

International consortium



In a nutshell

H2020 project running from 2020 to 2024,
29 partners, 9 European countries,
2 international partners from Canada,
10.4 M€ EC funding

More information

contact@imothep-project.eu

Coordinator : Ph. Novelli, ONERA

Follow us also on:

H2020-IMOTHEP

Community IMOTHEP



www.imothep-project.eu

comète - www.comete.com -

IMOTHEP
GETTING ⚡ HYBRID ⚡ ELECTRIC

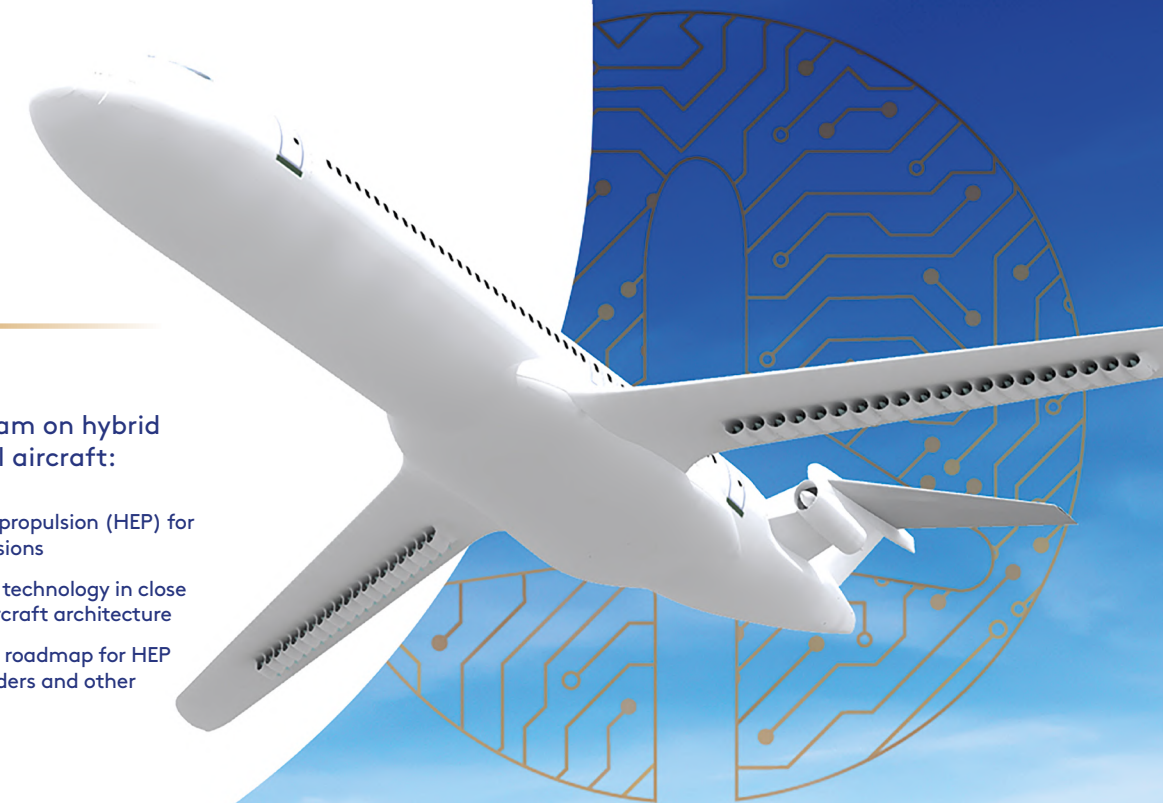
GETTING HYBRID ELECTRIC

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

- A holistic approach toward hybrid electric propulsion (HEP) for the reduction of commercial aircraft emissions
- 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



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875006



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875006

Overall approach

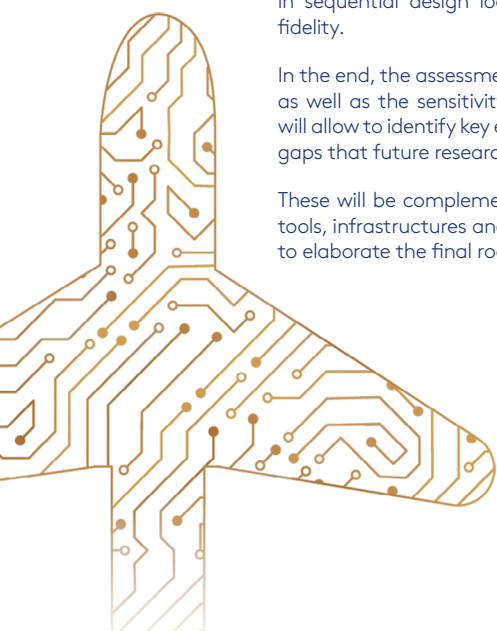
In a first step, a set of initial aircraft configurations will be developed based on missions' specifications and technology assumptions, covering different missions and level of disruption in aircraft design.

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 level of fidelity.

In the end, the assessment of the vehicles' performances, as well as the sensitivity analysis to design parameters, will allow to identify key enablers and measure 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.



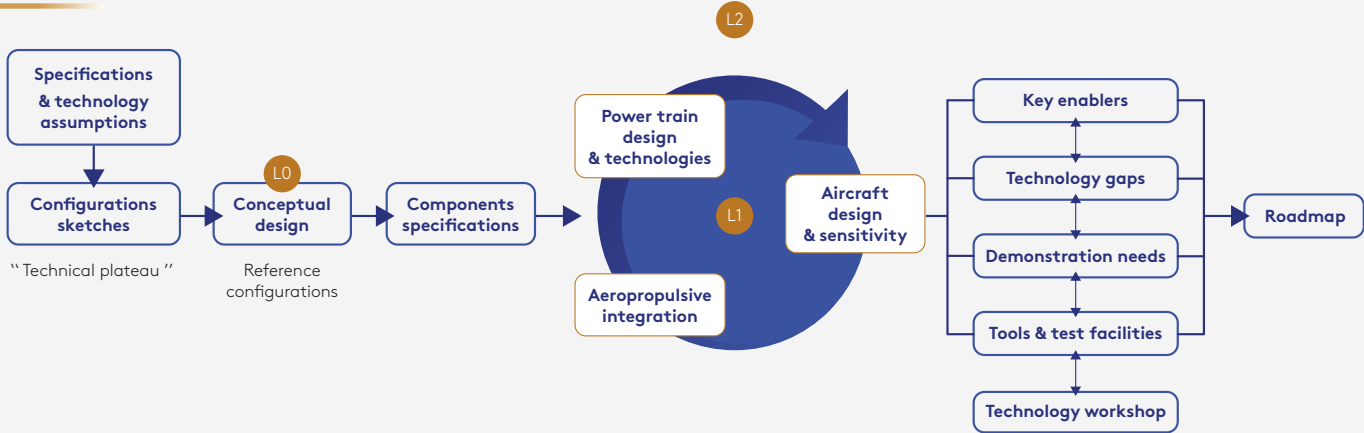
2 reference missions

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

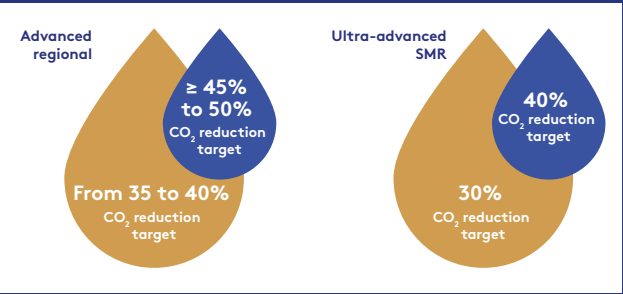
	Conservative	Radical
Regional	 Credits: Bauhaus-Luftfahrt Electrically assisted turboshaft	 Credits: Safran Turboelectric + DEP + wing-tip propeller
SMR	 Credits: ONERA Tube & wing, turboelec, DEP (from CS2)	 Credits: ONERA BWB, turboelectric, DEP, BLI

Methodology



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