

Airbus to take up the hydrogen contrail characterisation challenge

- Airbus UpNext to perform hydrogen-powered flight with new flying testbed
- Record-holding Perlan 2 pilots to fly glider with hydrogen combustion engine
- Test campaign will study composition of hydrogen engine contrails

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Farnborough, 20 July 2022 – Airbus UpNext, a wholly-owned subsidiary of Airbus, has revealed a flight test programme to study the contrails produced by a hydrogen combustion engine as part the Company's ZEROe roadmap. The project, named "Blue Condor", will launch two modified Arcus gliders, one equipped with a hydrogen combustion engine and one equipped with a conventional kerosene-powered combustion engine, in order to compare contrails emitted at high altitudes.

"Contrail characterisation is of significant interest to Airbus. We know that hydrogen emits no carbon dioxide when burned, but we also know that with water vapour and heat being the most significant by-products, hydrogen combustion does produce contrails. Although these contrails differ significantly to those produced by conventional JetA/A1 combustion engines, understanding their composition will be key to support our decarbonisation journey," said Sandra Bour Schaeffer, CEO of Airbus UpNext. "In taking up this challenge we are making significant headway in our decarbonisation strategy and our ambition to bring the world's first zero-emission commercial aircraft into service by 2035."

The Blue Condor demonstrator will be supported by the Perlan Project team, which will be responsible for the modification of the Arcus gliders. They will also provide the high-altitude glider pilots, the same pilots who in 2018 set the world subsonic altitude record – 76,124 feet – in a pressurised glider for Airbus Perlan Mission II.

The German Research Centre DLR will collect and analyse data captured using their measurement instrumentation sensors on a chase aircraft, while Airbus will ensure the provision of the hydrogen system and equipment, including the combustion engine as well as the details of the flight test mission.

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To ensure 100% comparable data between the hydrogen and conventional engine, the test flights will be carried out back-to-back under the same meteorological conditions. Test flights are scheduled for late 2022 in North Dakota, USA, in collaboration with the University of North Dakota.

Airbus is also conducting various demonstration programmes – including ECLIF3 (Emission and Climate Impact of Alternative Fuels) and VOLCAN (“VOL avec Carburants Alternatifs Nouveaux”) – to better understand contrails produced by sustainable aviation fuels.

Airbus Perlan Mission II is also continuing, with plans in 2023 to soar to altitudes approaching the Perlan 2 glider’s 90,000-foot service ceiling, in order to conduct research of upper atmospheric weather. If successful, Airbus Perlan Mission II would set the all-time world altitude record for wingborne flight, and would do so in a zero-emission aircraft.

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Newsroom

Contacts for the media

Lois BENQUET

Airbus

+33 (0) 6 42 88 10 65

lois.benquet@airbus.com

James DARCY

Airbus Americas

+1 571 214 1722

james.darcy@airbus.com

Matthieu DUVELLEROY

Airbus UpNext

+33 (0) 6 29 43 15 64

matthieu.duvelleroy@airbus.com

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