D7.2 – Design and development of systems and components

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Publishable summary

The long-haul transport sector and its heavy-duty vehicles are extensively used in Europe. Heavy-duty vehicles transport 75% of freight over land in Europe. Because of their load capacity and annual mileage, heavy-duty vehicles are also a significant source of greenhouse gas (GHG) emissions in Europe. Hence, the reduction of real driving emissions and fuel consumption has become a main societal challenge.

To reduce GHG emissions and contribute to the project´s objectives, IRIZAR has proposed to develop a Hybrid vehicle with State of the Art (SotA) Internal Combustion Engine (ICE) fueled with Hydrotreated Vegetable Oil (HVO), incorporating advanced Hybrid Control Module (HCM) and smart Heating, Ventilation and Air Conditioning (HVAC) system. The proposed development will aim to achieve a 12% energy savings when compared to the i6s 2018 reference vehicle, which directly brings 12% of CO_2 reduction. All these developments, findings and results will contribute to definition of the inputs-outputs for VECTO adaptations.

Based on the studies carried out in deliverable 7.1 of this same working package, all the proposed development paths have been analyzed, and the technical solutions needed to achieve the proposed objectives have been developed, which are described in this document. These developments will be implemented and tested in a demonstrator vehicle during the next steps of this project.

7.1 Disclaimer

Appendix A – Table of Abbreviations

Symbol / Shortname	
eMotor	Electric motor
SOC	State of charge
ICE	Internal combustion engine
HVO	Hidrotreated vegetable oil
EMS	Energy management system
HCM	Hybrid control module
ECU	Electronic control unit
VCAN	Vehicle controller area network
LTO	Lithium titanate oxid
BOL	Beginning of life
EOL	End of life
AEBS	Advanced emergency braking system
SW	Software
RPM	Revolutions per minute
PDU	Power distribution unit
LAT	Limiting ambient temperature
HVAC	Heating, ventilation and air conditioning
LEZ	Low emission zone
BTMS	Battery thermal management system
HV	High voltage
GHG	Greenhouse gas
HMI	Human-Machine Interface
CAN	Controller area network
EV	Electric vehicle
UCC	Use case cluster
COP	Coefficient of performance
VDV	Verband Deutscher Verkehrsunternehmen
GPS	Global positioning system