THE D328 UPLIFT FLYING TESTBED BECOMES THE FIRST LARGE AIRCRAFT TO SUCCESSFULLY FLY WITH 100% SYNTHETIC ZERO AROMATICS FUELS

News / Manufacturer

Deutsche Aircraft has successfully operated the first-ever test flight using 100% synthetic zero aromatics fuel in both engines of the D328 UpLift flying testbed. This is the first time a CS-25 aircraft has operated solely on a fuel that is chemically identical to Power-to-Liquid fuel. The flight, which was conducted at Oberpfaffenhofen Airport on 9 October 2024, is the starting point of the CLIM0ART inflight emission measurement campaign, which will investigate the benefits of using 100% zero aromatics PtL to reduce climate impact. PtL can be produced using sustainable CO2, renewable energy and water in the future, offering the potential to reduce the CO2 balance by up to 95% as well as decreasing non-CO2 effects.

The current CLIM0ART measurement campaign with the D328 UpLift platform is funded by the German Federal Ministry for Economic Affairs and Climate Action through the LuFo-Klima Aviation Research Programme. The project is led by the German Aerospace Center (DLR) and Deutsche

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Aircraft, with Sasol as the contributing fuel partner. During this flight campaign, the D328 UpLift aircraft flies in formation with DLR's Falcon 20E research aircraft, which is equipped with probes to measure the emissions from zero aromatics synthetic fuel and to probe the properties of ice crystals in condensation trails. The campaign also marks the first time that the emissions of a CS-25 turboprop aircraft are measured in flight with fully synthetic fuels. The in-flight emission measurements were preceded by extensive emission measurements of the D328® turboprop aircraft on the ground, powered by the same zero-aromatics PtL-proxy fuel.

The synthetic fuel is supplied by Sasol, a leading South African chemical company, that has mastered the Fischer-Tropsch process on an industrial scale. While the currently used fuel is not yet produced from sustainable feedstock (hence being called “PtL-proxy”), Power-to-Liquid fuels, or e-kerosene, have the potential to facilitate aviation's transition to climate neutrality in the long term, as their production is not constrained by feedstock scarcity. In addition to reducing the CO2 footprint, the absence of aromatics can significantly reduce the warming effect of contrails and will improve the air quality at airports.

Nico Neumann, Chief Operations Officer at Deutsche Aircraft, commented: “The CLIM0ART project is another piece of the puzzle in our holistic approach to optimising the environmental impact of our aircraft, with the objective of implementing the latest climate science in our D328eco, which is currently under development. This achievement not only underscores the potential of synthetic fuels but also highlights the significance of the collaboration between industry and research institutions and the support from the German government in driving meaningful change and contributing to the global aviation value chain.”

Regina Pouzolz, Director Sustainable Flight at Deutsche Aircraft, said: “We want the D328eco to be compatible with zero aromatics PtL produced from renewable and sustainable resources, in addition to any other fuel choice of our customers around the world. I would like to thank the DLR and our fantastic team for their efforts and spirit of collaboration to make this flight happen.

Dr. Markus Fischer, DLR Executive Board Member for Aeronautics stated: “Sustainable fuels will play an important role in climate-friendly aviation in the future, especially electricity-based fuels for widespread production. I am therefore particularly pleased that our new D328 UpLift research aircraft is the first in the world to fly with such a synthetic aromatics-free fuel in its turboprop engines on its research campaign premiere. With our 'flying laboratory' Falcon 20E, we are contributing DLR's outstanding expertise in measuring emissions and the resulting contrails directly in flight.”

The D328 UpLift Flying Testbed will be pivotal in the application of new, climate-friendly systems, fuel and propulsion technologies. It is predicted that PtL production volumes will have to be increased in order to meet the mandate of the ReFuelEU Aviation regulation obliging airlines to uplift a minimum share of e-kerosene by 2030. The scientific findings of this campaign will inform policy and build momentum to support the required ramp-up of Power-to-Liquid fuels.

As the D328 Uplift continues to soar, Deutsche Aircraft remains committed to playing a pivotal role in innovation, setting an example for the aviation industry to achieve a future that is more sustainable and environmentally conscious.

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16 OCTOBER 2024

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