PROJECT

UPGRADE

High efficient Particulate free Gasoline Engines

Funding: European (Horizon 2020)

Duration: Oct 2016 - Sep 2019

Status: Complete

Total project cost: €9,563,223

EU contribution: €9,563,222

Call for proposal: H2020-GV-2016-INEA

CORDIS RCN : 205607

Objectives:

The UPGRADE project aims to support the transition to a high efficient, cleaner and affordable powertrain technology systems, based on Spark Ignited GDI (Gasoline Direct Injection) approach, suitable for future Light Duty applications. The project also includes a deep analysis of the phenomenon of the formation of the nanoparticles in relationship to the engine design and its operating conditions and, with regard to the after-treatment solutions, the study and development of new Gasoline Particulate Filter (GPF) technologies.

To increase the engine efficiency under Real Driving conditions, the following steps will be carried out:

- address stoichiometric combustion approach on the “small” size engine and lean-burn combustion approach on the “medium” size one
- study and develop the best combinations of technologies, including advanced VVA/VVT capabilities, advanced boosting system (including electrically assisted booster operations), EGR (Exhaust Gas Recirculation) and thermal management systems
- Explore and implement advanced fuel injection (direct) and ignition system supported by new dedicated control strategies that will be integrated in the ECU (Engine Control Unit) software.

In order to demonstrate the call overall targets (15% improvement on CO2 emissions based on the WLTP cycle and compliancy with post Euro 6 RDE standards) the project will see the realization of two full demonstrator vehicles: one B-segment vehicle, equipped with the small downsized stoichiometric engine, and one D/E vehicle equipped with the medium size lean-burn engine. The vehicle will be fully calibrated and assessed by independent testing, according to on road test procedures, using the available best representative PEMS (Portable Emission Measurement System) technology and considering also PN measurement below 23 nm diameter.

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:

Centro Ricerche Fiat - Societa Consortile Per Azioni

Address:
Strada Torino, 50
10043 ORBASSANO (TO)
Italy

Organisation Website:
http://www.crf.it

EU Contribution: €1,884,208

Partner Organisations:

Volvo Personvagnar Ab

Address:
Avd 50090 Hb3S
405 31 Goteborg
Sweden

EU Contribution: €1,602,531

Aristotelio Panepistimio Thessalonikis

Address:
KEDEA BUILDING, TRITIS SEPTEMVRIOU, ARISTOTLE UNIV CAMPUS
54636 THESSALONIKI
Greece

Organisation Website:
http://www.auth.gr

EU Contribution: €365,000

Schaeffler Technologies Ag & Co. Kg

Address:
INDUSTRIESTR 1-3
91074 HERZOGENAURACH
Germany

EU Contribution: €992,485

Valeo Systemes De Controle Moteur Sas

Address:
Avenue Des Beguines 14
95800 Cergy
France

EU Contribution: €268,500

Avl List Gmbh

Address:
Hans-List-Platz
8020 Graz
Austria

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

EU Contribution: €984,750

Politecnico Di Milano

Address:
Piazza Leonardo Da Vinci 32
20133 Milano

Italy

Organisation Website:
http://www.polimi.it

EU Contribution: €380,000

Ifp Energies Nouvelles

Address:
1et 4 avenue de Bois-Préau
92500 RUEIL MALMAISON
France

Organisation Website:
http://www.ifp.fr

EU Contribution: €1,398,941

Valeo Equipements Electriques Moteur Sas

Address:
2 Rue Andre Boulle
94000 Creteil
France

EU Contribution: €328,500

Johnson Matthey Plc

Address:
40-42 Hatton Garden
London
EC1N 8EE
United Kingdom

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

EU Contribution: €252,789

Chalmers Tekniska Hoegskola Ab

Address:
-
41296 GOTHENBURG
Sweden

Organisation Website:
http://www.chalmers.se

EU Contribution: €803,019

Technologies:

Road vehicle propulsion
Downsized spark ignition engine

Development phase: Research/Invention

Emissions control systems
Gasoline Particulate Filter

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Road transport

Transport sectors: Passenger transport

Transport policies: Environmental/Emissions aspects

Geo-spatial type: Other