Development and validation of hybrid propulsion system components and sub-systems for electrical aircraft

Fact Sheet

Project Information

HYPSTAIR
Grant agreement ID: 605305
Status
Closed project
Start date
1 September 2013
End date
31 August 2016

Funded under
FP7-TRANSPORT
Overall budget
€ 6 550 518,20
EU contribution
€ 4 368 499

Coordinated by
PIPISTREL DOO PODJETJE ZA PROIZVODNJO ZRACNIH PLOVIL
Slovenia

Objective

The HYPSTAIR project concerns the design of components of a serial hybrid propulsion system for small aircraft. A serial hybrid aircraft concept currently represents the best efficiency versus range compromise in the light aviation segment. It can be considered as an electrically powered aircraft, with an on board generator used for extending the range when necessary. Limitations of current electric energy storage technology make an electric-only propulsion system as yet unsuitable for long range flying, therefore an on board ICE generator provides a weight efficient, if somewhat less energy efficient, power generation solution.

The project will involve conceptual design of the hybrid propulsion system components, namely the generator, motor, inverter, batteries and control unit. The components will be sized and designed by considering the performance and energy
components will be sized and designed by considering the performance and energy efficiency of the complete airframe-propulsion system, and will be tested in a laboratory environment. A dedicated human-machine interface will be designed that will allow simple operation of a complex hybrid system. Together with the reliability of electrical motors and the use of dual energy sources, safety of flying as provided by a system built upon these components will be improved.

All components will be designed in a way that they will meet the relevant safety and certification standards. As there currently exist no regulations for aviation hybrid drive systems, defining these in collaboration with the authorities will be an important contribution of the project, paving the way for hybrid and electric technologies to be introduced to the market. These efforts will help create a competitive supply chain for hybrid drive components and reduce the time to market of such innovations.

Field of science

/social sciences/economics and business/business and management/commerce
/engineering and technology/environmental engineering/energy and fuels/electric energy
/engineering and technology/environmental engineering/waste management/energy efficiency
/engineering and technology/mechanical engineering/vehicle engineering/aerospace engineering/aircraft

Programme(s)

Topic(s)

Call for proposal

FP7-AAT-2013-RTD-1

Funding Scheme

CP-FP - Small or medium-scale focused research project

Coordinator

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Activity type

Private for-profit entities
(excluding Higher or Secondary Education Establishments)

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