PROJECT

EMA4FLIGHT

Development of Electromechanical Actuators and Electronic control Units for Flight Control Systems

Funding: European (Horizon 2020)

Duration: Feb 2017 - Sep 2021

Status: Complete

Total project cost: €1,856,869

EU contribution: €1,698,126

Call for proposal: H2020-CS2-CFP03-2016-01

CORDIS RCN : 208051

Background & policy context:

Nowadays, there is a trend towards the More-Electric Aircraft (MEA) concept. MEA would replace the secondary aircraft power systems (electric, hydraulic and pneumatic) with a globally optimized electrical system. However, the architecture of the electric system must be carefully selected to optimize the whole aircraft. Actual research in MEA technology is focused on new advances in power electronics, fault-tolerant electric machines, digital control, electro-mechanical actuators and communications. Modern technologies involved in MEA are being taken in two different paths: i) elimination of bleed-air systems and hydraulic engines with further improvements in electrical power generation capability. It requires changes in both electrical generation and distribution network, and ii) replacement of hydraulics actuators with electro-mechanical actuators with the same level of safety and reliability, reducing weight, fuel usage, maintenance and production costs.

Several studies have been recently carried out emphasizing the interest on the replacement of the traditional electro-hydrostatic actuators used in flight control surfaces by electro-mechanical actuators (EMAs). The reasons for such a choice are: weight and maintenance reduction, elimination of pipes vibration problems, increase of reliability, increase of the system performance and pressure losses thanks to the absence of valves.

Objectives:

The EMA4FLIGHT project will design, manufacture and tune innovative electro-mechanical actuator sub-systems for aileron/spoiler and winglet/flap-tab flight control surfaces, with clearance for flight. The designed sub-systems will be improved by electric motor and ballscrew innovative architecture, advanced control strategies and smart safety, diagnostic and maintenance functions.

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:

Fundacion Tecnalia Research & Innovation

Address:
PARQUE CIENTIFICO Y TECNOLOGICO DE GIPUZKOA PASEO MIKELETEGI 2
20009 DONOSTIA/SAN SEBASTIAN (GIPUZKOA)
Spain

Organisation Website:

http://www.tecnalia.com

EU Contribution: €397,150

Partner Organisations:

Umbragroup Spa

Address:
Localita Paciana Zona Industriale
6039 Foligno Perugia
Italy

EU Contribution: €450,000

Ramem Sa

Address:
CALLE SAMBARA 33
28033 MADRID
Spain

Organisation Website:
http://www.ramem.com

EU Contribution: €299,163

Skylife Engineering Sl

Address:
CALLE EARLY OVINGTON 24 15-16
41309 LA RINCONADA SEVILLA
Spain

EU Contribution: €282,119

Gmv Aerospace And Defence S.a.

Address:
Isaac Newton - P.T.M. 11
28760 Tres Cantos - Madrid
Spain

Organisation Website:
http://www.gmv.es/

EU Contribution: €269,695

Technologies:

Aircraft design and manufacturing
Electro-Mechanical Actuators (EMAs)

Development phase: Research/Invention

STRIA Roadmaps: Transport electrification, Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other