



CLEAN AVIATION

UP Wing

U-HARWARD

ONLINE WORKSHOP

May 24, 2023

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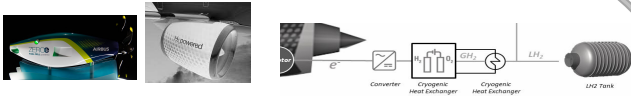


**Co-funded by
the European Union**

Clean Aviation: Overview of Projects in Call 1 and future topics

Phase 1: Jan. 2023 - June 2026

H2 Pillar



HER Pillar

up to 100 pax 1000+NM



SMR Pillar

~200+ pax 2000+NM



Proposals contracted in Call 1

Topic	Project	Brief Description	Project	Brief Description	Project
Direct Combustion of H2 in Aero-engines	HYDEA (*)	Multi-MW Hybrid-Electric Propulsion System for HER	HE-ART	Ultra Efficient Propulsion Systems for SR/SMR	HEAVEN(*)
	CAVENDISH (*)		AMBER		OFELIA(*)
Multi-MW Fuel Cell Propulsion System	NEWBORN (*)	Thermal Management Solutions for HER	TheMa4HERA(*)		Ultra Performance Wing for SR/SMR
Large Scale Lightweight LH2 Integral Storage	H2ELIOS (*)	Electrical Distribution Solutions for HER	HECATE	Adv. Integrated Fuselage and Empennage for SR/SMR	UP Wing(*)
Near Term Disruptive Techn. for H2 Powered AC	fLHYing tank	Innovative Wing Design for HER	HERWINGT		FASTER-H2(*)
	HyPoTraDe				
Brief Description		Project			
Aircraft concepts for HER/SR/SMR		SMR ACAP <Projects to be linked with ACAP are marked with (*)>			
Novel Certification Methods and Means of Compliance		HERA (*)			
		CONCERTO (*)			

Topics in Call 2

Proposals uploaded

Topics potentially in Call 3

Topics under discussion

Objective

The **Ultra Performance Wing** project will validate, down select, mature and demonstrate key technologies and provide the architectural integration of “ultra-performance wing” concepts for targeted ultra-efficient Short/Medium Range aircraft (SMR), i.e. 150-250 PAX and 1000-2000nm range.

The project directly addresses the Clean Aviation objectives: fuel burn reduction of minimum 30% aircraft level, compared to the state-of-the-art reference Aircraft A321neo.

UP Wing will consider **2 aircraft configurations**, covering both exploitation horizons outlined in Clean Aviation impact objectives: **a high aspect ratio SAF wing** with turbofan engine targeting 10-13% and a **dry high aspect ratio wing** with open rotor up to 17% energy efficiency increase on wing level.

UP Wing will develop the integrated high aspect ratio **SAF wing up to TRL4** until the end of this project and will provide concepts studies for several dry wing configurations.

The **interdisciplinary European consortium**, consisting of airframe integrators, industry, research establishments and academia will develop the related enabling technologies covering all relevant engineering disciplines.

Performance monitoring considering Impact Monitoring in close collaboration with the architecture project (ACAP) will be done. For all technologies, the project objectives are broken down to individual targets to be monitored. Ground, wind tunnel and virtual testing are foreseen. Thanks to multidisciplinary optimisation the overall wing design for Configuration 1 will ensure the proper integration of all technologies up to TRL4. These results will be picked up in a **second Clean Aviation phase achieving TRL6** until the end of the Clean Aviation programme.

These Clean Aviation objectives are well aligned to the development plans of future aircrafts entering into service in 2035 (SAF SMR & H2 Regional), with 75% market penetration until 2050. Academia involved will ensure proper scientific exploitations via lectures, conference contributions, journal proceedings whereas the industrial partners will mature specific technology bricks to TRL4 and higher.

Total cost: € 44 046 560

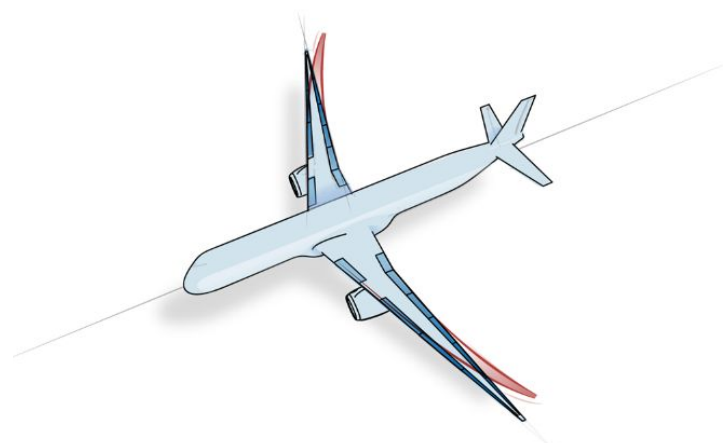
EU Contribution: € 38 005 938

Coordinated by: AIRBUS OPERATIONS GMBH Germany

Link to CORDIS: <https://cordis.europa.eu/project/id/101101974>

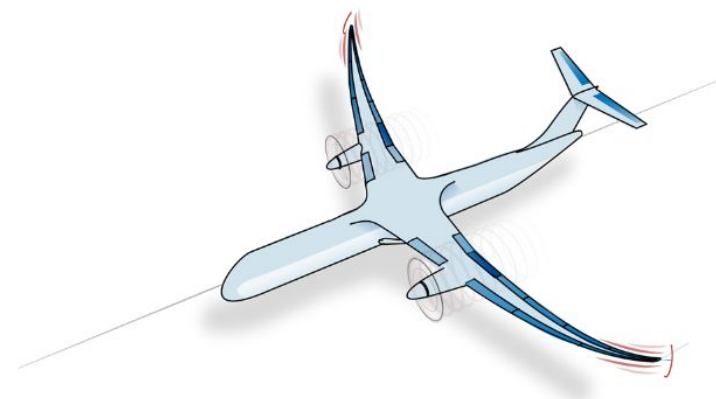
UP Wing Top Level Objectives

- UP Wing will **develop, validate, down-select, mature** and **demonstrate** key technologies and provide the architectural integration of “ultra-performance wing” **concepts** for the targeted ultra-efficient SMR, ie ~ 150-250 PAX and 500..2000nm range
- Two main challenges will be addressed covering most of the potential design space with the following targets:



Configuration 1:

- An A/C equipped with a novel ultra-high performance wing **using SAF**
- targeting an increased airframe efficiency of **10...13%** (in terms of drag at minimum weight) [equivalent weight]
- targeting **TRL4** by end of CA phase1 (Q2/2026)



Configuration 2:

- An aircraft equipped with a novel ultra-high performance wing exploiting **non-drop-in fuels** such as hydrogen (**dry wing**)
- targeting an increased airframe efficiency of up to **15...17%** in terms of drag at minimum weight [equivalent weight]

UP Wing Top Level Objectives

Multifunctional High Performance Wing Technology

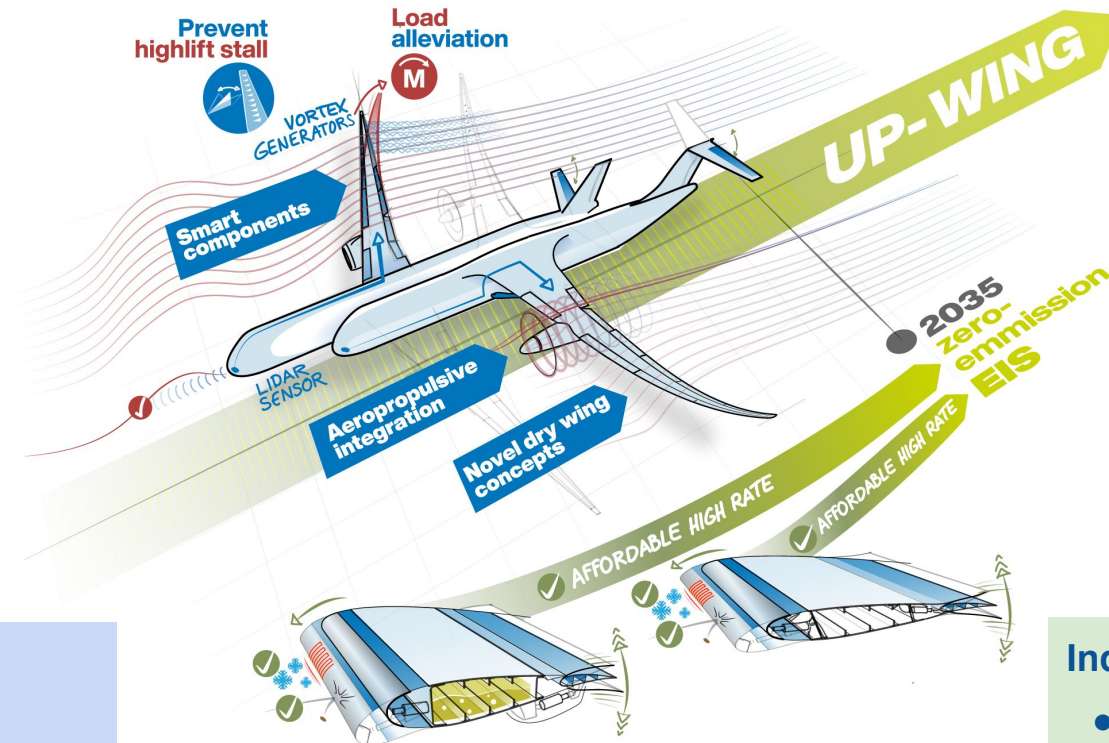
Key Brick: HAR multifunctional wing design

- Active Loads Control, incl. UV Lidar
- Outer wing stall protection

Transversal architecture & integration

- Virtual product and digital twin
- Simulation backbone & MDO/A processes

[Link to ACAP](#)



Disruptive Wing Technology

- Alternative wing concepts (dry wing)

Industrial Wing Technology

- Industrial Wing Box architecture
- Multifunctional movables, smart components and system design, incl. eWIPS

UP Wing consortium 29 partners (incl. affiliates)

Industrial partners

AIRBUS

AIRBUS
DEFENCE & SPACE

DASSAULT
AVIATION

AERnova



LIEBHERR



MEGGITT

SME



RTO

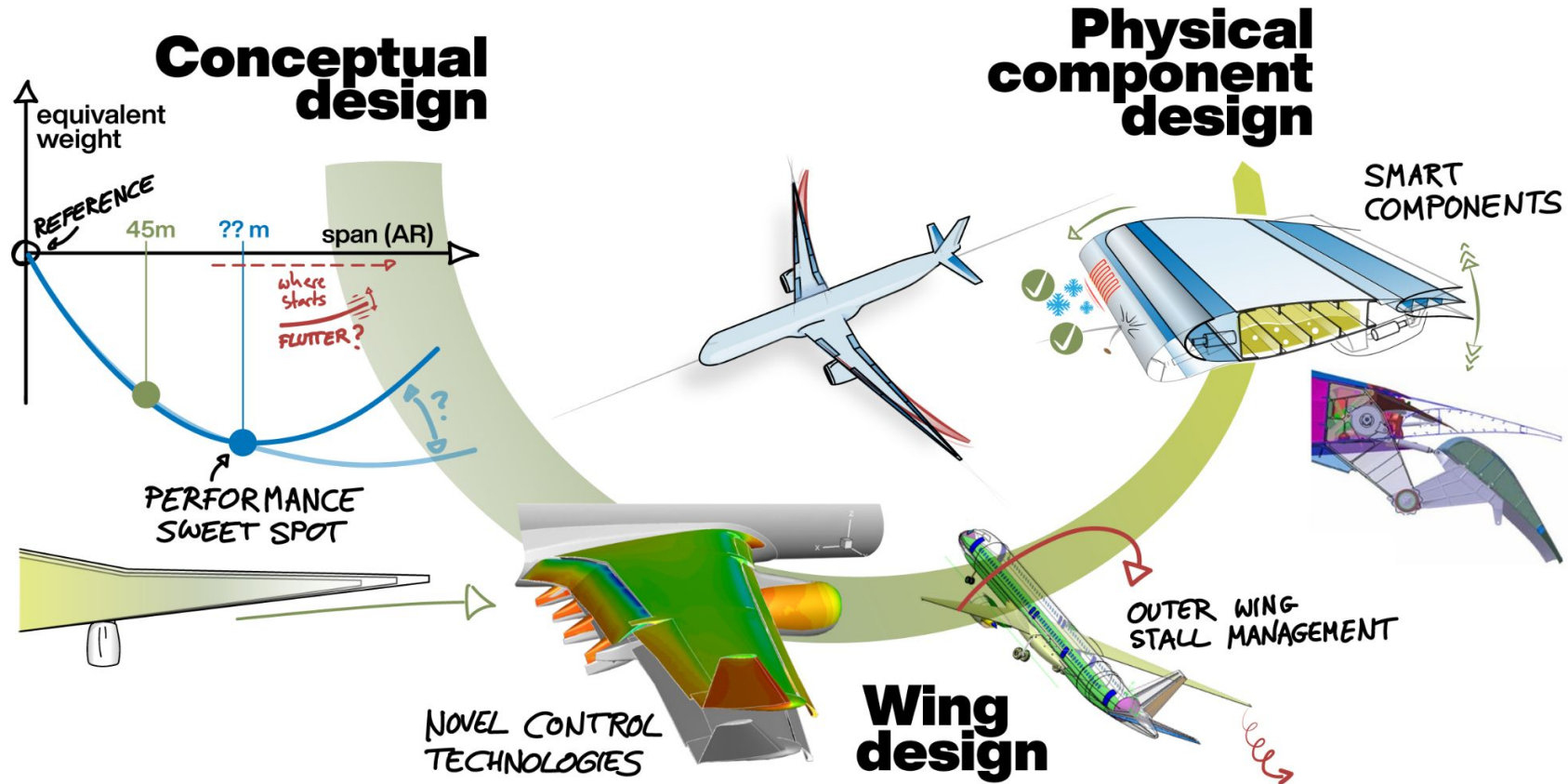


Fraunhofer



Universities





Thank you!

