

Final Event
24-25th of May 2022

Physical Demos

Fuel Cell Vehicle – Toyota Mirai



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



Walter Lhomme
Eduard Aguirre Falcon

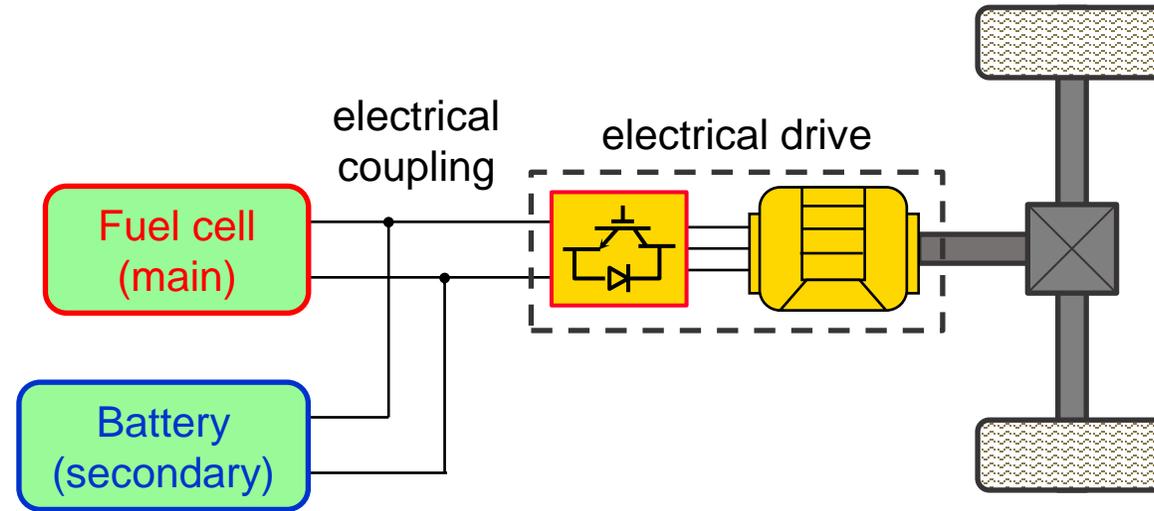


Daniela Chrenko

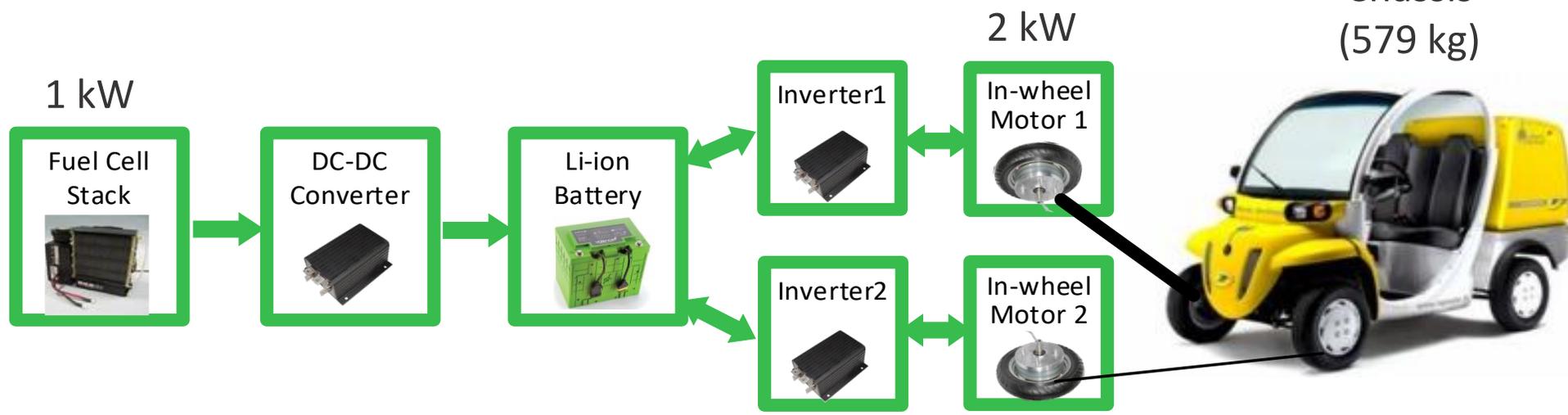
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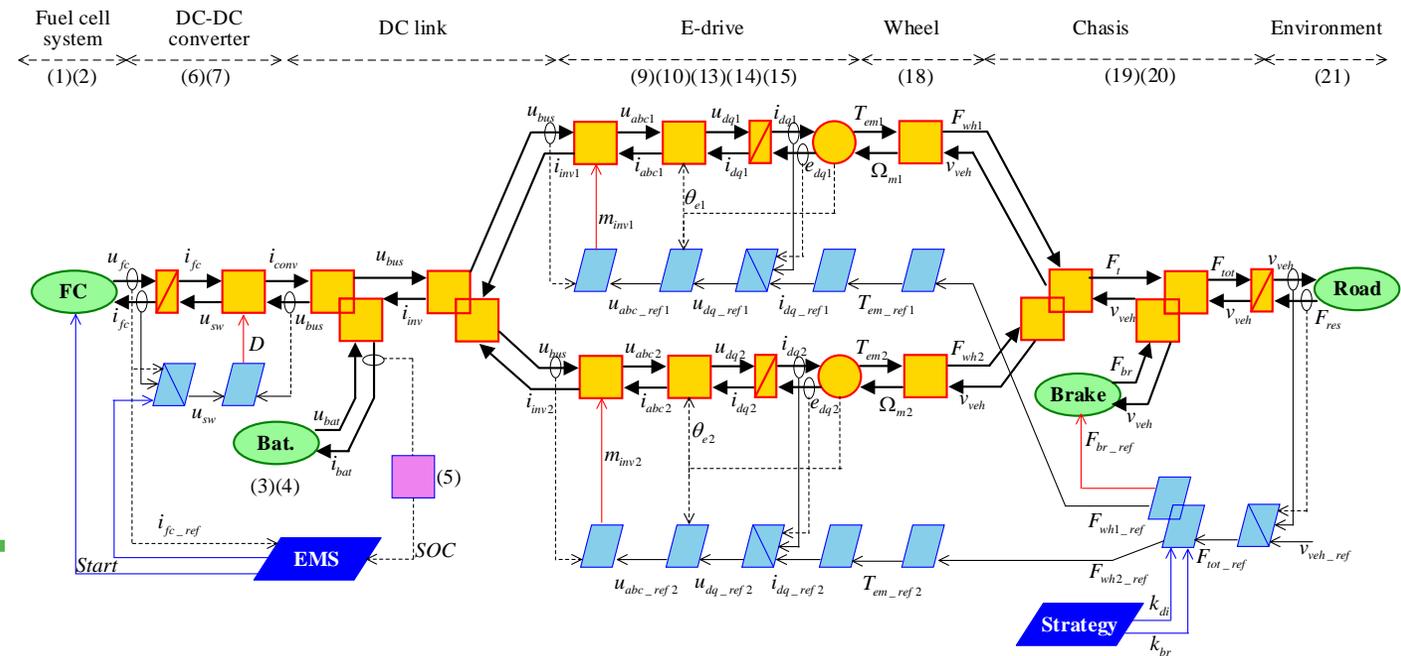
A Fuel Cell vehicle is an hybrid electric vehicle



Fuel Cell Vehicle in the PANDA project

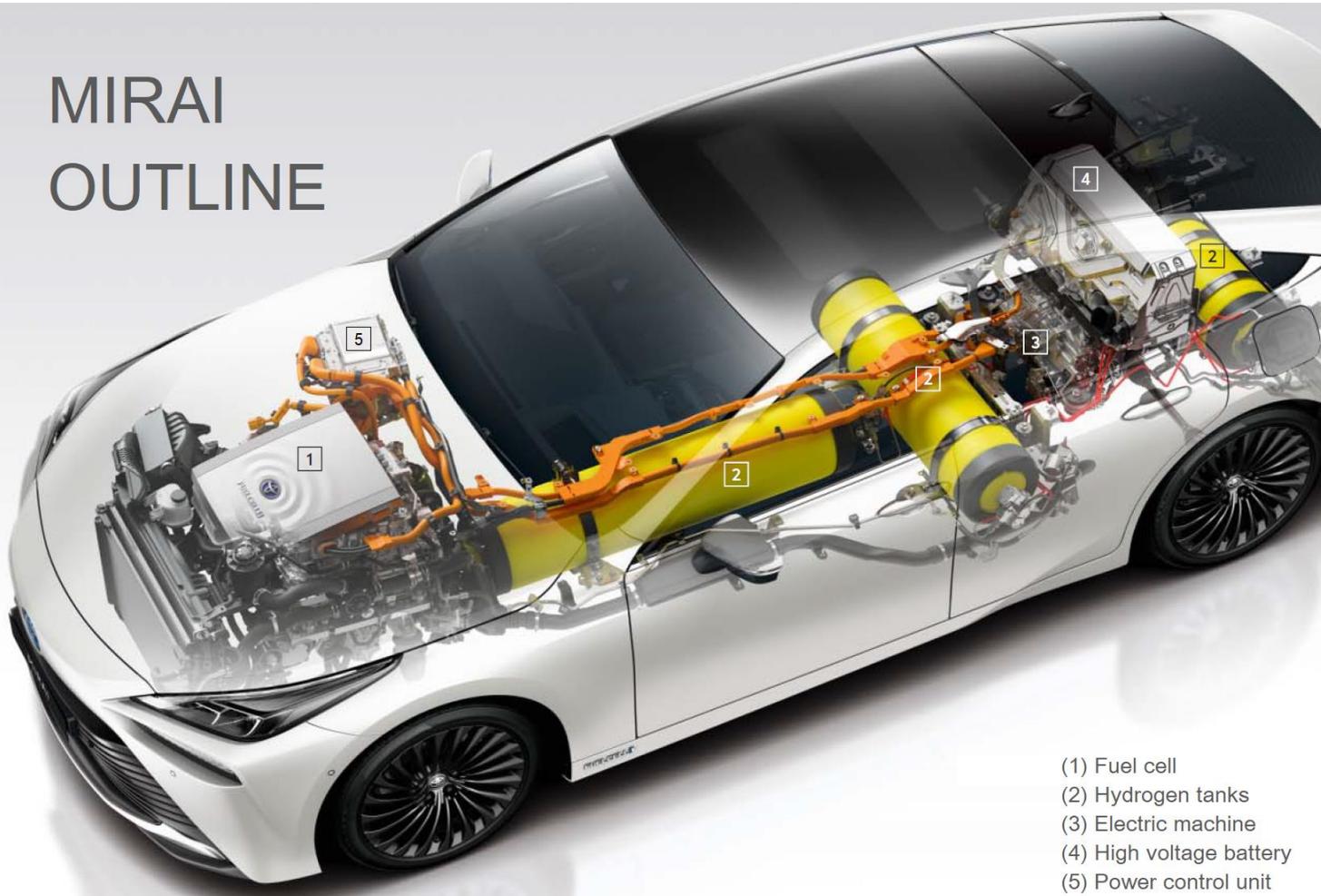


MobyPost
Postal delivery
applications



Extension of the PANDA concept to the Toyota Mirai 2

MIRAI OUTLINE



Picture from Toyota Motor Europe

Specifications

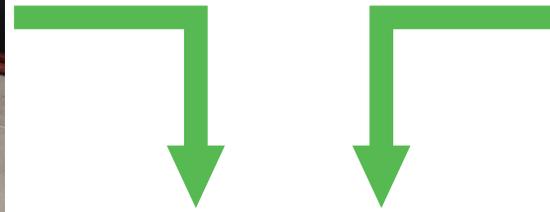
| | |
|----------------|------------------|
| Layout | Rear wheel drive |
| Range (WLTP) | 650 km |
| Max speed | 175 km/h |
| 0 – 100 km/h | 9.2 s |
| Curb weight | 1950 kg |
| Consumption | 0.89 kg / 100 km |
| Starting price | 68 k€ |

Vehicle data acquisition

TOYOTA MIRAI

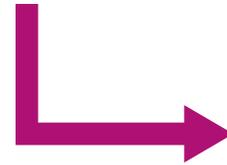


Communication



INS

Power



Prototypage Unit

Power



Logging



COMPUTER



Programming



FLASH DRIVE

Video on the Toyota Mirai





Thanks for your attention!

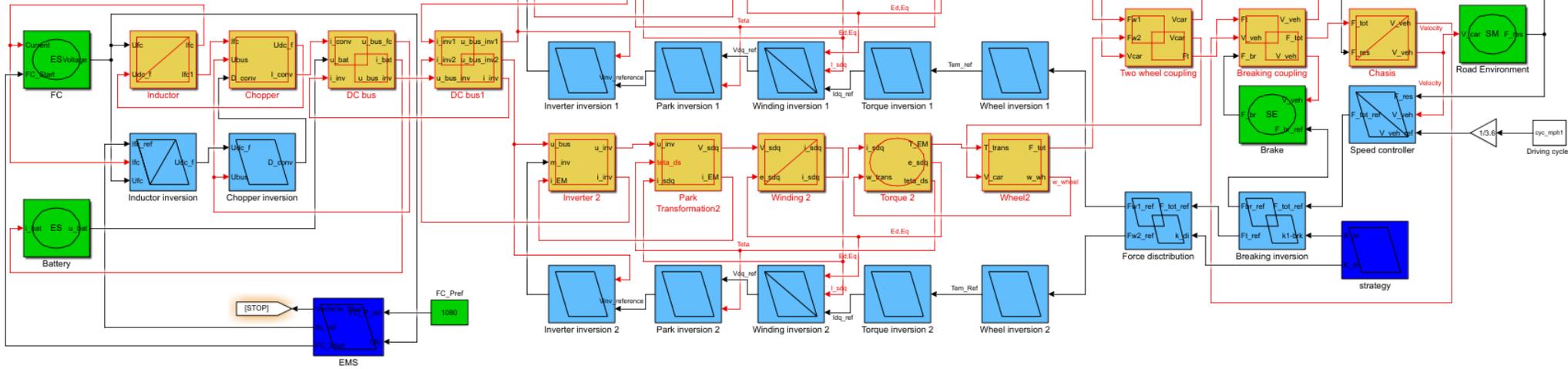
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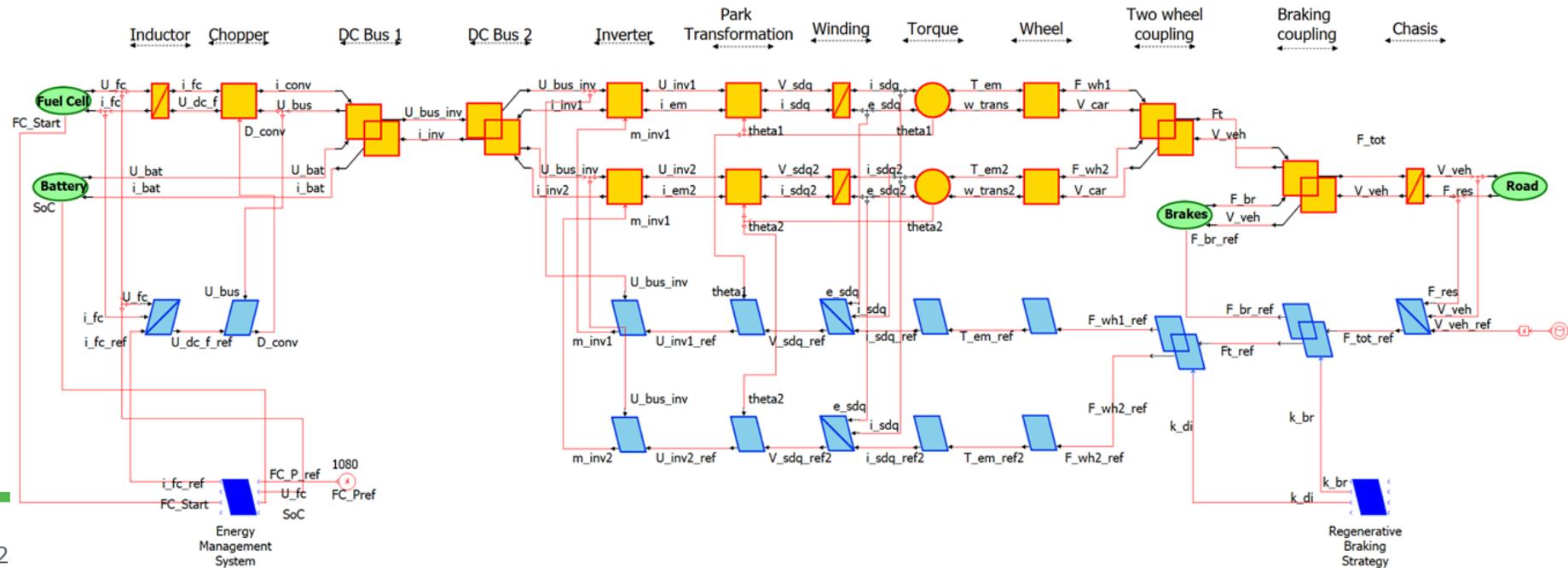
SIEMENS



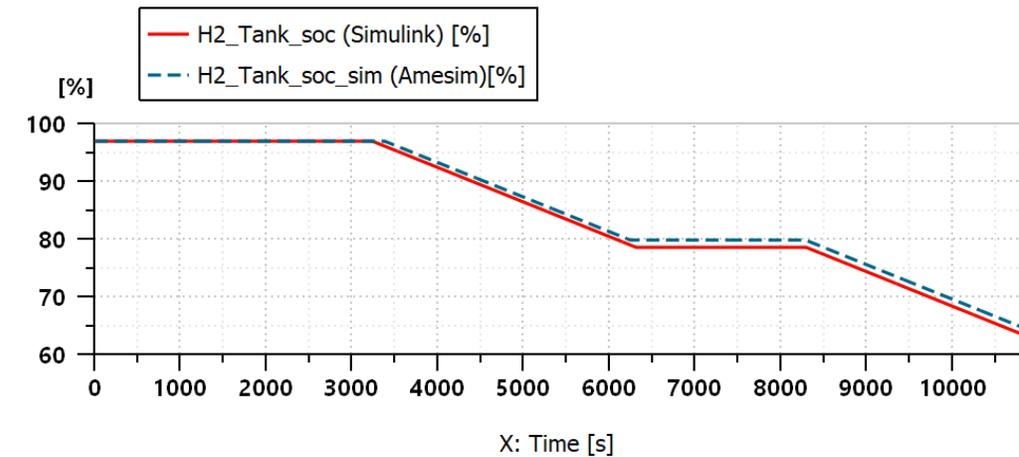
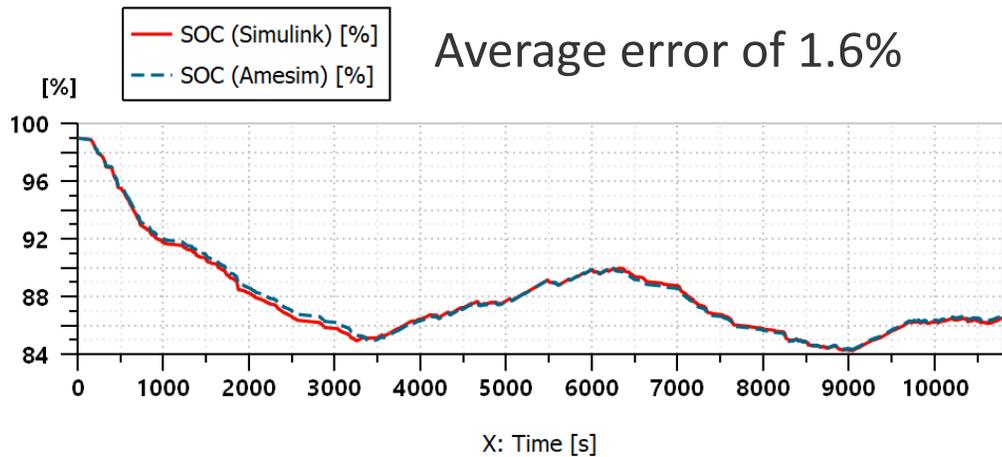
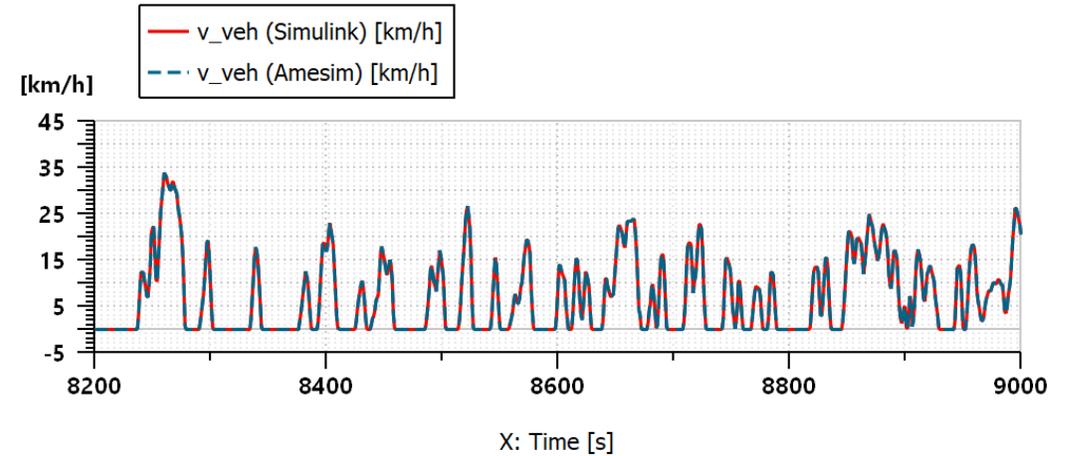
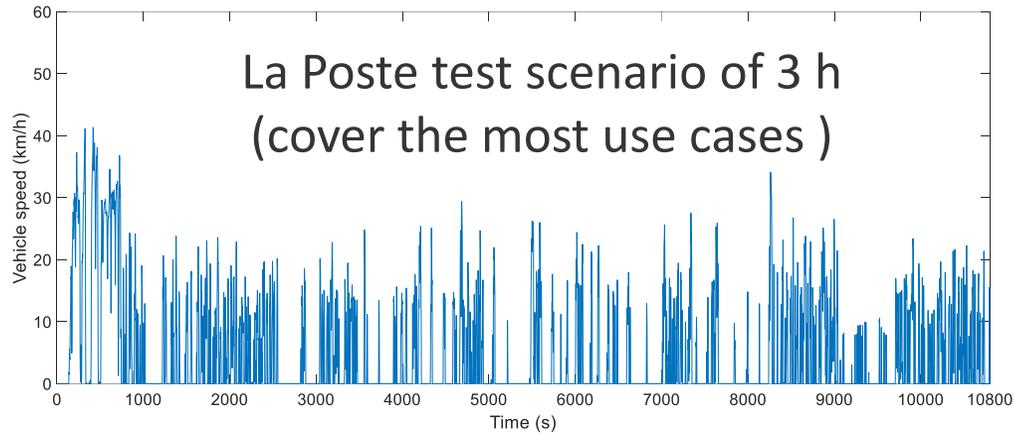
Simulation of Mobypost



Implementation



Comparisons of the results



Obtained results



Virtual testing of the FCV with validation for daily postal delivery applications

Components are modelled and organized using the EMR formalism

Good comparison between the simulation and experimental results

- under 5% error for the battery energy evaluation
- 2% error for the DC bus energy evaluation

Simulation implemented in the Matlab-Simulink© environment and also Simcenter Amesim©

The developed FCV model provides an efficient tool for the system/component design and testing

- Reduction of the development cost by means of “W-model” concept proposed in PANDA
- Extension of the concept to the Toyota Mirai

EMR of the Mobypost

