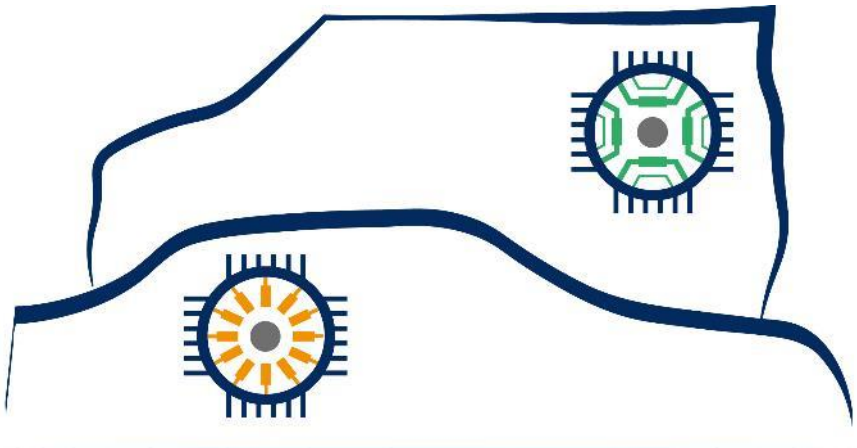
Rare Earth Free e-Drives Featuring Low Cost Manufacturing



ReFreeDrive

Collaborative Project
Grant Agreement Number 770143

Start date of the project: 1st October 2017, Duration: 36 months

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Work Package no.: 5
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Lead contractor for this deliverable:	**PRI**
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Abbreviations

AC: Alternative Current
APM: Auxiliary Power Module
BMS: Battery Management System
BOM: Bill Of Material
BP: Battery Pack
CAN: Controller Area Network
CC: Cooling Circuit
CFD: Computational Fluid Dynamics
CNC: Computer Numerical Control
DC/DC: DC converter
DC: Direct Current
ECU I: Electronic Control Unit 1
ECU II: Electronic Control Unit 2
EMI: ElectroMagnetic Interference
EV: Electric Vehicles
CNC: Computer Numerical Control
HMI: Human Machine Interface
HV: High Voltage
IC: Information Cluster
IMD: Insulation Monitoring Device
LV: Low Voltage
N/A: Not Applicable
OBC: On Board Charger
OED: Original Electrical Device
PB: Power Braking
PS: Power Steering
SOC: State Of Charge
SOH: State Of Health
TBD: To Be Defined
WP: Work Package
WP1: Water Pump 1
WP2: Water Pump 2

1 Executive Summary

The present report provides an overview on the activities inherent the Technical Medium Power Powertrain Integration (75kW) for the ReFreeDrive Project, Task 5.5.

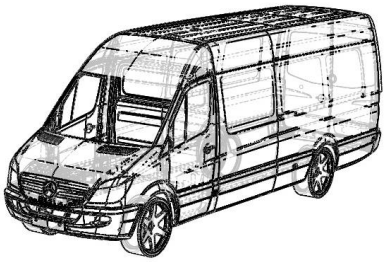

Figure 1 - 3D view of the Mercedes Sprinter

The purpose of this document is to describe the activities of vehicle integration that have been performed in order to allow the Medium Powertrain integration and the demonstration of the new ReFreeDrive motors on the Mercedes Sprinter (Figure 1).

The activities of this report have been divided in 3 different macro areas and therefore divided in sub groups each one related to sub components of the vehicle.

1- **Component Selection.** This section describes the activities related to the analysis of the requirements for each specific sub group of component, the discussion with different suppliers until the final decision has been taken.
2- **Component Integration.** This section describes the detailed design of different sub components such us the Battery Pack (BP) or the activity of integration of purchased parts inside the vehicle.
3- **Powertrain Integration.** This section has a specific focus on the activities performed at a system level and involves the communication and the integration of different components in order to obtain a complete working vehicle.

No barriers and risks to be highlighted to affect the development of the project strategy. A minor number of tasks that was theoretically due within the 5.5 are still under investigation and have been postponed to WP7. They have been marked with To Be Defined (TBD). The reason is that these activities are strictly related to installation in the vehicle and the testing of the components under manufacturing. It would be therefore useless and misleading to work on further investigations at this level.

In D5.5 there have been no deviations in content or time from the deliverable objectives set out in the ReFreeDrive Grant Agreement.