

Final Event
24-25th of May 2022

Demos

VEEM P-HEV Validation



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

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Valeo EEM



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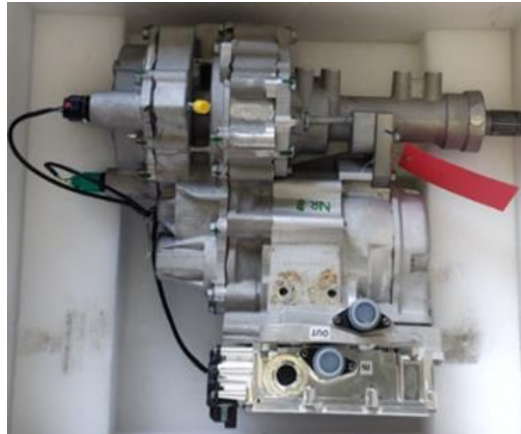
Valeo HEV's e-drive presentation



e-drive = Permanent Magnets Synchronous Machine (PMSM) + Inverter

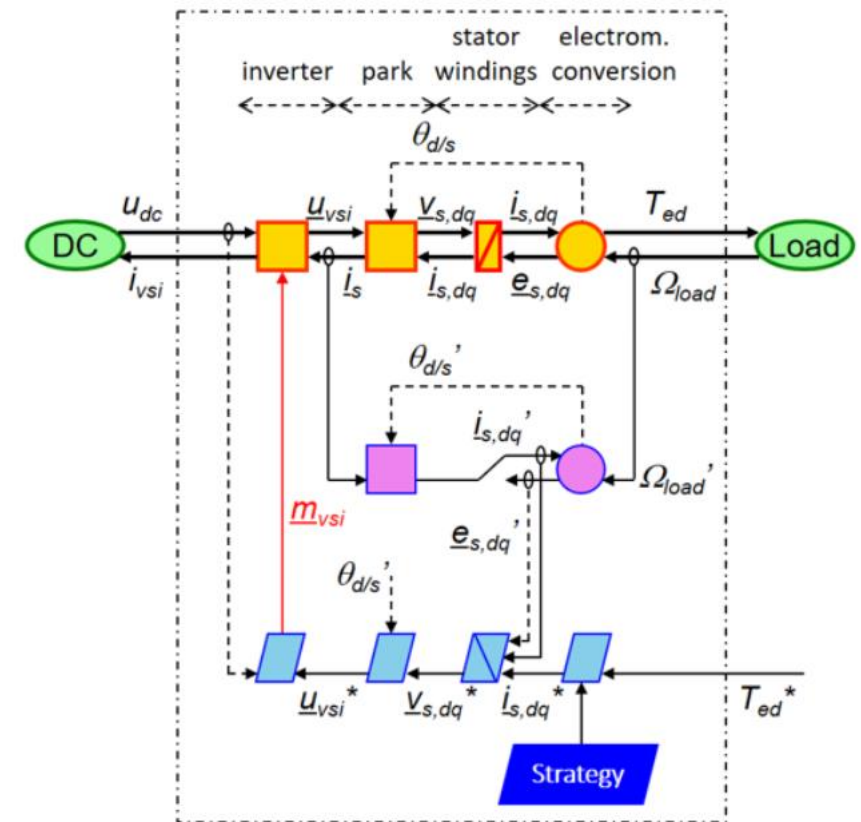
🐼 Valeo Physical rear e-drive:

- 25kW peak power
- Low voltage 48V
- Watercooled



🐼 Models:

- EMR approach to interface with other system models
- Various modelization types:
 - Open models (e.g: knowledge models)
 - Blackbox (e.g: behavior models):
 - Cloud usable: **OK**
 - HiL usable: **KO**



Democar Vehicle presentation



🐼 **Base vehicle:** Peugeot 308 130ch

🐼 **Democar:**

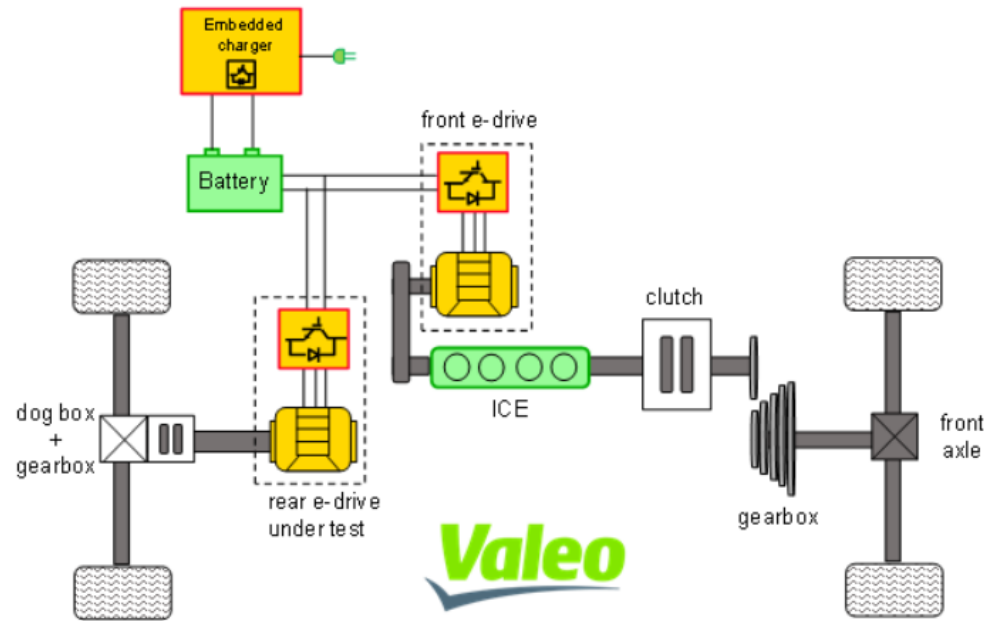
- Front e-drive: iBSG 4kW
- Rear e-drive:
 - GMG 25kW
 - ratio 18 with disconnect
- Battery: 4.8kWh 48V



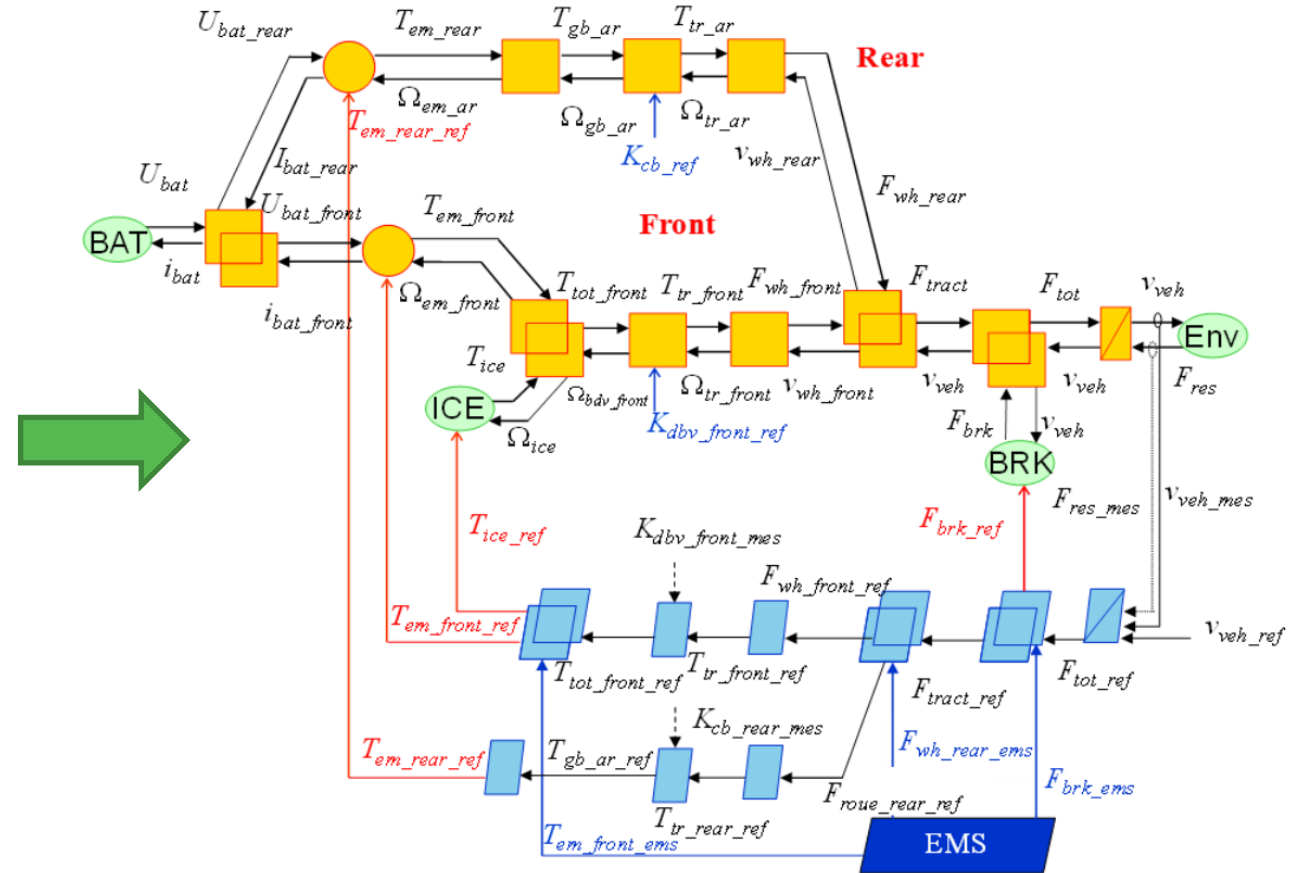
Democar Model presentation



Democar powertrain architecture:



Vehicle model using EMR formalism:

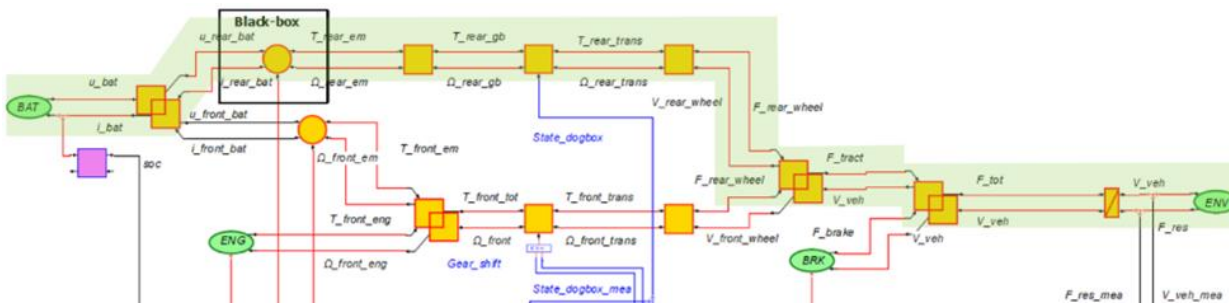


Democar Tests presentation

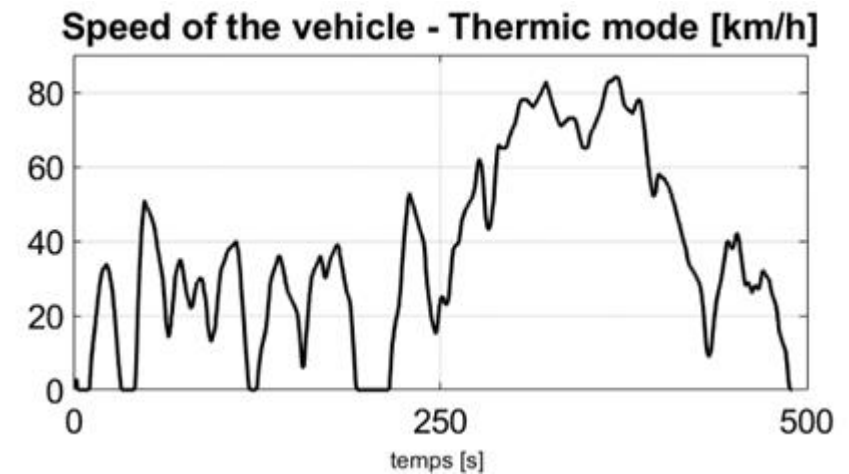
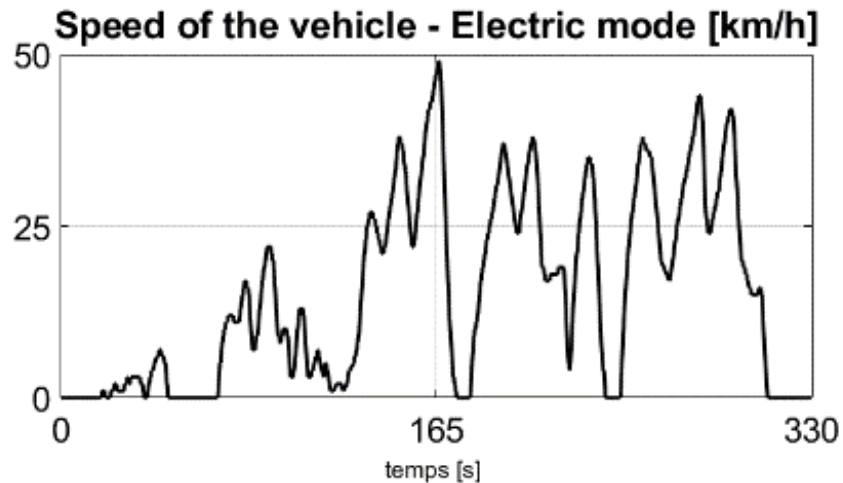
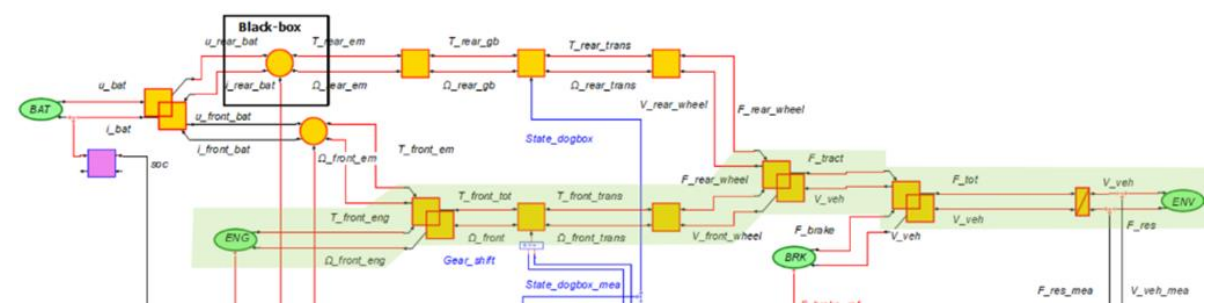


2 separate validations scenari

 **Electric** only scenario → energy validation



 **Thermal** only scenario → gearbox validation



Electric drive scenario

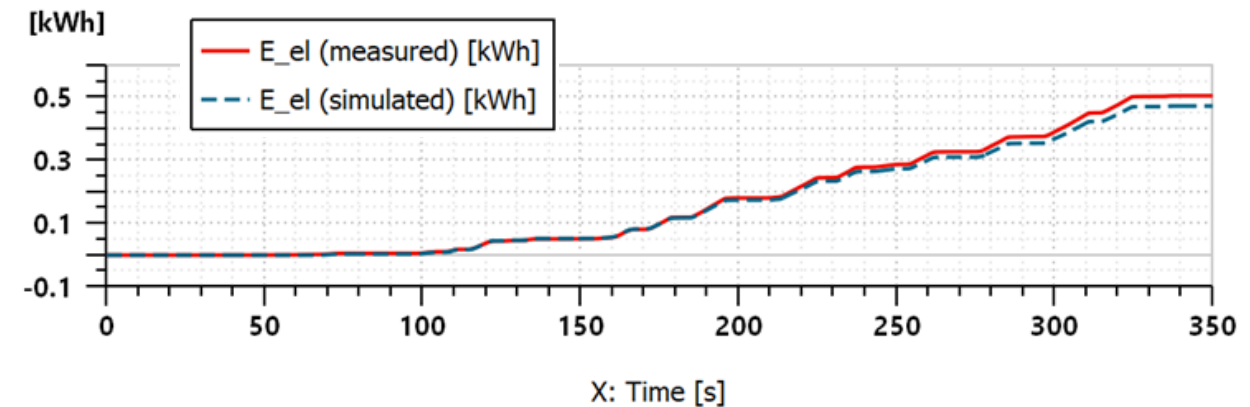
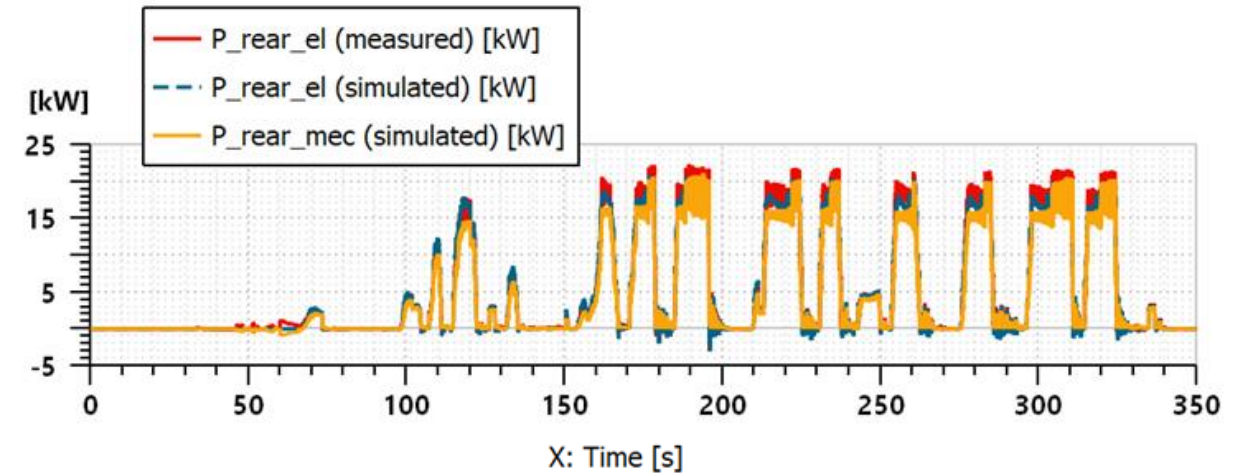


🐼 Electric power:

- The electric power supplied by the eMachine in the **model** matches the **measurement**

🐼 Energy:

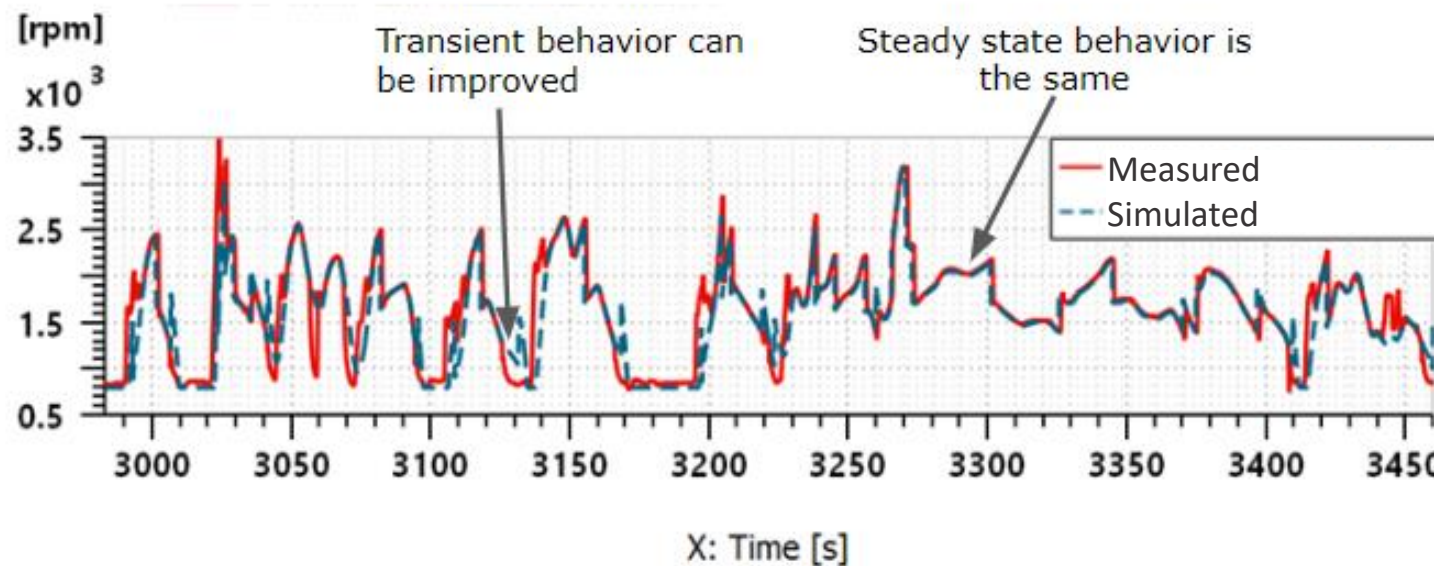
- The cumulative energy consumption shows an error of **6.4%**
- This error is constant through the cycle, demonstrating a consistent behavior



Thermal only scenario



Engine speed validation:



- 🔄 Same behavior in terms of engine speed, except during transients (take-off, stop phases).
- 🔄 This could be improved with a more advanced gearbox and torque converter models.

P-HEV validation conclusion



- 🐼 Good correlation in pure electric and pure thermal drive.
- 🐼 **We can assume that when using both together the correlation will stay valid.**





End of presentation

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SIEMENS



Renault Group

BLUWAYS

