



Powerful **A**dvanced **N**-Level **D**igital **A**rchitecture
for models of electrified vehicles and their components

<https://project-panda.eu/>

Research Innovation Action

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Virtual product development and production of
all types of electrified vehicles and components

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Publishable Executive Summary

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The PANDA project aims at using the W-model approach, which relies strongly on virtual design and test methods, to reduce the Hybrid Electric Vehicle time-to-market. The project proposes a standard efficient virtual and real testing method of electrified vehicles and will provide a Cloud library of functional models to be accessible by multiregional companies [PANDA Bouscayrol 2020]. In this context, building multi-scale multi-physical models of the E-drive components is an essential part of the project.

This deliverable reports the work done in WP3 on the E-drive (Permanent Magnet Synchronous Machine + inverter) behavior models. Two behaviour models are presented: Electrical model with constant temperature, Electrical-thermal coupled model. These models are derived from experimental data using a learning machine technic: Linear regression, and simulated on Matlab/Simulink. They will be then validated as black-box models (confidentiality reasons) via the Cloud-Computing virtual testing in WP4 and then via the real testing in WP5.

As a black box model has no mandatory inputs and output, in order to respect the EMR philosophy, the inputs and outputs have been defined by the knowledge models developed in [PANDA Ruba 2020]. These models can therefore easily be interfaced with other components in the vehicle testing platform.

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Table 2: Project Partners

#	Type	Partner	Partner Full Name
1	UNIV	ULille	Université de Lille
2	IND	SISW	Siemens Industry Software SRL
3	UNIV	VUB	Vrije Universiteit Brussels
4	IND	VEEM	VALEO Equipement Electriques Moteur SAS
5	UNIV	UTCN	Universitatea Tehnica Cluj Napoca
6	SME	TY	Tajfun HIL (Typhoon HIL)
7			(change from TUV to TUV-BT)
8	UNIV	UBFC	Université Bourgogne Franche-Comté
9	SME	UNR	Uniresearch BV
10	IND	RTR	Renault Technologie Roumanie
11	SME	Bluways	BlueWays International bva
12	IND	TUV-BT	TUV SUD Battery Testing GmbH



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