PRESS RELEASE

7 April 2022

Maiden flight of Clean Sky 2's scaled flight demonstrator

On 30 March 2022, the maiden flight of a scaled version of a single-aisle aircraft, known as the Scaled Flight Demonstrator (SFD), took place. Under the Clean Sky 2 Joint Undertaking, co-funded by the EU's Horizon 2020 programme and private industry, stakeholders will use the SFD to test and mature disruptive technologies that will enable significant reductions in energy consumption. The flight took place in Deelen (NL) and lasted 9 minutes, achieving a height of 400 metres (1,400 feet).

In order to achieve a climate-neutral air transport system by 2050, European research centres and industries have developed an SFD to supplement numerical simulations, wind tunnels, and other classical experimental testing means. The SFD will be particularly useful for aircraft dynamics and control law validation. The SFD has a wingspan of 4 metres, a take-off mass of 140 kg, and a cruise speed of 85 kts. Through wind tunnel tests and flight test campaigns, the SFD's flight mechanics characteristics are derived from and subsequently compared to those of a full-scale aircraft to holistically assess the approach.

This maiden flight corresponds to the start of Qualification Flight Testing. Following this first series of tests, the SFD will be transferred to Aeroporti di Puglia, Italy, for Mission Flight Testing later this year. During this second experimental campaign, specific manoeuvres will be completed to build the required database for the thorough scientific validation of the Scaled Flight Testing approach.

Following a review of industrial needs and available research capabilities, the Large Passenger Aircraft (LPA) Innovative Aircraft Demonstration Platform (IADP) has decided to complete a thorough validation of Scaled Flight Testing as a viable and competitive test mean to investigate aircraft dynamic behaviour. In a second phase, the SFD will be used to mature distributed electric propulsion.

The Scaled Flight Testing approach is validated by a consolidated team of 4 entities providing specific expertise. In addition to setting-up and coordinating the entire validation process, ONERA is investigating the scaling impact and will define the final transposition laws between the scaled vehicle and its full-scale reference. Royal NLR - Netherlands Aerospace Centre, identified as the SFD operator, is in charge of SFD design, manufacturing, integration, ground testing, and flight operations as well as the complete Flight Test Instrumentation. Concurrently, CIRA designed, manufactured, and tested the SFD's Guidance Navigation and Control system as well as the Remote Pilot Ground Station. CIRA is also in charge of mission flight testing taking place in Grottaglie (IT). Airbus provided the demonstration goals at the beginning of the project and supports the various phases of SFD development throughout the project.

Note for editors

For more information:

- https://clean-aviation.eu/clean-sky-2/key-demonstrators/novel-aircraft-scaled-flight-test-demonstration
- Watch the short video illustrating the SFD: https://www.youtube.com/watch?v=CnGQwYbpiQQ

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Download press materials (photos + video)

Clean Aviation Joint Undertaking

The Clean Aviation Joint Undertaking is the European Union's leading research and innovation programme for transforming aviation towards a sustainable and climate neutral future.
Pulling together the best talent and capabilities of the private and public sectors and developing cutting-edge technologies, and making these available for a transformational leap in aircraft performance in the 2030s, the new Clean Aviation Joint Undertaking will pave the way towards the EU's ambition of climate neutrality by 2050.
Operating at the centre of a broad and diverse eco-system of players across Europe ranging from the aeronautical community, pioneering SMEs, research establishments and academia, it acts as a hub for new ideas and bold innovations.
As a European public-private partnership, Clean Aviation pushes aeronautical science beyond the limits of imagination by creating new technologies that will significantly reduce aviation's impact on the planet, enabling future generations to enjoy the social and economic benefits of air travel far into the future.
Visit our website to find out more about Clean Aviation: www.clean-aviation.eu

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About ONERA, the French Aerospace Lab

ONERA is the French national laboratory for aeronautics and space R&T, staffed by 2000 people. Under the supervision of the French Ministry of Armed Forces, ONERA has an annual budget of 237 million euros, of which more than half comes from commercial contracts. As the French expert in aerospace technologies, ONERA prepares tomorrow's defenses, meets the aerospace challenges of the future, and contributes to the competitiveness of the European aerospace industry. ONERA masters all the disciplines and technologies in its aerospace fields. All major civil and military aerospace programs in France and Europe contain "DNA" from ONERA: Ariane, Airbus, Falcon, Rafale, missiles, helicopters, engines, radars, etc.

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About Royal NLR – Netherlands Aerospace Centre

Royal NLR operates as an objective and independent research centre, working with its partners towards a better world tomorrow. As part of that, NLR offers innovative solutions and technical expertise, creating a strong competitive position for the commercial sector.

NLR has been a centre of expertise for over a century now, with a deep-seated desire to keep innovating. It is an organisation that works to achieve sustainable, safe, efficient and effective aerospace operations. The combination of in-depth insights into customers' needs, multidisciplinary expertise and state-of-the-art research facilities makes rapid innovation possible. Both domestically and abroad, NLR plays a pivotal role between science, the commercial sector and governmental authorities, bridging the gap between fundamental research and practical applications. Additionally, Royal NLR is one of the large technological institutes (GTIs) that have been collaborating since 2010 in the Netherlands on applied research as part of the TO2 federation.

From its main offices in Amsterdam and Marknesse plus two satellite offices, NLR helps to create a safe and sustainable society. It works with partners on numerous programmes in defence and elsewhere, including work on complex composite structures for commercial aircraft and on goal-oriented use of the F-35 fighter. Additionally, NLR helps to achieve both Dutch and European goals and climate objectives in line with the Luchtvaartnota (Aviation Policy Document), the European Green Deal and Flightpath 2050, and by participating in programs such as Clean Aviation and SESAR.

www.nlr.org

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About CIRA - Italian Aerospace Research Centre

The Italian Aerospace Research Center (CIRA) is a public-private consortium company founded in 1984 whose shareholders include: ASI (Italian Space Agency) 47%; CNR (National Council for Research) 5%; Industrial Consortium of Caserta 16%; Italian Aerospace Industries 32%.
The Italian Government entrusted CIRA of the Italian Aerospace Research Program (PRORA) management, under the control of Ministry of University and Research (MUR), to carry out: enhancement of scientific competences and expertise; development and operation of strategic testing facilities; development of strategic research programs.
CIRA is a conceptual link between universities devoted to basic research and aerospace industries, and as such it is mainly involved in the development of enabling technologies.
CIRA participates in cooperative research programs in order to promote the exchange of information and to become involved in the current aerospace research challenges.

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About Airbus

Airbus is a global leader in aeronautics, space and related services. In 2019, it generated revenues of € 70 billion and employed a workforce of around 135,000. Airbus offers the most comprehensive range of passenger airliners. Airbus is also a European leader providing tanker, combat, transport and mission aircraft, as well as one of the world's leading space companies. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions worldwide.

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