in the world hydrogen-ready. More than half of aviation CO2 emissions today come from the A320 and 737 family of aircraft. Both Airbus and Boeing will need to replace these venerable airplanes with a new design starting development in the late-2020s and entering passenger service in the mid-2030s. Making their successors hydrogen airplanes is a golden opportunity—perhaps the only opportunity—for aviation to get anywhere near meeting Paris Agreement emissions targets without having to curb aviation traffic volumes."

The company, backed by GE Aviation, Airbus Ventures, Toyota Ventures, JetBlue Ventures, and

American Airlines, as well as several of the world's largest green hydrogen producers and top-tier financial investors, plans to springboard from regional airplanes to larger ones and to hydrogen fuel deliveries for other mobility applications using its modular logistics network.

The hydrogen-powered airplane is not just a revolutionary new product; it is a symbol of hope and progress, a beacon of light in a world that desperately needs it. Today marks a new chapter in the history of aviation and the fight against climate change. Universal Hydrogen is leading the charge, and the world is taking notice.

05 MARCH 2023

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