EU Clean Sky research programme to be extended

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DLR supports European research into eco-efficient flight – EU Clean Sky research programme about to be extended

The German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) and 13 leading representatives of the European aviation industry and research sector have jointly agreed to intensify their cooperation in the field of eco-efficient aviation. Through the continuation of the EU 'Clean Sky' Technology Initiative, the partners aim to strengthen the transformation of aviation into an eco-efficient transport system. To this end, 3.6 billion Euro will be invested between 2014 and 2020 together with the EU. The Clean Sky 2 programme will deliver more research and development for making aviation in Europe more environmentally friendly and more efficient. DLR is playing a leading role in this endeavour.

"The continuation of Clean Sky is an important step on the path towards a sustainable aviation sector with lower emission levels, less noise and greater efficiency," stated Rolf Henke, DLR Executive Board Member for Aeronautics Research. "We are delighted to be contributing DLR's expertise in aviation research to the Clean Sky 2 programme and, in so doing, playing a key role in shaping the future of air travel."

75 percent reduction in carbon dioxide emissions by 2050

The European aviation vision 'Flightpath 2050' and the new Strategic Research and Innovation Agenda (SRIA) of the European forum for aviation research ACARE (Advisory Council for Aviation Research and Innovation in Europe) set ambitious objectives for this research programme. In 2050, aviation is expected to have achieved a 75 percent reduction in carbon dioxide emissions compared to the year 2000. There are also plans to reduce noise levels around airports by 65 percent.

DLR involved in three Clean Sky projects

At the present time, DLR is chairing the 'Technology Evaluator' at Clean Sky. Here, researchers are investigating the interaction between individual aviation
technologies with the help of a simulated network. It is only through the interaction of individual components such as wings, engines, fuselage and tail unit that the full impact of an aircraft on its environment can be understood. For example, how much fuel can be saved if a more efficient engine is considered together with a wing design that optimises airflow? Will the individual innovations have a positive effect on one another? As well as considering the aircraft as a whole – that is, as the sum of its parts – researchers are also looking into scenarios for airports of the future and into the development of global air traffic. In addition, DLR is involved in the three Clean Sky projects 'Smart Fixed Wing Aircraft', 'Green Rotorcraft' and 'Systems for Green Operations'.

In the 'Smart Fixed Wing Aircraft' project, the research partners are developing a new wing design, intended to have better aerodynamic flow properties. This concept will be tested on an Airbus A340. 'Green Rotorcraft' covers development work into quieter and more fuel-efficient helicopter components. One example of this is the new flow-optimised rotor blades. As part of the 'Systems for Green Operations' project, researchers are investigating quieter and more fuel-efficient flight paths and improved taxiways at airports. Scientists have also placed the purely electric operation of individual aircraft systems on their agenda.

Clean Sky 2 will be run under the auspices of the European Research Framework Programme 'Horizon 2020'. Anchoring it in the central research and development programme of the

European Union means there is a solid financial basis for the continuation of the technology initiative. Leading industry partners of DLR in Clean Sky 2 include Airbus, Eurocopter, Safran, Thales Rolls-Royce, MTU Aero Engines and Liebherr.

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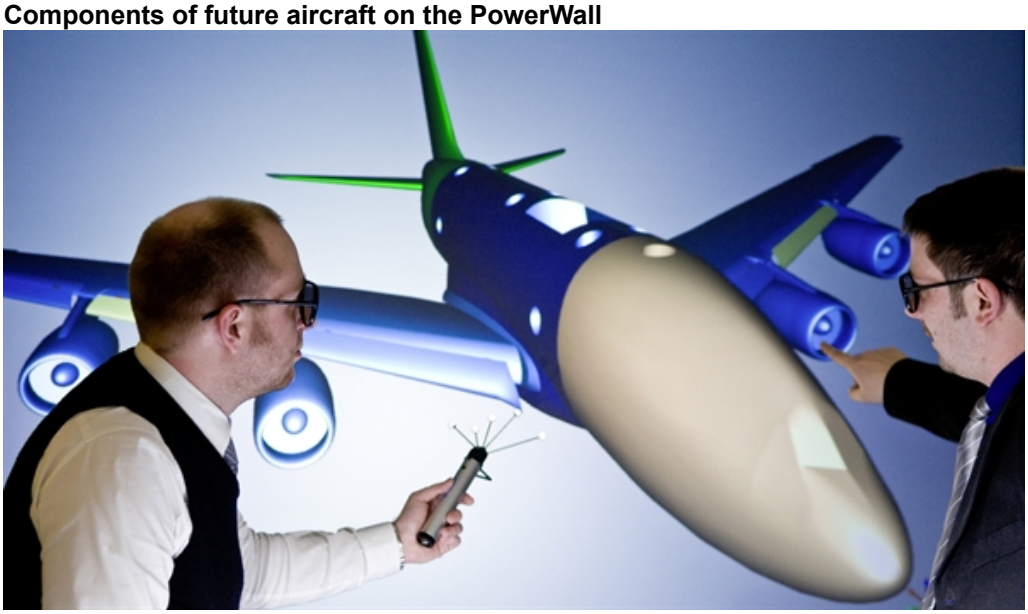
Components of future aircraft on the PowerWall



Components of future aircraft start to take shape virtually. The PowerWall display allows designers and researchers to see future systems and components in unprecedented detail, and from all directions. The Clean Sky 2 programme will deliver more research and development for making aviation in Europe more environmentally friendly and more efficient.

Credit: DLR (CC-BY 3.0).

Clean Sky 2: reducing emissions

In 2050, and according to the European aviation vision 'Flightpath', aviation is expected to have achieved a 75 percent reduction in carbon dioxide emissions compared to the year 2000. There are also plans to reduce noise levels around airports by 65 percent. The technology initiative Clean Sky 2 will be based on these goals.

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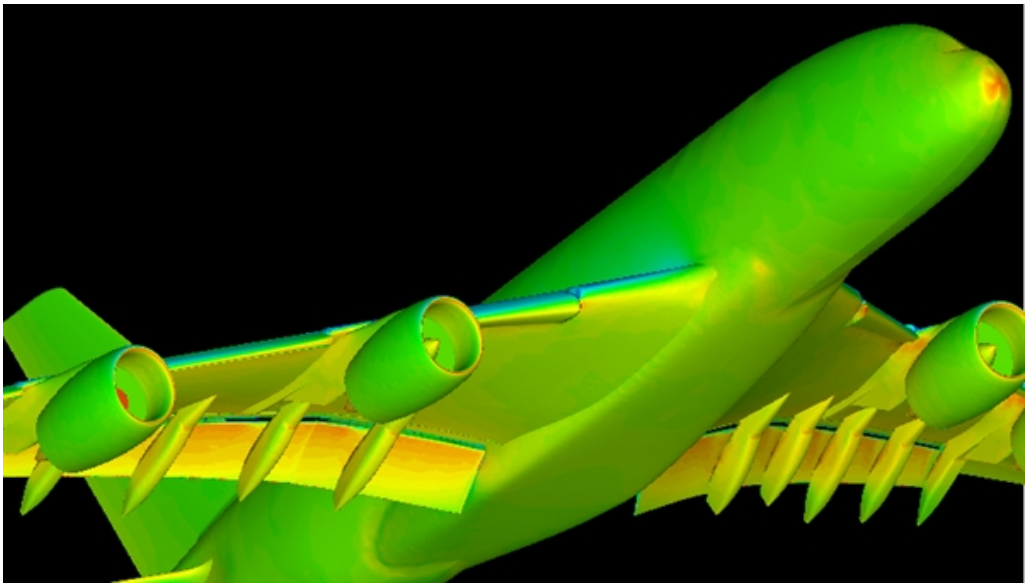
Numerical simulation



Numerical simulation: Simulated pressure distribution for an airliner in landing approach.

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