SUSTAINability increase of lightweight, multifunctional and intelligent airframe and engine parts

Fact Sheet

Project Information

SUSTAINair

Grant agreement ID: 101006952

Start date
1 January 2021

End date
30 June 2024

Funded under
H2020-EU.3.4.

Overall budget
€ 4 998 747,50

EU contribution
€ 4 998 747,50

Coordinated by
LKR LEICHTMETALL KOMPETENZZENTRUM RANSHOFEN GMBH
Austria

Project description

Towards the next generation of airframe and engine parts

One of the EU's priorities is to advance the design, production and field operation of multifunctional and intelligent airframe and engine parts. New technologies emerging as a result of advances in European research and innovation can help meet this goal. However, key obstacles surrounding the entire aircraft component value chain will need to be overcome first. Tackling these challenges, the EU-funded SUSTAINair project aims to address each stage of the component value chain by developing and introducing novel concepts and techniques that will shape design, manufacturing,

maintenance, repair, overhaul and recycling processes for lightweight, multifunctional and intelligent airframe and engine parts.

Objective

Multiple challenges exist with respect to the development of multifunctional and intelligent airframe and engine parts. These are situated along the entire aircraft component value chain - design, manufacturing, MRO and recycling. SUSTAINair addresses each of these phases. With respect to design, new joining techniques for metal and composite designs are developed and demonstrated. For metal joining, these include a novel pin-pattern creation with Laser Powder Bed Fusion/Wire Arc Additive Manufacturing/Laser Direct Energy Deposition. For composites, these consist of thermoplastic welding. With respect to both design and manufacturing, a flexible wing with morphing capabilities is made industrially possible by introducing a novel concept using tailored elastomers, seamless integrated with conventional structural wing parts for lowest integration risk, providing a realistic industrial morphing technology. The problem of high production waste in the manufacture of composite materials, Ti AM and Al HPDC is addressed, thereby reducing waste streams, e.g.: For thermoset prepreg manufacturing waste and thermoplastic waste, new recycled materials are developed and characterized to allow re-use with recyclability up to 100%, bringing FTB ratio close to 1 (KET3-KPI); Increased BTF ratio of Ti powders by using it 6x (vs. 1x now) (KET4-KPI); Incredible BTF ratio <1.1 by advanced HPDC processing of thermal stable nano-eutectics (KET5-KPI). A Structural Health Monitoring system optimizing MRO activity is proven using radically new ZnO nanowires, which will be integrated into polymer as well as metal parts. Finally, SUSTAINair raises the bar with respect to aircraft EoL, introducing Industry 4.0 automated technology for robotic dismantling.

Fields of science

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Programme(s)

Topic(s)

Call for proposal

H2020-MG-2020-SingleStage-INEA

Funding Scheme

RIA - Research and Innovation action

Coordinator

LKR LEICHTMETALL KOMPETENZZENTRUM RANSHOFEN GMBH

Address
Lamprechtshausenerstrasse
5282 Ranshofen
Austria

Activity type
Research Organisations

EU contribution
€ 854 828,75

Website

Contact the organisation

Participants (10)

STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM

Netherlands

EU contribution
€ 530 000

Address
Anthony Fokkerweg 2
1059 CM Amsterdam

Activity type
Research Organisations

Website

Contact the organisation

DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV

Germany

EU contribution
€ 449 638,75

Address
Linder Hohe
51147 Koln

Activity type
Research Organisations

Website

Contact the organisation

JOANNEUM RESEARCH FORSCHUNGSGESELLSCHAFT MBH

JOANNEUM RESEARCH FORSCHUNGSGESELLSCHAFT MBH

Austria

EU contribution

€ 449 412,50

Address

Leonhardstrasse 59
8010 Graz

Activity type

Research Organisations

Website

Contact the organisation

UNIVERSITAT LINZ

Austria

EU contribution

€ 392 750

Address

Altenberger Strasse 69
4040 Linz

Activity type

Higher or Secondary Education Establishments

Website

Contact the organisation

TECHNISCHE UNIVERSITEIT DELFT

Netherlands

EU contribution

€ 450 000

Address

Stevinweg 1
2628 CN Delft

Activity type

Higher or Secondary Education Establishments

Website

Contact the organisation

AELS

Netherlands

EU contribution

€ 400 562,50

Address

Vliegveldstraat 100, H8 & H9
7524 PK Enschede

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Contact the organisation

INOCON TECHNOLOGIE GMBH

Austria

EU contribution

€ 297 055

Address

Wiener Strasse 3
4800 Attnang-puchheim

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Contact the organisation

INVENT INNOVATIVE VERBUNDWERKSTOFFEREALISATION UND VERMARKTUNG NEUERTECHNOLOGIEN GMBH

Germany

EU contribution

€ 403 750

Address

Christian Pommer Strasse 47
38112 Braunschweig

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website

Contact the organisation

DUTCH THERMOPLASTIC COMPONENTS BV

Netherlands

EU contribution

€ 353 250

Address

Bolderweg 2
1332AT Almere

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website

Contact the organisation

RTDS - VEREIN ZUR FORDERUNG DER KOMMUNIKATION UND VERMITTLUNG VON FORSCHUNG, TECHNOLOGIE UND INNOVATION (RTDS VEREIN, ENGL. RTDS ASSOCIATION)

Austria

EU contribution

€ 417 500

Address

Activity type

Lerchengasse 25/2-3
1080 Wien

Other

Contact the organisation

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