



ESPESA: Electromechanical Systems and Power Electronics for Sustainable Applications

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Partners:

UTCN	Technical University of Cluj-Napoca, Romania
TUE	Technical University of Eindhoven, Netherlands
ENSAM	Ecole Nationale Supérieure d'Arts et Métiers, France
RWTH-IEM	RWTH Aachen, Institute of Electrical Machines, Germany
DLR	DLR, Institute of Vehicle Concepts, Germany
SISW	Siemens Industry Software NV Leuven, Belgium
UTBM/FCLAB	University of Technology of Belfort-Montbéliard, France

Abstract

The objective of EU H2020 ESPESA project is to strengthen the research activity and to implement a Technology Transfer & Innovation Management (TTIM) strategy at Centre for Applied Research in Electrical Engineering and Sustainable Development (CAREESD), by improving/enhancing the expertise, competences and skills of its researchers and support staff and by promoting the research collaboration among different partners of project's consortium.

The scientific scope of the ESPESA project is focused on two vital areas for building up a sustainable future of our planet: energy and transport. More specifically, the project has four defined topics, which are closely related to each other:

- 1) High speed electric drives (design and analysis of electric machines and power converters);
- 2) Optimized energy management on EV/HEV/FCV (fuel cell diagnosis and hybrid vehicle powertrain analysis);
- 3) Next generation technologies for renewable electricity (distributed renewable energy sources and associated control strategies for grid integration);
- 4) Fault-tolerant electromechanical systems (reliable design and analysis of re-configurable electromechanical systems).

UTBM/FCLAB, as one of the leading EU research institutions on fuel cell technology and real-time simulation systems, will involve their knowledge and expertise in the project for the following research areas: embedded energy sources (fuel cells and batteries), energy management in EVs and FCVs, development of control strategies to optimize the operation of fuel cell hybrid powertrain, design of power converters (DC/DC, DC/AC converters) and their fault tolerance capability, development of SiL and HiL test bench for FCV powertrain test and integration.

The project is expected to organize exchange forums, joint research projects, scientific workshops, international conference panels and short-term visits for researchers from different institutions.