

PROJECT

DEMOS

Developing advanced Engine Multi-disciplinary Optimization Simulations (DEMOS)

Funding: European (Horizon 2020)

Duration: Jan 2016 - Dec 2019

Status: Complete

Total project cost: €410,450

EU contribution: €410,450



Call for proposal: H2020-CS2-CFP01-2014-01

[CORDIS RCN : 199447](#)

Objectives:

The “Innovative Aircraft Architecture” technology stream of the Clean Sky 2 Airframe ITD focuses on advanced power-plant solutions (such as CROR and UHBR) that are able to deliver a significant gain in aircraft performance.

Project DEMOS will develop advanced predictive modelling and simulation capabilities for engine design space exploration and performance optimization of such novel propulsion systems.

The overall and detailed objectives of Project DEMOS may be summed up as follows:

- Assess, adapt and further develop a set of reliable and robust models to simulate/optimize performance of UHBR propulsion system architectures
- Identify, build and integrate simulation models of specific (novel) components which may be considered as enablers of the technology
- Demonstrate and assess the effect and influence of these components on the propulsion system performance in terms of overall performance, increase in mass, effect on lifing characteristics of the propulsion system and on the operating/ maintenance cost
- Develop a modular approach to enable integration and further development of main modules/models for preliminary design process
- Facilitate complex integration requirements
- Improve process efficiency through the development of advanced solvers and adequate numerical methods to address complex system simulations
- Development of advanced simulation techniques to improve the monitoring of communication between integrated models, robustness and convergence
- Enable complex propulsion system performance optimisation with constraint handling capability
- Develop a suite of advanced solvers to enable extended transient capabilities and simulation of complex systems transients and control

The project will build on the established multi-disciplinary concept design tools and further develop and adapt them in terms of applicability to advanced technologies and multi-objective concept analysis and selection.

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:

Empresarios Agrupados Internacional Sa

Address:

Calle Magallanes 3
28015 Madrid
Spain

EU Contribution: €110,000

Partner Organisations:**National Technical University Of Athens****Address:**

Heroon Polytechniou 9 (polytechnic campus)
15780 ZOGRAFOS
Greece

Organisation Website:

<http://www.martrans.org>

EU Contribution: €139,663

Cranfield Aerospace Limited**Address:**

Cranfield University Campus Hangar 2
Cranfield
MK43 0AL
United Kingdom

Organisation Website:

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

EU Contribution: €160,788

Technologies:

Aircraft propulsion
Ultra-high bypass ratio jet engine

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Deployment planning/Financing/Market roll-out

Geo-spatial type: Other