PROJECT

IAWAS

Innovative Aluminium filler Wires for Aircraft Structures

Funding: European (Horizon 2020)

Duration: Oct 2018 - Sep 2021

Status: Complete

Total project cost: €498,924

EU contribution: €498,924

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

CORDIS RCN : 218078

Objectives:

The project aims at:

1. developing new Al filler wires for WAAM and LBW of the new Al-Li alloys,
2. optimising the WAAM process and implementing suitable post-treatments,
3. characterising the microstructure, mechanical and corrosion properties of the optimised post-treated WAAM material,
4. manufacturing by WAAM two demonstrators of the targeted part and inspecting their quality.

New Al wire compositions will be defined after a literature review of the different processes involved and WAAM and LBW tests on existing extrudable Al alloys.

Methodology:

The new Al wires will be manufactured via casting and extrusion of bar-shaped semi-products that will be drawn. A parameter study will be performed for each of these processes. The new wires will be tested in the LBW and WAAM processes that will allow to select the most suitable new wire per process and to identify ways of improvement in their manufacturing route and composition. A 2nd loop of manufacturing and testing will be performed until achieving the best possible quality.

In parallel, the WAAM process will be developed, optimised and completed with post-treatments. The development will be performed with the existing Al alloys until the production of the new wires.

The optimised post-treated WAAM material issued from the final new wire will be characterised for analysing its microstructure and evaluating its mechanical and corrosion properties.

Two demonstrators of the targeted part will be manufactured using the final new wire and the optimum WAAM conditions. A structural and geometry analysis will be performed prior to their manufacturing. Their quality will be inspected, and a cost analysis will be done.

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-AIR-01-34 Development of innovative aluminium filler wire based manufacturing of aeronautic components and structures

Lead Organisation:

Societe Nationale De Construction Aerospatiale Sonaca Sa

Address:

Route Nationale Cinq
6041 Gosselies
Belgium

Organisation Website:
http://www.sonaca.com

EU Contribution: €143,165

Partner Organisations:

Universal Alloy Corporation Europesrl

Address:
SAT DUMBRAVITA, COMUNA DUMBRAVITA, NR. 244A
437145 BAJA MARE
Romania

EU Contribution: €113,625

Selectarc Welding

Address:
12 RUE JUVENAL VIELLARD
90600 GRANDVILLARS
France

EU Contribution: €71,631

Cranfield Aerospace Limited

Address:
Cranfield University Campus Hangar 2
Cranfield
MK43 0AL
United Kingdom

Organisation Website:
http://www.cranfield.ac.uk

EU Contribution: €170,503

Technologies:

Additive manufacturing
Additive Layer Manufacturing

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