

PROJECT

SKOPA

Skin friction and fiber-optics-based surface pressure measurements for aircraft applications

Funding: European (Horizon 2020)

Duration: Oct 2018 - Mar 2021

Status: Complete

Total project cost: €709,581

EU contribution: €609,582



Call for proposal: H2020-CS2-CFP07-2017-02

[CORDIS RCN : 218247](#)

Objectives:

The objective of the present proposal is to perform in-flight, time-resolved measurements of skin friction and surface pressure near the wing-pylon interface of a transport aircraft approaching stall. This research is driven by the need to integrate Ultra High Bypass Ratio (UHBR) engines on the wings of transport aircrafts. Such UBHR engines, which have a higher propulsion efficiency than current models and thus contribute to a more ecologic and economic aircraft-engine platform, are associated with relatively large nacelles that increase the risk of flow separation on the wing/pylon interface. In order to mitigate this risk, active flow-control technologies are required. The development of these technologies requires, in turn, the accurate measurement of skin friction and surface pressure.

Methodology:

The approach proposed herein is:

1. to design and fabricate a complete, flight-ready, measurement system based on hot-film sensors for skin-friction measurements and fibre-optic sensors for pressure sensing,
2. to validate the system during preliminary wind-tunnel and low-speed flight experiments, and
3. to perform the actual flight measurements near the wing/pylon interface of a transport aircraft.

Within the Cleansky 2 JTI, the results obtained in this project will be used to demonstrate and quantify the effect of active flow-control in the region of the upper-surface wing near the wing-pylon interface.

The major impact of this project will be to contribute to the expected impact of the Clean Sky 2 Work Plan by permitting the experimental validation of local active flow-control near the wing-pylon interface of a transport aircraft. In addition, this project will enable further progress in innovative aerodynamic clean technologies for air transport and ultimately lower the environmental impact of commercial aviation while contributing to an increased European competitiveness in aeronautics.

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-CS2-2017-CfP07-LPA-01-39 Skin Friction measurements on a real aircraft and Fiber-optics based pressure measurements for aircraft applications

Lead Organisation:

Technische Universität Berlin

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Organisation Website:
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EU Contribution: €376,250

Partner Organisations:

Fos4X Gmbh

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EU Contribution: €233,332

Technologies:

Aircraft propulsion
Ultra-high bypass ratio jet engine

Development phase: Validation

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other