

PROJECT

REDISH

CROR Engine Debris Impact SHielding. Design, manufacturing, simulation and Impact test preparation

Funding: European (Horizon 2020)

Duration: Jan 2016 - Jun 2018

Status: Complete

Total project cost: €499,950

EU contribution: €499,950



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

[CORDIS RCN : 199355](#)

Background & policy context:

New, eco-efficient aircrafts are challenged by a demand to significantly reduce the CO₂ and NO_x emission. To achieve these goals, the topic manager is exploring new configurations for integrating advanced engines and propulsion concepts to the aircraft. Most of such promising concepts as the CROR-engine, Boundary Ingestion Layer (BIL), Ultra High Bypass Ratio engines (UHBR), multiple fan cannot be targeted simply by replacing engines of the current generation, but require a substantial change of the principle aircraft configuration.

In case of un-ducted engine architecture as the CROR, the rearward shift of the engines away from the wing provides additional advantages in cabin noise and passenger comfort and safety improvement.

Regarding the safety, main issue is the CROR engine debris that can be release with high energy when there is a failure. It is mandatory to develop innovative solutions for panels and shielding able to shield and reduce damage at impact, to secure the airframe integrity, so that aircraft can make safe continuation of flight and landing after engine burst event.

Objectives:

The goal of REDISH is the development and maturation of innovative shielding able to sustain impacts from high and low energy debris caused by CROR engine burst. A coupled experimental-numerical development approach at two structural scales (laminate/panel and component) is proposed that starts from a large pool of possible configurations that will be down selected in successive analysis steps of increasing detail. Virtual testing by means of high-fidelity simulation tools developed by the consortium will be used to decrease the need for costly physical testing as much as possible and accelerate the shielding development process. The specimens to be manufactured and tested are the ones strictly necessary to validate the numerical simulations and assure the highest educated selection of the actual solution to be implemented for CROR Engine Debris Impact Shielding.

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:

Fundacion Imdea Materiales

Address:

Calle Eric Kandel 2 Parque Cientifico Y Tecnologico Tecnogetafe
28906 Getafe

Spain

EU Contribution: €281,850

Partner Organisations:

Fundacion Para La Investigacion, Desarrollo Y Aplicacion De Materiales Compuestos

Address:

Avda Rita Levi Montalcini (Tecnogetafe) 29
28906 Getafe
Spain

Organisation Website:

<http://www.fidamc.es>

EU Contribution: €218,100

Technologies:

Aircraft operations and safety
Debris sheilding

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Safety/Security

Geo-spatial type: Other