

PROJECT

ModulED

Modular Electric Drivetrains

Funding: European (Horizon 2020)

Duration: Oct 2017 - Sep 2020

Status: Complete

Total project cost: €7,022,868

EU contribution: €7,022,868



[CORDIS RCN : 211694](#)

Background & policy context:

Electrification of passenger cars and light-duty vehicles will have a knock-on effect on reducing the greenhouse gases emission from the transportation sector, as it is still the biggest emitter due to fossil fuel based engines. However, the maturity of electrical drives and electrical engines needs a final push for better performance, better comfort and cost reduction in order to generate a massive adoption of such transport in Europe and worldwide, replacing conventional cars.

Objectives:

ModulED aims at developing a new generation of modular electric engine based on buried-permanent magnet motor with reduced rare earth use, and electric drivetrain for various configurations of Full and Hybrid Electric Vehicles (including cost, environmental impact, efficiency, and mass manufacturing ready). The multiphase e-motor will integrate the latest GaN inverter for power electronics, advanced control with higher fault tolerance, advanced cooling features, with reduced sizing and higher efficiency. It will be linked with a performant electrical drive and transmission, adapting new regenerative braking strategies. The project takes into account industrial, user requirements and environmental impacts through life cycle analysis, to gear the activities towards a full vehicle approach design and realization of each component and whole powertrain. Also, new virtual models will be developed for reliable design and simulation of every component features. Demonstration on BMW i3 or similar vehicle will be performed at the end, validating the high-performance powertrain. The project gathers 9 partners as cutting-edge from automotive, power electronics, powertrain specialists with 3 research centres, 3 Tier-1 suppliers and SMEs.

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:

Commissariat A L Energie Atomique Et Aux Energies Alternatives

Address:

RUE LEBLANC 25
75015 PARIS 15
France

Organisation Website:

<http://www.cea.fr>

EU Contribution: €1,511,875

Partner Organisations:

Rheinisch-Westfaelische Technische Hochschule Aachen**Address:**

Templergraben
52062 Aachen
Germany

Organisation Website:

<http://www.rwth-aachen.de>

EU Contribution: €563,625

Zg Zahnrad Und Getriebe Gmbh**Address:**

GEORG KOLLMANNBERGER STRASSE 3
85386 ECHING-DIETERSHEIM
Germany

EU Contribution: €309,063

Efficient Innovation Sas**Address:**

Avenue Clement Ader 55
34170 Castelnau-Le-Lez
France

Organisation Website:

<http://www.efficient-innovation.fr>

EU Contribution: €236,250

Siemens Industry Software Sas**Address:**

Avenue Morane Saulnier 13 Espace Velizy Immeuble Le Chavez
92320 Chatillon
France

Organisation Website:

<http://www.ugsplm.com>

EU Contribution: €395,000

Punch Powertrain Nv**Address:**

Industriezone Schurhovenveld 4125
3800 Sint-Truiden
Belgium

Organisation Website:

<http://www.punchpowertrain.com>

EU Contribution: €1,474,000

Brusa Elektronik Ag**Address:**

Neudorf 14
9466 Sennwald
Switzerland

EU Contribution: €1,284,364

Technische Universiteit Eindhoven

Address:

Den Dolech
5612 AZ Eindhoven
Netherlands

Organisation Website:

<http://www.industrialdesign.tue.nl>

EU Contribution: €650,170

Chalmers Tekniska Hoegskola Ab

Address:

-
41296 GOTHENBURG
Sweden

Organisation Website:

<http://www.chalmers.se>

EU Contribution: €598,521

Technologies:

Electric road vehicles
Electric drivetrain for full and hybrid EVs

Development phase: Research/Invention

Electric road vehicles
Electric motor with reduced rare earth materials use

Development phase: Research/Invention

Transport

STRIA Roadmaps: electrification

Transport mode: Road transport

Transport sectors: Passenger transport

Geo-spatial type: Other