

# Investigation and Maturation of Technologies for Hybrid Electric Propulsion

# An ambitious technological program on hybrid electric propulsion for commercial aircraft:

A holistic approach to achieve a key step in assessing the potential of hybrid electric propulsion

An in-depth analysis of hybrid power train technology in close connection with propulsion system and aircraft architecture

The ultimate goal to elaborate a European roadmap for HEP development, in connection with stakeholders and other on-going projects

A powerful multidisciplinary consortium

# **Overall approach**

In a first step, a set of initial aircraft configurations will be developed based on missions' specifications and technology assumptions, covering different missions and disruption levels in aircraft design.

From there, technical specifications will be derived for the selection and investigation of the most suitable technologies





for the hybrid electric power train and its components.

Technological studies will provide refined components' characteristics and performance estimates, which will be synthesized through the aircraft performance analysis in sequential design loops involving increasing fidelity levels.

In the end, the assessment of the vehicles' performances, as well as the sensitivity analysis to design parameters, will allow identifying key enablers and measuring technology gaps that future research will have to bridge.

These will be complemented by an analysis of needs for tools, infrastructures and regulatory adaptations in order to elaborate the final roadmap.

#### 2 reference missions

Mission	Pax	Speed	Targeted range
Regional	50	[0.4 - 0.48]	600 nm
SMR	150 - 180	[0.6 - 0.8]	≥ 800 nm 1200 nm best option

#### **4** supporting configurations



## **Ultimate ambition**

IMOTHEP will issue a European roadmap for the development of hybrid electric propulsion. The ambition is to achieve 10% more emissions reductions than the most ambitious targets set in CleanSky 2 for the evolution of conventional technology in 2035.



Reference for emissions reduction: 2014 technology

### International consortium

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In a nutshell	More information		
H2020 project running from 2020 to 2024	contact@imothep-project.eu	Follow us also on:	
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2 international partners from Canada		<b>Zenodo</b> IMOTHEP Community	www.imothep-project.eu
10.4 M€ EC funding			



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