

PROJECT

RHEA

Robust- and sustainable-by-design ultra-high aspect ratio wing and Airframe

Funding: European (Horizon 2020)

Duration: Jul 2020 - Dec 2023

Status: Ongoing

Total project cost: €2,006,559

EU contribution: €2,006,559



[CORDIS RCN : 228800](#)

Objectives:

The efficiency gains offered by ultra-high aspect ratio wings are key to increase the sustainability of air travel as the volume of passengers continues to grow. However, a fully viable and deployable solution has not yet been proposed due to technological, certification and operational limits, which are mainly due to complex aeroelastic behaviour and constraints from both manufacturing methods and airport infrastructure.

This project is centred around the idea that future-generation aircraft with ultra-high-aspect-ratio wings is conceivable with forward-looking technologies and physics-based multidisciplinary analysis and optimization approaches. Critically, RHEA will introduce a paradigm shift towards robust design methods, inherently built with a quantitative management of uncertainties in both operating conditions as well as model predictive capabilities. The project will also introduce a number of carefully selected technologies into the aero-structural design process of novel aircraft configurations. Multidisciplinary designs optimization of representative aircraft will address short-range, medium range and long-range missions.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Other programmes: JTI-CS2-2019-CFP10-THT-07 Ultra-High Aspect ratio wings

Lead Organisation:

Technische Universitaet Braunschweig

Address:

Pockelsstrasse
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Organisation Website:

<http://www.tu-braunschweig.de>

EU Contribution: €742,625

Partner Organisations:

Stichting Duits-Nederlandse Windtunnels

Address:

VOORSTERWEG 31
8316 PR Marknesse
Netherlands

Organisation Website:

<http://www.dnw.aero>

EU Contribution: €417,875

Imperial College Of Science Technology And Medicine**Address:**

Exhibition Road, South Kensington
LONDON
SW7 2AZ
United Kingdom

Organisation Website:

<http://www.imperial.ac.uk>

EU Contribution: €300,930

Irt Antoine De Saint Exupery**Address:**

B 612 - CS 34436, 3 RUE TARFAYA
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EU Contribution: €199,329

University Of Strathclyde**Address:**

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United Kingdom

Organisation Website:

<http://www.strath.ac.uk>

EU Contribution: €345,800

Technologies:

Aircraft design and manufacturing
Aircraft design model

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other