Airbus's "blended-wing body" design concept hydrogen-fuelled aircraft for up to 200 passengers. Photo copyright Airbus 2020 all rights reserved.

FUELLING DEMAND

Aviation is turning to hydrogen as a sustainable source of fuel. How can this benefit platinum demand?

Leading aerospace business Airbus is hoping to bring the world's first zero-emission commercial aircraft to the skies by 2035. To bring this vision to reality, it is developing game-changing concept aircraft — known as ZEROe — powered by hydrogen, a sustainable fuel source with, Airbus believes, the potential to reduce aircraft emissions by up to 50 per cent.

Airbus is not alone in believing that hydrogen propulsion offers enormous promise as an alternative to hydrocarbon fuels in an industry that has committed to halving emissions by 2050, relative to 2005 levels. ZeroAvia, a developer of hydrogen powertrain solutions for aircraft, aims to decarbonise medium-range small passenger aircraft by replacing conventional engines in propeller aircraft with electric motors, hydrogen fuel cells and gas storage. It plans to be ready to supply to commercial operators and aircraft manufacturers by 2023, initially targeting the market for regional flights of up to 500-miles in 10 to 20 seat fixed-wing aircraft.

Both Airbus and ZeroAvia aircraft will benefit from on-board electrical systems powered by platinum fuel cells; in fact, only recently, ZeroAvia achieved a world first when it successfully completed the test flight of a six-passenger airplane powered solely by a hydrogen fuel cell.

In Denmark, Copenhagen Airports has formed a first-of-its-kind partnership with other transport operators, including Scandinavian Airlines, to develop an industrial-scale production facility to produce sustainable fuels for road, maritime and air transport in the Copenhagen area. The partnership brings together the demand and supply side of sustainable fuels, with a vision to develop a production facility capable of delivering 250,000 tonnes of sustainable fuel, including hydrogen, for aircraft, buses, trucks and maritime vessels by 2030.

In turning to hydrogen, the commercial aviation industry is taking its lead from the success of hydrogen fuel cells that use platinum catalysts as a key component in other transport modes,

Airbus's turboprop design concept for up to 100 passengers powered by hydrogen combustion in modified gas-turbine engines. Photo copyright Airbus 2020 all rights reserved.

for example in fleet vehicles such as trucks and buses. Hydrogen fuel cells offer an effective alternative powertrain for aircraft due to their energy density and quick refuelling times, plus they have a much higher cycle life before replacement is necessary. They are also quiet – an important consideration when developing aircraft.

Moving to the mainstream

Developments in aviation – and across other modes of transport - are accelerating the adoption of hydrogen as a mainstream, sustainable fuel source. Hand in glove with this transition is the development of refuelling infrastructure, which, as the Copenhagen Airports partnership demonstrates, acts as an enabler of hydrogen demand across other modalities, including fuel cell electric vehicles (FCEVs).

Platinum catalysts are central to hydrogen fuel cell technology, as they are used not only in fuel cells, but also in the generation of green hydrogen from renewable sources. Investors are increasingly recognising the upside potential for platinum demand growth which could come as the hydrogen economy expands, from both increased green hydrogen generation as well as the wider adoption of FCEVs, where platinum demand growth will be led by heavy duty FCEVs, with significant demand from passenger FCEVs in the long-term.

Contacts:
Brendan Clifford, Investor Development, bclifford@platinuminvestment.com
Trevor Raymond, Research, traymond@platinuminvestment.com
David Wilson, Research, dwilson@platinuminvestment.com
Vicki Barker, Investor Communications, vbarker@platinuminvestment.com