

PROJECT

MAHEPA

Modular Approach to Hybrid Electric Propulsion Architecture

Funding: European (Horizon 2020)

Duration: May 2017 - Apr 2021

Status: Complete

Total project cost: €8,979,179

EU contribution: €8,979,179



[CORDIS RCN : 209717](#)

Objectives:

The overall objective of MAHEPA is to bridge the gap between the research and product stage of a low emission propulsion technology to meet the environmental goals for aviation towards the year 2050.

Two variants of a low emission, high efficiency, serial-hybrid-electric propulsion architecture will be advanced to TRL 6: the first uses a hydrocarbon fuelled internal combustion engine and an electric generator as primary power source, while in the second a hydrogen fuel cell is used to produce power showcasing the flexibility of the architecture. Common to both variants is the power control module, used to implement advanced power management methods to optimize mission, range and emissions of hybrid electric aircraft, and the new power electronic devices namely a highly efficient, airborne qualified electric propulsion motor and next-generation inverter technology. The modular approach is further demonstrated by integration and flight testing of each variant on a different small aircraft to showcase flexibility and scalability of the powertrain. A visionary implementation study towards commercial/transport category aircraft rounds up the project.

The core value of MAHEPA is to build-up technological know-how and use flight test data to validate performance, efficiency and emission reduction capabilities of above technologies. This will allow to make conclusions about the suitability of these solutions towards megawatt-scale hydrocarbon driven hybrids and zero-emission hydrogen-powered solutions. For small aircraft this propulsion system development can be the door opener for a commercialized, new, low emission, highly efficient airplane category.

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)

Lead Organisation:

Pipistrel Doo Podjetje Za Proizvodnjo Zravnih Plovil

Address:

GORISKA CESTA 50A
5270 AJDOVSCINA
Slovenia

Organisation Website:

<http://www.pipistrel.si>

EU Contribution: €3,286,250

Partner Organisations:

--

Compact Dynamics Gmbh**Address:**

MOOSSTRASSE 9
82319 STARNBERG
Germany

EU Contribution: €1,808,719

Universitaet Ulm**Address:**

HELMHOLTZSTRASSE 16
89081 ULM
Germany

Organisation Website:

<http://www.uni-ulm.de>

EU Contribution: €1,234,610

Deutsches Zentrum Fr Luft Und Raumfahrt E.v**Address:**

Linder Hoehe
51147 KOELN
Germany

Organisation Website:

<http://www.dlr.de>

EU Contribution: €1,409,603

H2Fly Gmbh**Address:**

AXTLESTRASSE 6
70599 STUTTGART
Germany

EU Contribution: €205,023

Univerza V Mariboru**Address:**

Slomskov Trg
2000 Maribor
Slovenia

Organisation Website:

<http://www.uni-mb.si>

EU Contribution: €477,475

Politecnico Di Milano**Address:**

Piazza Leonardo Da Vinci 32
20133 Milano
Italy

Organisation Website:

<http://www.polimi.it>

EU Contribution: €291,875

Technische Universiteit Delft**Address:**

.
2600 GA Delft
Netherlands

EU Contribution: €265,625

Technologies:

Aircraft propulsion
Aviation hybrid electric powertrain

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps: Transport electrification, Low-emission alternative energy for transport

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Geo-spatial type: Other