

PROJECT

FLOWCAASH

FLOW Control Actuators at Aircraft scale manufacturing by SLM with high aerodynamic performance for using in Harsh environment

Funding: European (Horizon 2020)

Duration: Apr 2018 - Dec 2020

Status: Complete

Total project cost: €549,061

EU contribution: €549,061



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

[CORDIS RCN : 213592](#)

Objectives:

The main goal of FLOWCAASH project is to design and manufacture reliable and safe flow control actuators at aircraft scale by Selective Laser Melting (SLM) able to withstand the high temperatures (up to 260 °C) and pressures (5 bar) during flight test with aerodynamic performance and high resistance to harsh environments. FLOWCAASH project is focused on the development of innovative designs of Active Flow Control (AFC) actuators to be manufactured by powder bed based additive manufacturing (AM) using Ti6Al4V alloy. Selective Laser Melting (SLM), that utilizes a laser as a thermal energy source to melt the powder has been chosen as the preferred AM technology. The innovative designs of these AFC actuators will allow to be installed in restricted space in the next generation aircrafts with UHBR (Ultra High Bypass Ratio) engines.

Two different actuators will be considered, Pulsed Jet Actuator (PJA) and Steady Blowing Actuator (SBA). These actuators will have the potential to reduce aerodynamic flow separation and to increase lift coefficient. This will be obtained by bionic design which allows complex geometries and improve structural strength while reducing the weight. In order to assure process reliability of large Ti parts, distortion prediction numerical simulations will be accomplished. As-built part will be post-processed by means of heat and surface treatments in order to ensure dimensional stability and adequate surface quality for aerodynamic performance.

Afterwards the actuators will be validated by aerodynamic and harsh environment tests including rain, icing, sand and dust, vibrations and anti-icing fluid. The FLOWCAASH project will be developed by a well-balanced consortium that brings together 2 partners: the research centre LORTEK and the aerospace test laboratory CTA.

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-LPA-01-34 3D printing and harsh environment testing of flow control actuators at aircraft scale

Lead Organisation:

Lortek S Coop

Address:

Arranomendia Kalea 4 A
20240 Ordizia

Spain

EU Contribution: €348,811

Partner Organisations:

Fundacion Centro De Tecnologias Aeronauticas

Address:

Parque Tecnologico De Alava (Minano), C/ Juan De La Cierva 1
1510 Minano (Alava)
Spain

Organisation Website:

<http://www.ctaero.com>

EU Contribution: €200,250

Technologies:

Additive manufacturing
Selective Laser Melting
(SLM)

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