PROJECT

COMPACT

COMbined Passive and Active Flow Control Technology Wing

**Funding:** European (Horizon 2020)
**Duration:** May 2019 - Apr 2021
**Status:** Ongoing
**Total project cost:** €2,091,693
**EU contribution:** €1,744,927

**Call for proposal:** H2020-CS2-CFP08-2018-01
CORDIS RCN : 222570

**Objectives:**

The aim of this project is to design and manufacture a large Hybrid Laminar Flow Control (HLFC) half model, representative of a civil transport aircraft wing, for installation in the ONERA S1MA tunnel. The model will be capable of testing the effectiveness of laminar flow control devices at transonic speeds (M~0.85) and high Reynolds number (>10x10^6/m).

The model will incorporate systems for delaying transition in the leading-edge region over 2 spanwise sections. The outer section will address the HLFC requirements, using either active suction through the surface of the porous wing leading edge and or passive control. The active suction control methods will consist of a porous skin and the wing will incorporate pipework permitting suction to be applied through the porous surface using a suction source provided by the wind tunnel. The location of boundary layer transition at each section will be measured using the IR technique and the upper wing surface will therefore include an insulating material for the measurement of transition using IR thermography. As with all HLFC models, the surface finish will be very high quality with no steps or gaps. The suction system and instrumentation will be fully tested prior to delivery of the model. The inboard part of the wing will be equipped with both passive and active (wall suction) anti-contamination devices to investigate ways to control attachment line transition.

The model will be fitted with a range of instrumentation including pressure tapping's, unsteady pressure transducers, accelerometers, strain gauges and possibly hot films, all of which will be thoroughly tested during final assembly. Finally, on completion of the model assembly, the model deformation due to representative applied static loads will be measured.

**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-CS2-2018-CfP08-LPA-01-51 Design and manufacturing of a large-scale HLFC wing model for a transonic WTT

**Lead Organisation:**

Aircraft Research Association Limited

**Address:**
Manton Lane
Bedford
MK41 7PF
United Kingdom

**Organisation Website:**
<table>
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<tr>
<th>URL: <a href="http://www.ara.co.uk">http://www.ara.co.uk</a></th>
<th>EU Contribution: €935,809</th>
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**Partner Organisations:**

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<th>Organisation</th>
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<tbody>
<tr>
<td>Ibk-Innovation GmbH &amp; Co. Kg</td>
<td></td>
</tr>
<tr>
<td><strong>Address:</strong></td>
<td>BUTENDEICHSWEG 2 21129 HAMBURG Germany</td>
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<tr>
<td><strong>Organisation Website:</strong></td>
<td><a href="http://www.ibk-innovation.de">http://www.ibk-innovation.de</a></td>
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<tr>
<td>Meca-Ouest</td>
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<tr>
<td><strong>Address:</strong></td>
<td>15 RUE MARCEL LEBORDEGOIS ZONE INDUSTRIELLE NO.1 LA FREMONDIERE 61300 L'AIGLE France</td>
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**Technologies:**

- Computer-aided design and engineering
- Improvement of transition-prediction tools for future laminar flow aircraft

**Development phase:** Research/Invention

**STRIA Roadmaps:** Vehicle design and manufacturing, Infrastructure

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Other specified

**Geo-spatial type:** Other