

PROJECT

ULTIMATE

Ultra Low emission Technology Innovations for Mid-century Aircraft Turbine Engines

Funding: European (Horizon 2020)

Duration: Sep 2015 - Aug 2018

Status: Complete

Total project cost: €3,138,122

EU contribution: €3,138,122



Call for proposal: H2020-MG-2014_TwoStages

[CORDIS RCN : 193233](#)

Objectives:

With the ULTIMATE project five experienced research groups and four major European engine manufacturers will develop innovative propulsion systems to fulfil the SRIA 2050 key challenges. One of the most challenging targets is the 75% reduction in energy consumption and CO₂-emissions. Technologies currently at TRL 3-5, cannot achieve this aim. It is estimated that around a 30% reduction must come from radical innovations now being at lower TRL. Thus, European industry needs synergetic breakthrough technologies for every part of the air transport system, including the airframe, propulsion and power.

The ULTIMATE project singles out the major loss sources in a state of the art turbofan (combustor irreversibility, core exhaust heat, bypass exhaust kinetic energy). These are then used to categorize breakthrough technologies (e.g. piston topping, intercooling & exhaust heat exchangers, and advanced propulsor & integration concepts). This classification approach gives a structured way to combine and explore synergies between the technologies in the search for ultralow CO₂, NO_x and noise emissions. The most promising combinations of radical technologies will then be developed for a short range European and a long range intercontinental advanced tube and wing aircraft.

Through the EU projects VITAL, NEWAC, DREAM, LEMCOTEC, E-BREAK and ENOVAL, the ULTIMATE partners have gained the most comprehensive experience in Europe on conception and evaluation of advanced aero engine architectures. Existing tools, knowledge and models will be used to perform optimization and evaluation against the SRIA targets to mature the technologies to TRL 2. Road maps will be set up to outline the steps to develop the technologies into products and bring them onto the market. These road maps will also provide a way forward for future European propulsion and aviation research.

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)

Lead Organisation:

Chalmers Tekniska Hoegskola Ab

Address:

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41296 GOTHENBURG
Sweden

Organisation Website:

<http://www.chalmers.se>

EU Contribution: €650,000

Partner Organisations:

Safran Aircraft Engines

Address:

2 Bvd Du General Martial-Valin
75724 Paris
France

Organisation Website:

<http://www.safran-aircraft-engines.com>

EU Contribution: €99,844

Aristotelio Panepistimio Thessalonikis

Address:

KEDEA BUILDING, TRITIS SEPTENVRIOU, ARISTOTLE UNIV CAMPUS
54636 THESSALONIKI
Greece

Organisation Website:

<http://www.auth.gr>

EU Contribution: €380,000

Institut Superieur De L'aeronautique Et De L'espace

Address:

AVENUE EDOUARD BELIN 10
31055 TOULOUSE
France

Organisation Website:

<http://www.isae.fr>

EU Contribution: €400,000

Bauhaus Luftfahrt Ev

Address:

Boltzmannstraße
85748 Garching Near Munich
Germany

EU Contribution: €420,000

Arttic

Address:

58A rue du Dessous des Berges
75013 PARIS
France

Organisation Website:

<http://www.arttic.com>

EU Contribution: €187,578

Gkn Aerospace Sweden Ab

Address:

-
46181 Trollhaettan
Sweden

EU Contribution: €150,000

Cranfield Aerospace Limited

Address:

Cranfield University Campus Hangar 2
Cranfield
MK43 0AL
United Kingdom

Organisation Website:

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

EU Contribution: €550,700

Rolls Royce Plc

Address:

65 Buckingham gate
LONDON
SW1E 6AT
United Kingdom

Organisation Website:

<http://www.rolls-royce.com>

EU Contribution: €100,000

Mtu Aero Engines

Address:

Dachauer Strasse 665
80995 MUENCHEN
Germany

Organisation Website:

<http://www.mtu.de>

EU Contribution: €200,000

Technologies:

Aircraft propulsion
Optimum turbofan engine
design

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Environmental/Emissions aspects, Decarbonisation

Geo-spatial type: Other

