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SUSTAINair

SUSTAINablility increase of lightweight, multifunctional and intelligent **air**frame and engine parts

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LKR Leichtmetallkompetenzzentrum Ranshofen GmbH
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The project SUSTAINair has received funding from the European Union's H2020 research and innovation programme under Grant agreement ID: 101006952. This publication reflects only the author's view. The European Commission and the Innovation and Network Agency (INEA) are not responsible for any use that may be made of the information it contains.

Kurzdarstellung der Konsortialpartner von SUSTAINair

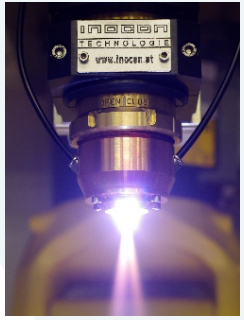
11 Partner

4 European countries

5 Austrian Partners

5 SMEs

No.	Participant organisation name	Type	Country
1	LKR Leichtmetallkompetenzzentrum Ranshofen GmbH (AIT-LKR)	RTO	AT
2	Netherlands aerospace centre (NLR)	RTO	NL
3	Deutsches Zentrum für Luft- und Raumfahrt (DLR)	RTO	DE
4	Joanneum Research (JR)	RTO	AT
5	Johannes Kepler University Linz (JKU)	HE	AT
6	Delft University of Technology (TUD)	HE	NL
7	AEROCIRCULAR (ACIR)	SME	BE
8	INOCON Technology GmbH (INOCON)	SME	AT
9	INVENT GmbH (INVENT)	SME	DE
10	Dutch Thermoplastic Components B.V. (DTC)	SME	NL
11	RTDS Association (RTDS)	SME	AT



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SUSTAINair Project information in CORDIS: https://cordis.europa.eu/project/id/101006952
SUSTAINair webpage: .....coming soon....

Ziel des Projekts SUSTAINair

Answering H2020 call MG-3-5-2020 - Next generation multifunctional and intelligent airframe and engine parts, with emphasis on manufacturing, maintenance and recycling https://cordis.europa.eu/programme/id/H2020_MG-3-5-2020 , requesting proposals to address three or more of the following areas:

1. *Innovative manufacturing technologies and processes for **flexible wing with morphing capabilities**, for control surfaces such as leading and trailing edge as well as winglets, which can adapt their shape in low-speed aircraft configurations.*
2. ***Innovative joining technologies and damage diagnostics for composites and dissimilar materials** in primary and secondary aircraft structures, with high potential to offer substantial benefits towards reduced weight, while allowing for faster and leaner integration and repair.*
3. *Advanced quality monitoring and on-line process control, applied to flexible automation of the manufacturing/maintenance/repair processes for increased rates.*
4. *Manufacturing processes for the production of composite, multifunctional and intelligent airframe parts, as well as high-temperature and complex-shaped engine parts, covering the whole production chain – cf. process planning, manufacturing and assembly, quality control – with a view to support activities such as supervision and multi-disciplinary optimisation (process-product-performance) of production, smart tooling and on-line quality control.*
5. *Multifunctional and intelligent engine parts covering variable geometries in engine structures for optimized performance over the whole cycle, embedded intelligence as well as integrated thermal and electric functionalities*
6. *Integrated technologies and methodologies towards **next generation health management and monitoring**, together with sensor development, wireless networks and data-driven fault detection.*
7. *New MRO and **recycling technologies for Multifunctional and Intelligent Airframe** and engine parts.*

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Multiple challenges exist with respect to the development of **multifunctional and intelligent** airframe and engine parts … along the entire aircraft component value chain - design, manufacturing, MRO and recycling.

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**.

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.

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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.: **thermoset** prepreg manufacturing waste and **thermoplastic waste**, new **recycled materials** are developed and characterized to allow

- Re-use with recyclability up to 100%, bringing BTF 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 HPDC processing of thermal stable nano-eutectics (KET5-KPI).

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**.

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SUSTAINair webpage: .....coming soon....

Zeitplan

SUSTAINair

Grant agreement ID: 101006952

Status
Ongoing project

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

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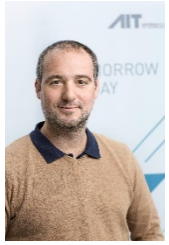
Kontakte

Coordinators:



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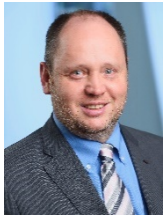

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