

PROJECT

AMuLET

Advanced Control Unit for Morphing Leading Edge Management

Funding: European (Horizon 2020)

Duration: Mar 2018 - Feb 2021

Status: Complete

Total project cost: €623,150

EU contribution: €436,205



Call for proposal: H2020-CS2-CFP06-2017-01

[CORDIS RCN : 213804](#)

Background & policy context:

The morphing wing concept can be inserted between the major trends and improvements in modern aircrafts. Indeed, a wing that can change its shape is much more efficient, safer and silent than the actual design with moving surfaces.

The current project is inserted in the framework of the morphing leading edge high lift surfaces which can replace common slats, obtaining:

- Reduction of acoustic emissions
- Actuation Efficiency Improvement
- Overall Drag Reduction

Objectives:

A lot of effort has already been invested into the research of morphing but designing and manufacturing a functional morphing wing is still a challenge in present day. The AMuLET project addresses the problem of designing a control unit mainly capable of managing electric power to actuators, acquired stress data for leading edge current shape reconstruction and actuation of the electric motors responsible for the leading-edge deformation. Therefore, the Electronic Control Unit (ECU) shall be able to:

- Drive and Control LE Actuators:
 1. Control Multiple Actuators in speed, position and current
 2. Control multiple actuators brakes (if applicable to TM's EMAs)
 3. Control the current leading-edge shape
 4. Reconstruct the leading-edge shape by elaborating received set of data representing the strains from several measurement points of the leading edge
 5. Command the correct displacement of the actuators
- Manage the power supplied to the various actuators, and
- Monitor the health status of:
 1. Actuators' Motors
 2. Leading edge morphing structure
 3. ECU itself

The outcome of AMULET project is the development, the manufacturing and the test of the integrated control device for actuators and sub-units in a morphing structure. In fact, the ECU will be sized to fit in a ground-based demonstrator for wind tunnel tests and will be designed for reduced power consumption.

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-CFP06-AIR-02-41 Integrated electronics for actuator data and power management for Morphing Leading Edge activities

Lead Organisation:

Skylife Engineering SI

Address:

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Spain

EU Contribution: €236,688

Partner Organisations:

Italsystem S.r.l

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83100 AVELLINO
Italy

Organisation Website:

<http://www.italsystemsrl.it>

EU Contribution: €199,518

Technologies:

Aircraft design and manufacturing
Morphing wing

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other