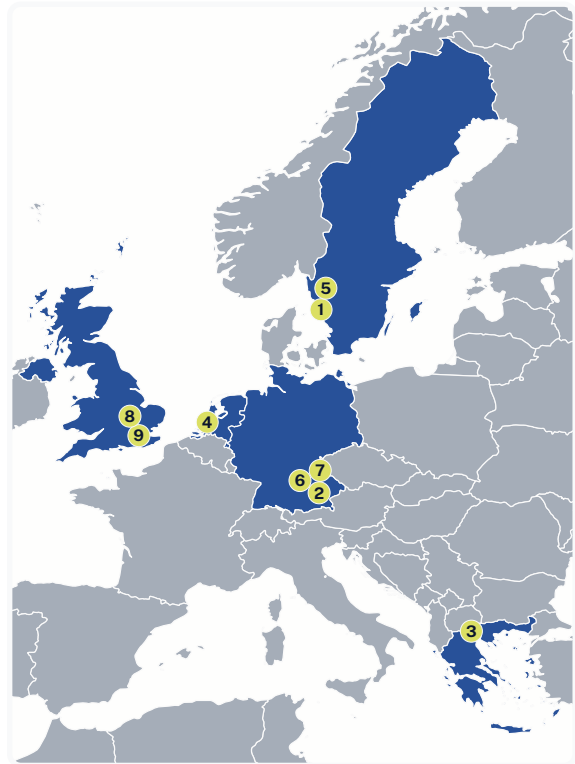


The Consortium

A team of 9 experts from academia & industry



1 Chalmers University



2 Bauhaus Luftfahrt



4 TU Delft



6 MTU Aeroengines



8 Cranfield University



3 Aristotle University of Thessaloniki



5 GKN Aerospace Sweden AB



7 PNO Innovation GmbH



9 Rolls-Royce



The MINIMAL project researches disruptive highly-efficient composite cycle engine technology to shorten the gap to year 2050 climate neutrality.

Coordinator

Prof. Carlos Xisto

Professor in Aerospace Propulsion
Dep. Mechanics and Maritime Sciences | Fluid Dynamics
Chalmers University of Technology
Hörsalsvägen 7A, M-Huset
SE-412 96 Gothenburg
Sweden

Project Office

PNO Innovation GmbH

Oskar-von-Miller-Ring 29
80333 Munich
Germany



Minimum enviroNmental IMpact ultra-efficient cores for Aircraft propuLsion

www.minimal-aviation.eu



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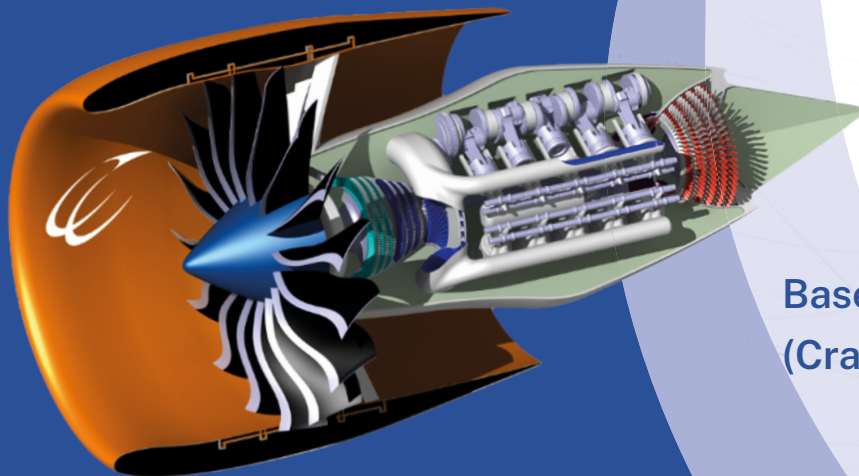
About the project

MINIMAL (Minimum enviroNmental IMpact ultra-efficient cores for Aircraft propuLsion) develops cleaner and more efficient aircraft engine technologies for the future of aviation.

The project explores new engine concepts powered by hydrogen and Sustainable Aviation Fuel (SAF) to help reduce aviation's impact on the climate.

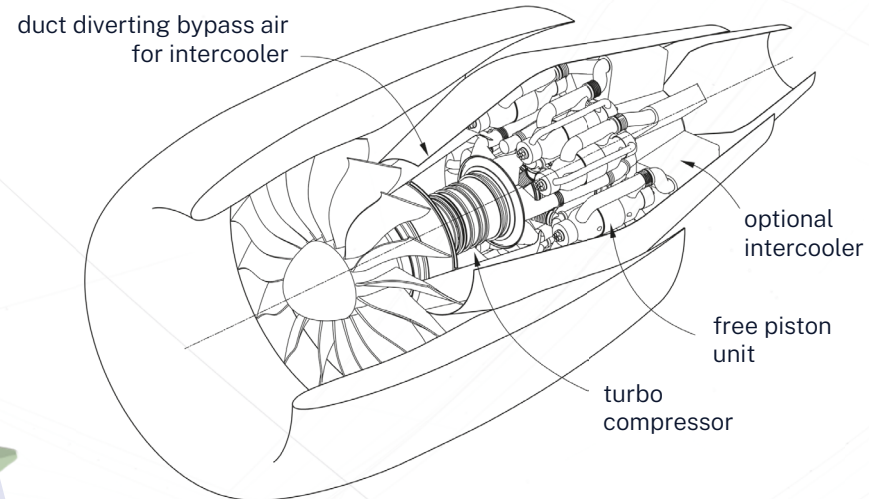
MINIMAL has already demonstrated promising technologies, including:

- » cleaner hydrogen combustion systems
- » smarter engine cooling solutions using hydrogen
- » advanced engine designs for lower emissions and better efficiency

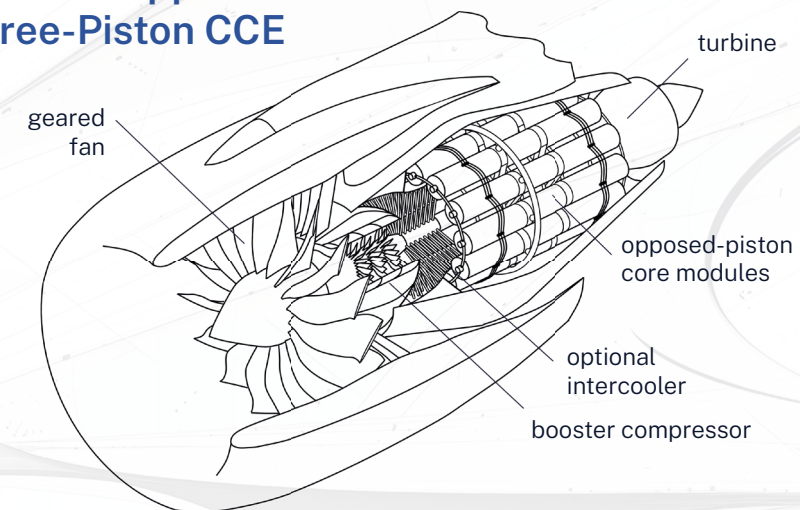


**Baseline CCE
(Crankshaft-Based)**

**Free
Double-Piston CCE**



**Opposed
Free-Piston CCE**



Results & Expected impact

- » lower fuel consumption
- » reduced harmful emissions
- » lower climate impact from aircraft contrails
- » supporting the transition towards climate-neutral aviation