

PROJECT

ORCA

Optimised Real-world Cost-Competitive Modular Hybrid Architecture for Heavy Duty Vehicles

Funding: European (Horizon 2020)

Duration: Oct 2016 - Jun 2021

Status: Complete

Total project cost: €10,192,029

EU contribution: €8,310,755



Call for proposal: H2020-GV-2016-INEA

[CORDIS RCN : 205652](#)

Objectives:

The ORCA Project proposal addresses topic GV-03-2016, of the Transport Work Programme. The work proposed will, in a single coordinated project, address all the aspects of the domain 2 “For pure and plug-in hybrids, power-train system integration and optimisation through the re-use of waste heat, advanced control, downsizing of ICEs, innovative transmissions and the integration of electronic components” regarding Heavy Duty Vehicles.

The activity proposed will be conducted by an 11-member consortium from 7 different European Members States representing all requested competencies in the field of powertrain optimization for Heavy Duty vehicles. The consortium comprises OEMs with IVECO-ALTRA, CRF and VOLVO (also members of EUCAR, suppliers VALEO, BOSCH, JOHNSON MATTHEY and JSR MICRO (CLEPA), leading Engineering and Technology Companies/organizations and Universities with TNO, FRAUNHOFER, and VUB (EARPA). The majority are also active members of ERTRAC and EGVA.

The overall objectives of the ORCA project are:

Reduce the TCO to the same diesel vehicle TCO level, targeting over 10% system cost premium reduction compared to actual IVECO hybrid bus and VOLVO conventional truck with the same performances, same functionalities and operative cost, and also targeting up to 10% rechargeable energy storage (RES) lifetime/energy throughput improvement.

Improve the hybrid powertrain efficiency up to 5% compared to actual IVECO hybrid bus and conventional truck through optimized RES selection & sizing and by improving the energy and ICE management.

Reduce the fuel consumption by 40% compared to an equivalent conventional HD vehicle (bus & truck).

Downsize the ICE by at least 50% compared to actual IVECO hybrid bus and VOLVO conventional truck.

Improve the electric range from 10km to 30km by adding the PHEV capabilities and optimising the RES capacity.

Case study assessment to replace a diesel engine by a CNG engine for future heavy-duty vehicles.

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:

Nederlands Organisation For Applied Scientific Research**Address:**

Schoemakerstraat 97
6060 DELFT
Netherlands

Organisation Website:

<http://www.tno.nl>

EU Contribution: €1,292,170

Partner Organisations:**Volvo Bus Corporation****Address:**

Fästningsvägen 1
40508 Gothenburg
Sweden

Organisation Website:

http://www.volvo.com/bus/global/en-gb/home_new.htm

EU Contribution: €681,019

Robert Bosch GmbH**Address:**

Robert-Bosch Platz
70839 Gerlingen-Schillerhoehe
Germany

Organisation Website:

<http://www.bosch.com>

EU Contribution: €121,275

Centro Ricerche Fiat - Societa Consortile Per Azioni**Address:**

Strada Torino, 50
10043 ORBASSANO (TO)
Italy

Organisation Website:

<http://www.crf.it>

EU Contribution: €464,875

Johnson Matthey Battery Systems Engineering Limited**Address:**

Nobel Road Units 1 Nobel Court
Dundee
DD2 4UH
United Kingdom

Organisation Website:

<http://www.axeon.com>

EU Contribution: €703,182

Iveco S.p.a.**Address:**

Via Puglia 35
10156 Torino
Italy

Organisation Website:

<http://www.iveco.com>

EU Contribution: €1,017,100

Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.v.**Address:**

HANSASTRASSE 27C
80686 MUNCHEN
Germany

Organisation Website:

<http://www.fraunhofer.de>

EU Contribution: €199,813

Vrije Universiteit Brussel**Address:**

Pleinlaan
1050 Brussel
Belgium

Organisation Website:

<http://www.vub.ac.be>

EU Contribution: €2,161,875

Valeo Systemes De Controle Moteur Sas**Address:**

Avenue Des Beguines 14
95800 Cergy
France

EU Contribution: €700,210

Altra Spa**Address:**

Via Adamoli Gelasio 237 F-G
16138 Genova
Italy

EU Contribution: €805,700

Jsr Micro Nv**Address:**

TECHNOLOGIELAAN 8
3001 LEUVEN
Belgium

EU Contribution: €163,538

Technologies:

Road vehicle propulsion

Downsized internal combustion engines for hybrid buses and trucks

Development phase: Research/Invention

STRIA Roadmaps:

Transport electrification, Vehicle design and manufacturing, Low-emission alternative energy for transport

Transport mode: Road transport

Transport sectors: Freight transport

Transport policies: Other specified

Geo-spatial type: Other