

Zero-carbon plane deals take off

Universal Hydrogen and MagniX have developed conversion kits that include hydrogen fuel cells and electric powertrains to turn De Havilland Canada Dash 8s into zero-emissions airliners

Dash 8 Q300: *Ravn Alaska* and Spain's *Air Nostrum* to retrofit 16 aircraft and replace conventional turboprops



1. Hydrogen modules: Three double-capsule modules replace 10 rear seats, reducing capacity from 50 to 40 passengers

2. Electric propulsion unit: Pair of MagniX two-megawatt EPUs replace standard 1,860-kW Pratt & Whitney turboprops

3. Nacelles:

Hydrogen gas flows from rear capsules to fuel cells in aircraft's engine nacelles

4. EPU: Provides torque and power at same RPM as propeller – eliminating need for gearbox

5. Fuel cells: Anode and cathode are sandwiched around electrolyte (PEM)

Anode: Platinum catalyst splits hydrogen into ions and electrons

PEM: Ions pass to cathode, negative-charged electrons create electric power

Cathode: Hydrogen ions, electrons and oxygen combine to form water

