

PROJECT

ESTEEM

Advanced Energy Storage and Regeneration System for Enhanced Energy Management

Funding: European (Horizon 2020)

Duration: Jul 2017 - Dec 2021

Status: Ongoing

Total project cost: €826,433

EU contribution: €826,432



Call for proposal: H2020-CS2-CFP04-2016-02

[CORDIS RCN : 210618](#)

Objectives:

ESTEEM Consortium will bring together their world-leading expertise in aircraft Electrical Power Systems (EPS), Power Electronics (PE), advanced control systems, modelling and simulation for aerospace applications, Energy Storage System (ESS) and smart and Enhanced Electrical Energy Management (E2-EM) strategies to design, develop and manufacture an innovative Energy Storage and Regenerative System ESRS with embedded supercapacitors Energy Storage Device (ESD) for smart energy management of a regenerative Electro-Mechanical Actuator (EMA) emulator. The developed system components; ESD and EMA emulator will be connected together by a Secondary Electrical Distribution Centre (SEPDC) to constitute the ESRS. Then, the ESRS will be interfaced with the "Iron Bird" to demonstrate the concept of advanced Electrical Power Distribution System (EPDS) with E2-EM functionalities. The aim is to demonstrate the E2-EM functionalities for future aircraft EPDS and contributing towards the achievement of more efficient, greener aviation. The developed demonstrator will be efficient, reliable, compact and lighter and smarter.

The key system component will be a newly designed DC/DC converter for interfacing the supercapacitors ESD with the SEPDC, which will be under control of supervisor to implement E2-EM functionalities and energy-management algorithm. Intelligent and adaptive converter control algorithm will be developed to provide high dynamic performance essential for fast control of peak power under situations of grid parameters variation. The converter control will consider the implementation of state of health and monitoring algorithms for the supercapacitors ESD.

The ESTEEM innovations will reach the market through integration within the Regional IADP in Clean Sky 2. The project partners will collaborate with the Topic Manager on a regular basis to ensure that the innovative ESRS demonstrator technology can be seamlessly integrated firstly into the "iron-bird" for ground-based

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:

The University Of Nottingham

Address:

University Park
Nottingham
NG7 2RD
United Kingdom

EU Contribution: €513,687

Partner Organisations:

Aeromechs SRL

Address:

VIA PARENTE 10
81031 AVERSA CE
Italy

EU Contribution: €176,620

Universita Degli Studi Della Campania Luigi Vanvitelli

Address:

Via Po 18/a
10222 Busca
Italy

EU Contribution: €136,125

Technologies:

Electric vehicle batteries (and energy management)
Energy Storage and Regenerative System (ESRS)

Development phase: Research/Invention

Transport

STRIA Roadmaps: electrification

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other