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Connected Electric Vehicle Optimized for Life, Value, Efficiency and Range

GRANT AGREEMENT No. 824295



CEVOLVER – Deliverable Report
D3.2 Hardware setup of component carrier

Publishable summary

BOSCH is currently building prototypes of EV rolling chassis in a cooperation with an external partner (BENTELER), which will primarily serve as a development platform. CEVOLVER is organized as an integral part of this activity, which internally, however the whole activity, addresses numerous topics that go beyond the CEVOLVER context but from which CEVOLVER can benefit in some areas.

In the following report, we will focus on further development of a first prototype (described in report D3.1). Based on the findings of this first prototype "P1", it was decided to update and further develop a second, vehicle "P2" that is fully newly built.

The first prototype, "P1", does not have a body, instead it only has a frame and roll-cage. The second prototype, "P2", has the same frame and suspension, but a full body mounted onto it, which brings full interior with it.

P1 has been finished from a driving perspective (mechanical, suspension, thermals) but has a slightly different overall system than P2. P2 incorporates the first lessons learned from P1. Major changes from P1 to P2 (aside from the body) are in the thermal system and the high-voltage system.

The thermal system of the second prototype vehicle, also internally named "BEDS 2.2", has undergone significant changes. While the first prototype focused on cooling the powertrain components and tempering - i.e. both cooling and heating - the battery to maintain defined temperature limits, the aim of the second prototype is to demonstrate the fullest possible functionality of all basic, comfort and safety-relevant functions of the HVAC and coolant system. Therefore, in the second prototype on hardware side on the one hand a heat pump is used and on coolant side measures as – e.g. energy harvesting – were launched to increase efficiency and thus driving range.

The high-voltage architecture received significant changes. In P1, a single DC battery output terminal which then was distributed by a large PDU to all HV components was installed. This setup was changed in two ways. We now have two DC outputs from the battery, where one output goes directly to the rear EDU (electric drive unit). This results in a significant saving of high-voltage cables and HV connectors. Weight savings result in several kilograms and the PDU, located under the hood, is now significantly smaller, despite having an additional PTC heater connection. The PDU (power distribution unit) is now located directly on the EDU.

This report focuses on these changes and does not re-iterate previous results from P1 reported with delivery D3.1 – *"Vehicle Concept Deduction and Implementation"* in detail.

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Project partners:

#	Partner	Partner Full Name
1	FEV	FEV Europe GmbH
2	BOSCH	Robert Bosch GmbH
3	FORD	Ford-Werke GmbH
5	IFPEN	IFP Energies Nouvelles
6	RWTH	Rheinish-Westfaelische Technische Hochschule Aachen
7	VUB	Vrije Universiteit Brussel
8	UNR	Uniresearch BV
9	I2M	I2M Unternehmensentwicklung GmbH
10	RBOS	Robert Bosch AG
11	CRF	Centre Recherche Fiat



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