Optimization of scalaBle rEaltime modeLs and functIonal testing for e-drive ConceptS

EUROPEAN COMMISSION
Horizon 2020
GV-07-2017
GA # 769506

Deliverable No.	OBELICS D2.2	
Deliverable Title	Innovative E-motor modelling techniques	
Deliverable Date	2019-05-30	
Deliverable Type	REPORT	
Dissemination level	Confidential – member only (CO)	
Written By	Franck Sellier (SIE-SAS) Daniel Roiu, Alfredo Primon (CRF) Svetla Chakarova Kaeck, Hellal Benzaoui (Volvo) Damijan Miljavec (UL) Kazusa Yamamoto (Valeo) Mohamed El-Baghdadi (VUB) Marco Ranieri (CEA)	2019-04-02 2019-04-30 2019-05-07 2019-05-10 2019-05-10 2019-05-16 2019-05-22
Reviewed by	David Delichristov (ViF)	2019-06-18
Approved by	Horst Pfluegl (AVL) – Project Coordinator	2019-06-19
Status	Final	2019-06-21

Publishable Executive Summary

This deliverable (D2.2) gives a detailed description of innovative modelling approaches, scalability techniques and parametrization tools for E-motors. In this task, multi-physical models for the main e-Motor technologies used for traction applications have been developed. A strong focus has been made on accurate representation of electro-magnetic behavior, but also on the detailed thermal representation of the e-Motor. Simplification technics has been developed to reduce simulation time of the model while keeping a high accuracy, both regarding electromagnetic, thermal and mechanical domain. Innovative configurator enabling determination of e-Motor design and corresponding performance characteristics based on only fundamental e-Motor inputs have been developed. Then parameterization methods and tools enabling fast system level model characterization from detailed models or experimental characterization were developed.

The E-Motor models developed in WP2, Task 2.2 will be further used by WP4, WP5 and especially in the realistic EV use cases of WP6.

14 Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

Project partners:

Partner no.	Partner organization name	Short Name
1	AVL List GmbH	AVL
2	Centro Richerche Fiat SCpA	CRF
3	FORD Otomotiv Sanayi Anonim sirketi	FO
4	Renault Trucks SAS	RT-SAS
5	AVL Software and Functions GmbH	AVL-SFR
6	Robert Bosch GmbH	Bosch
7	SIEMENS INDUSTRY SOFTWARE NV	SIE-NV
8	SIEMENS Industry Software SAS	SIE-SAS
9	Uniresearch BV	UNR
10	Valeo Equipements Electroniques Moteurs	Valeo
11	Commissariat à l'Energie Atomique et aux Energies Alternatives	CEA
12	LBF Fraunhofer	FhG-LBF
13	FH Joanneum Gesellschaft M.B.H.	FHJ
14	National Institute of Chemistry	NIC
15	University Ljubljana	UL
16	University Florence	UNIFI
17	University of Surrey	US
18	Das Virtuelle Fahrzeug Forschungsgesellschaft mbH	VIF
19	Vrije Universiteit Brussel	VUB

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 769506.