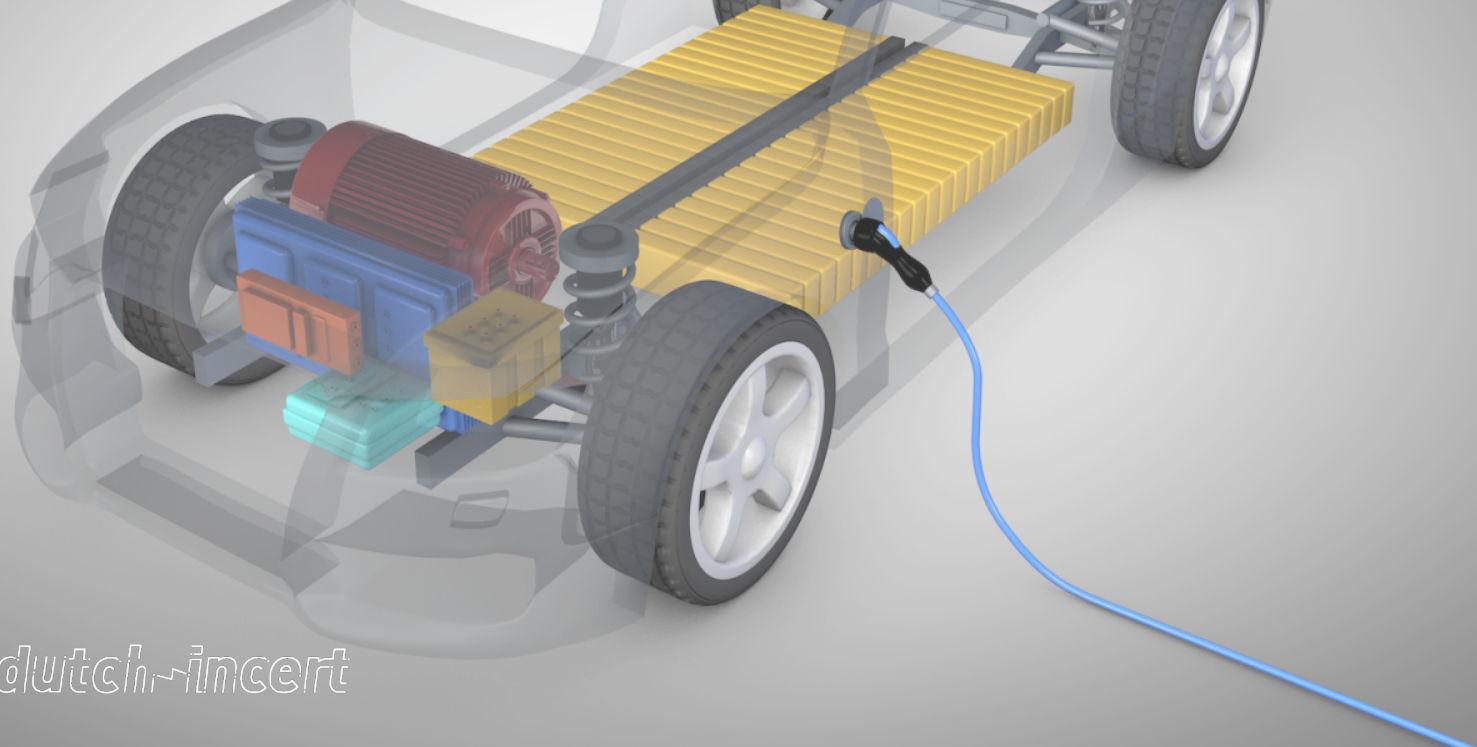
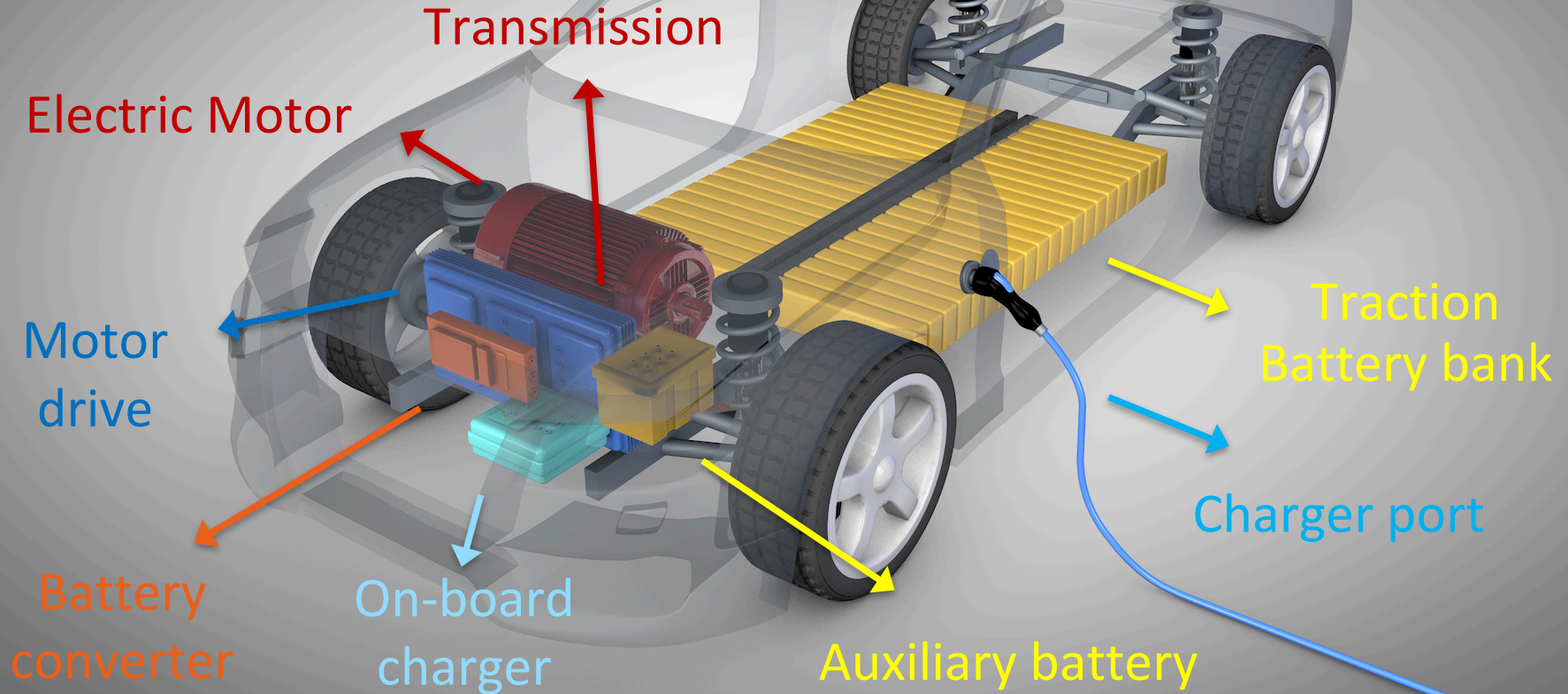


What's inside an electric car

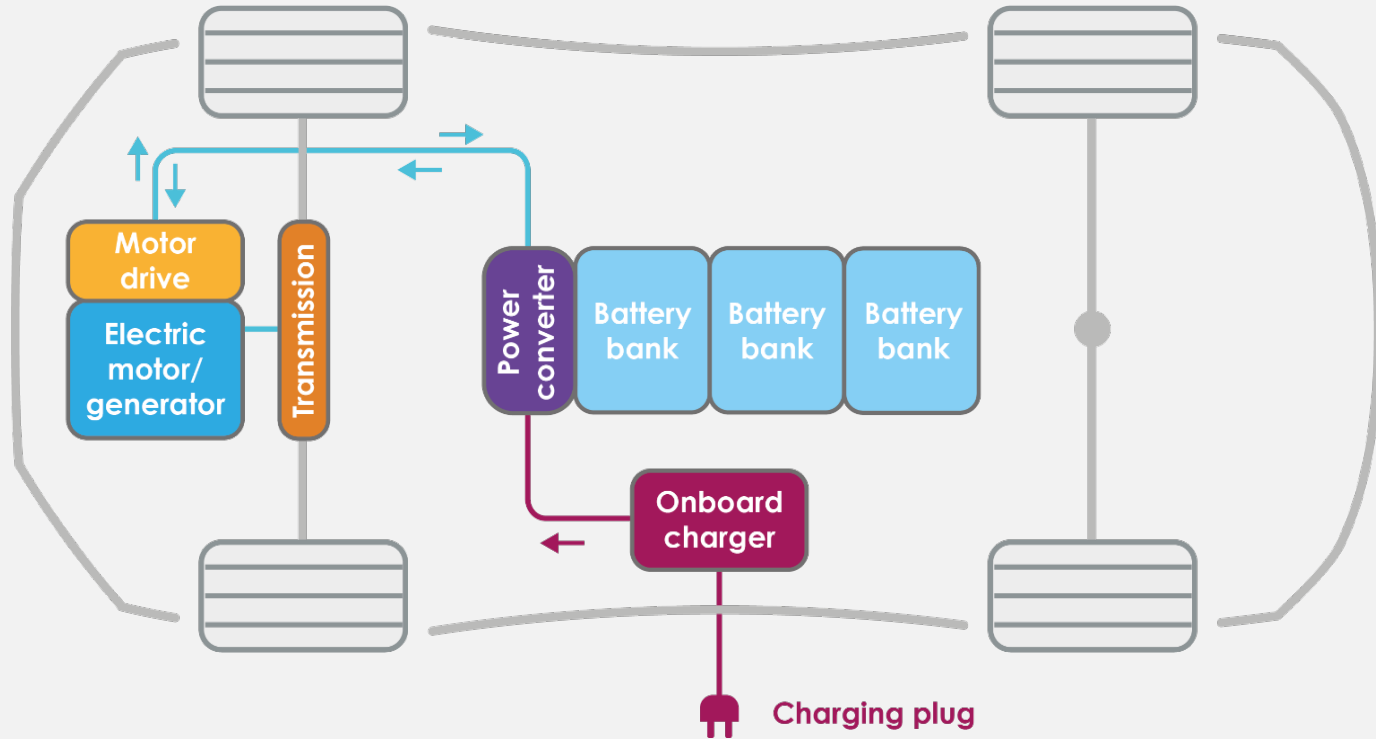
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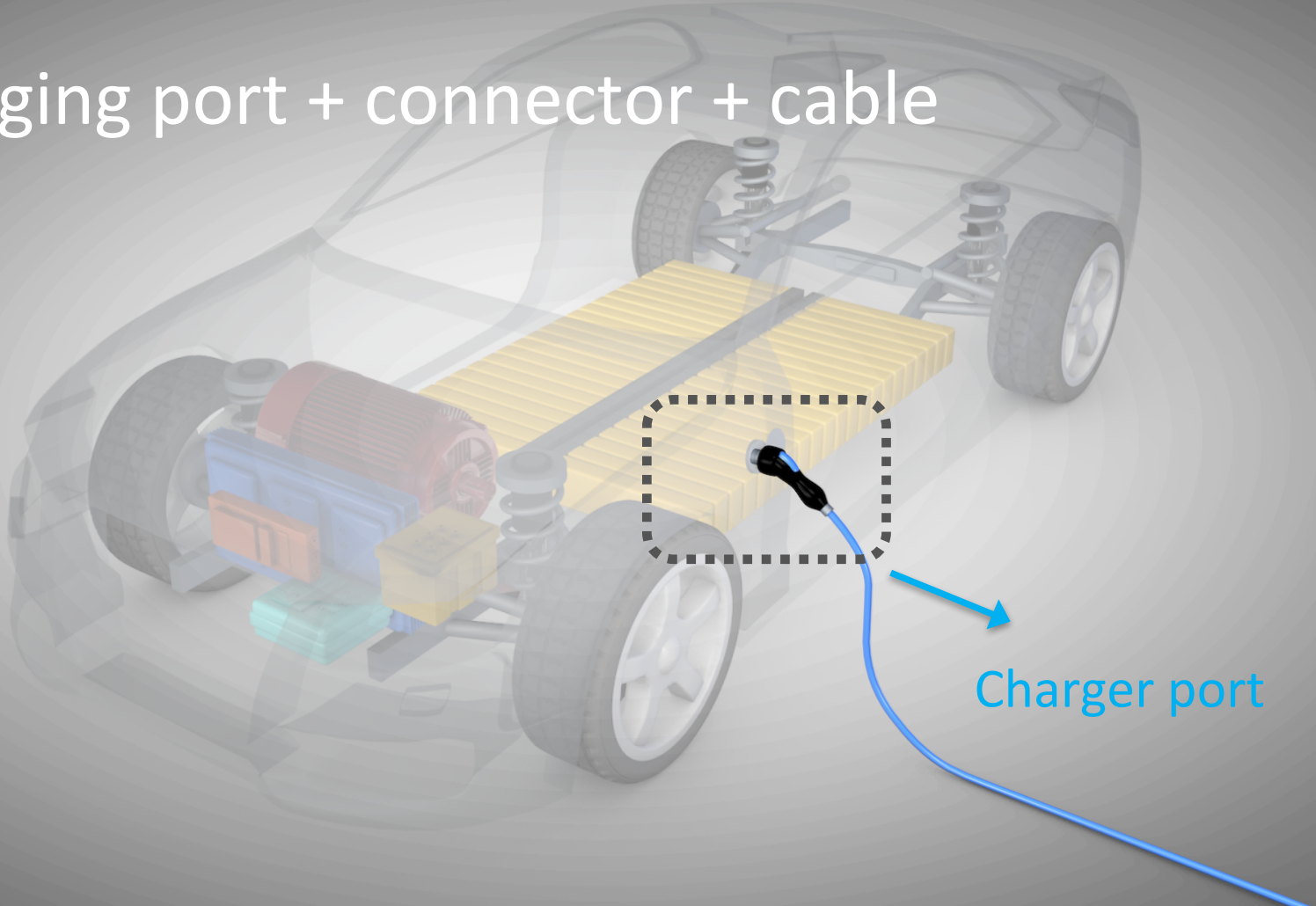
Key parts of an electric car



Key parts of an electric car

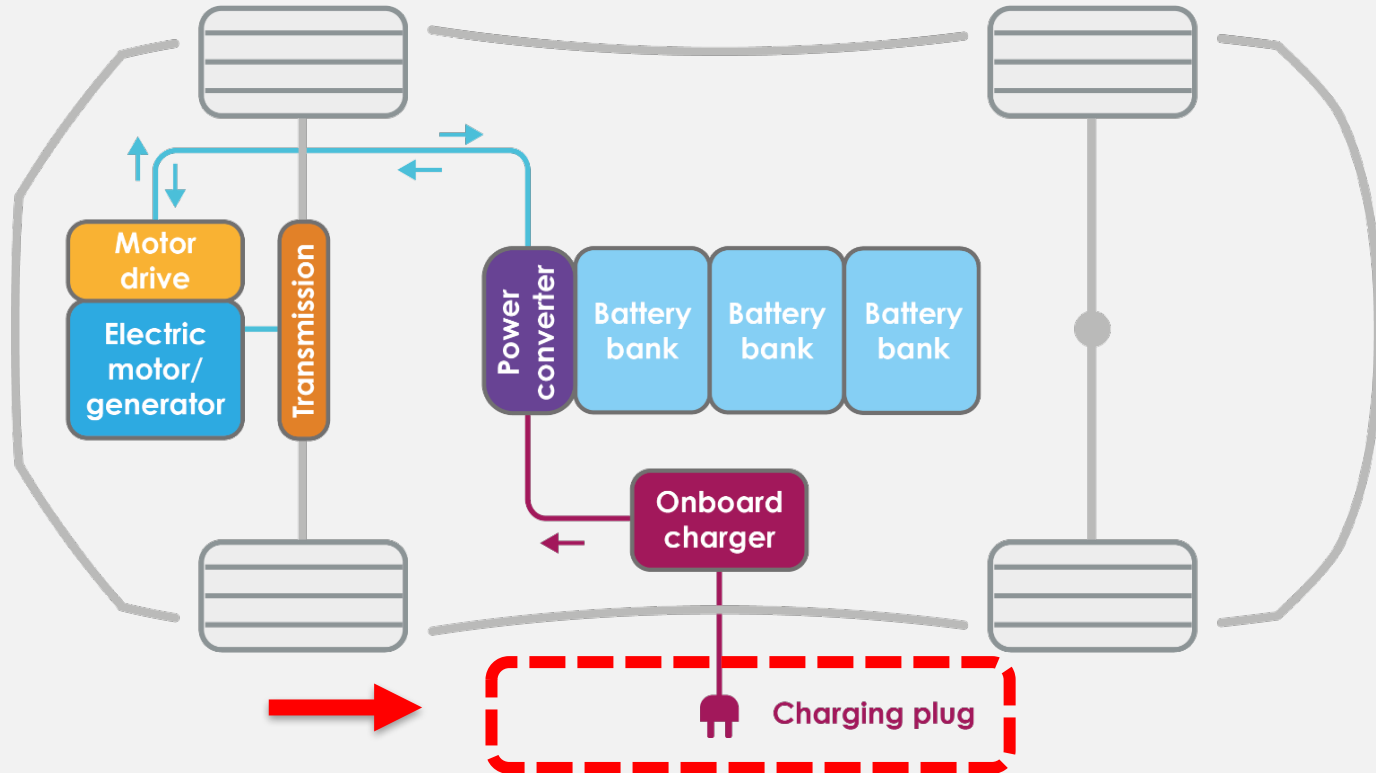


Charging port + connector + cable

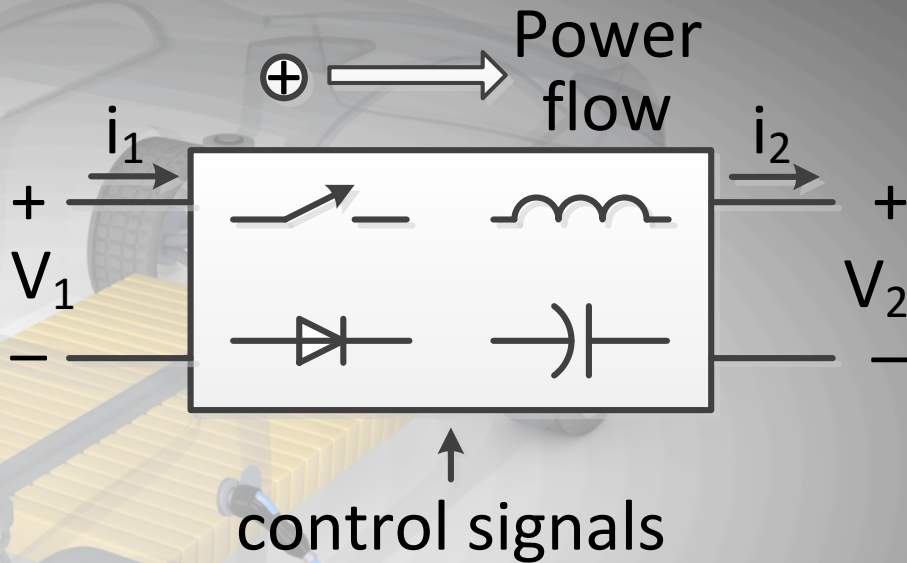


Charger port

Charging port + connector + cable

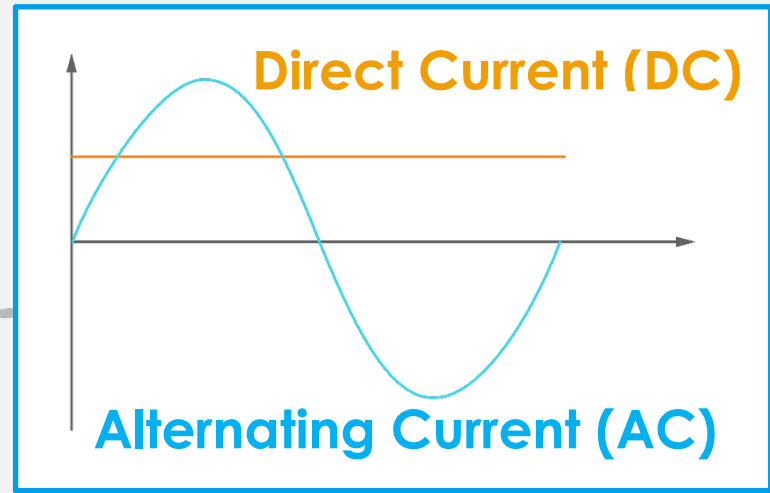
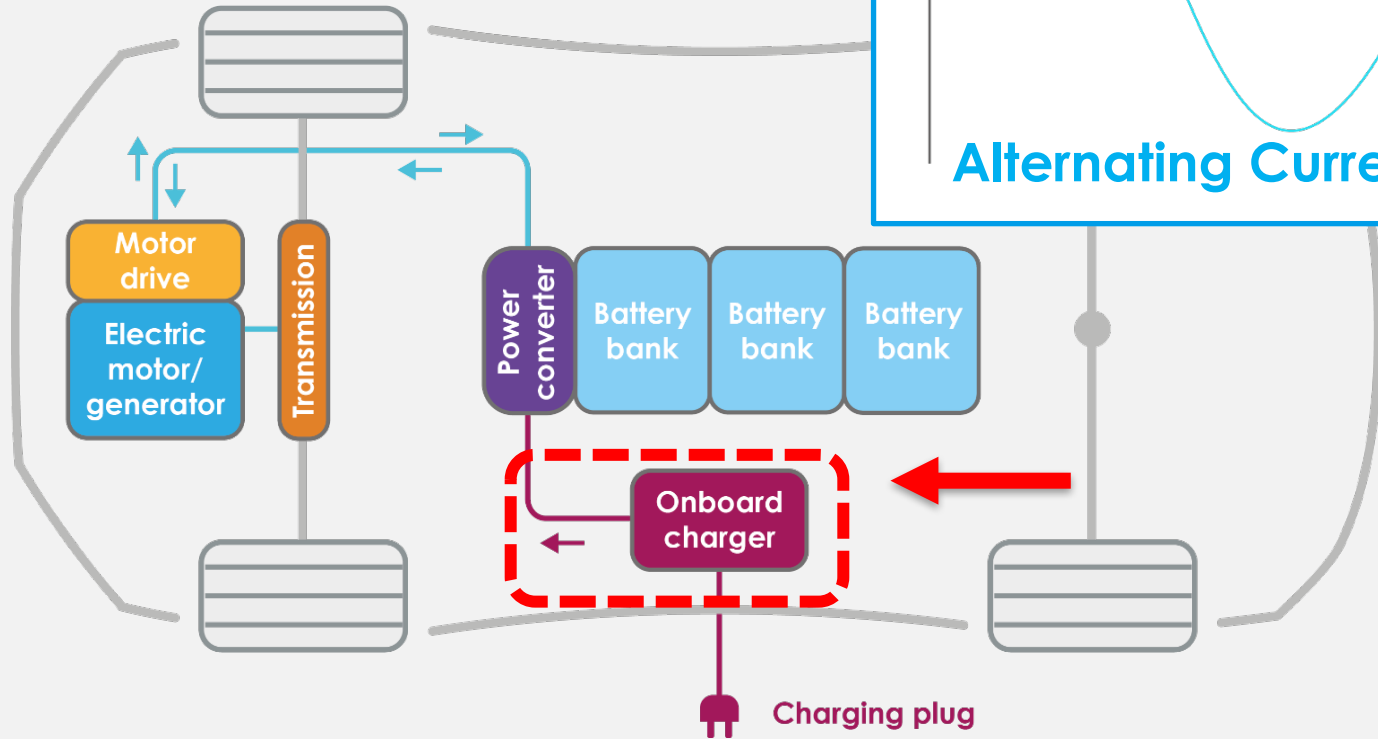


Onboard charger

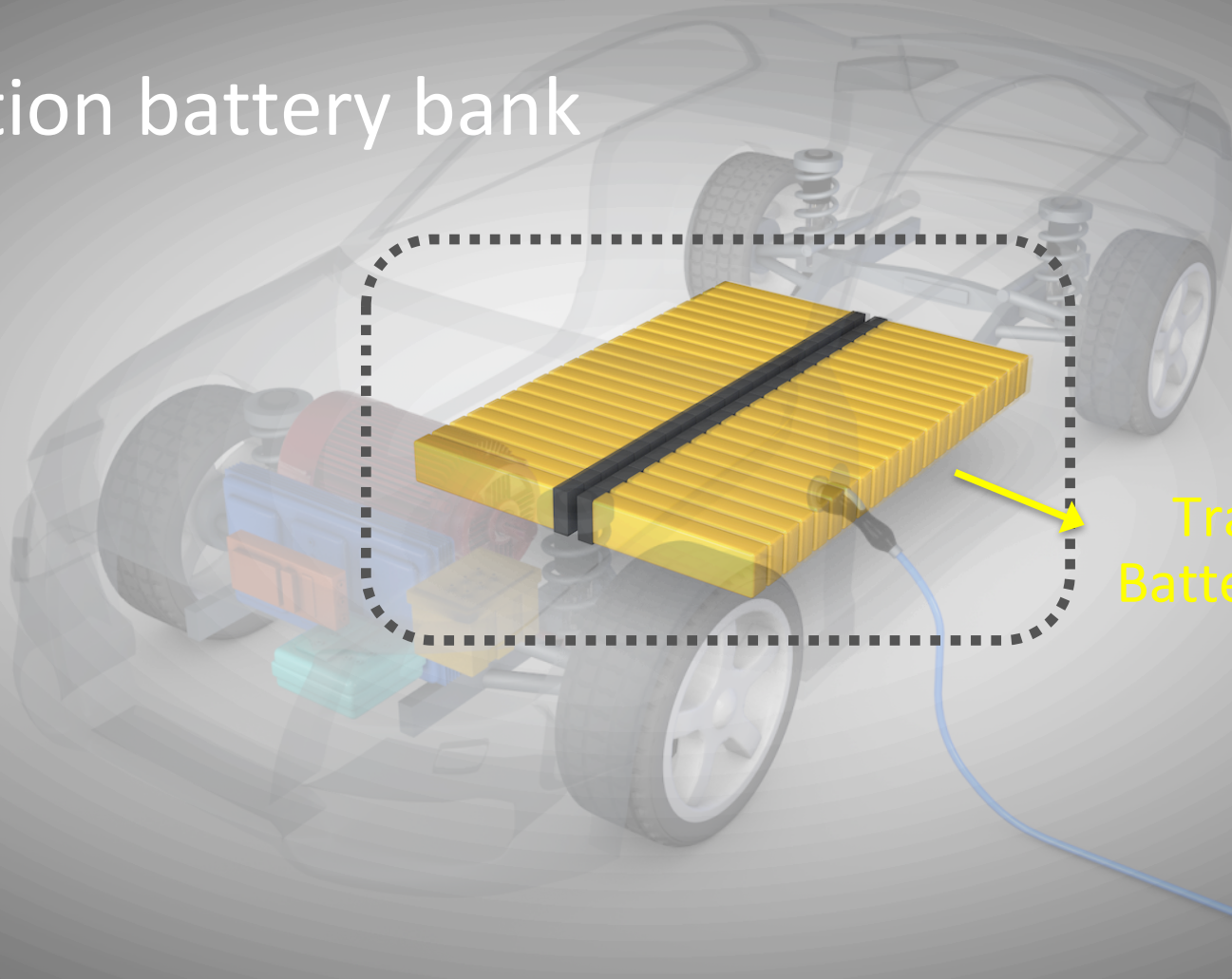


On-board
charger

Onboard charger



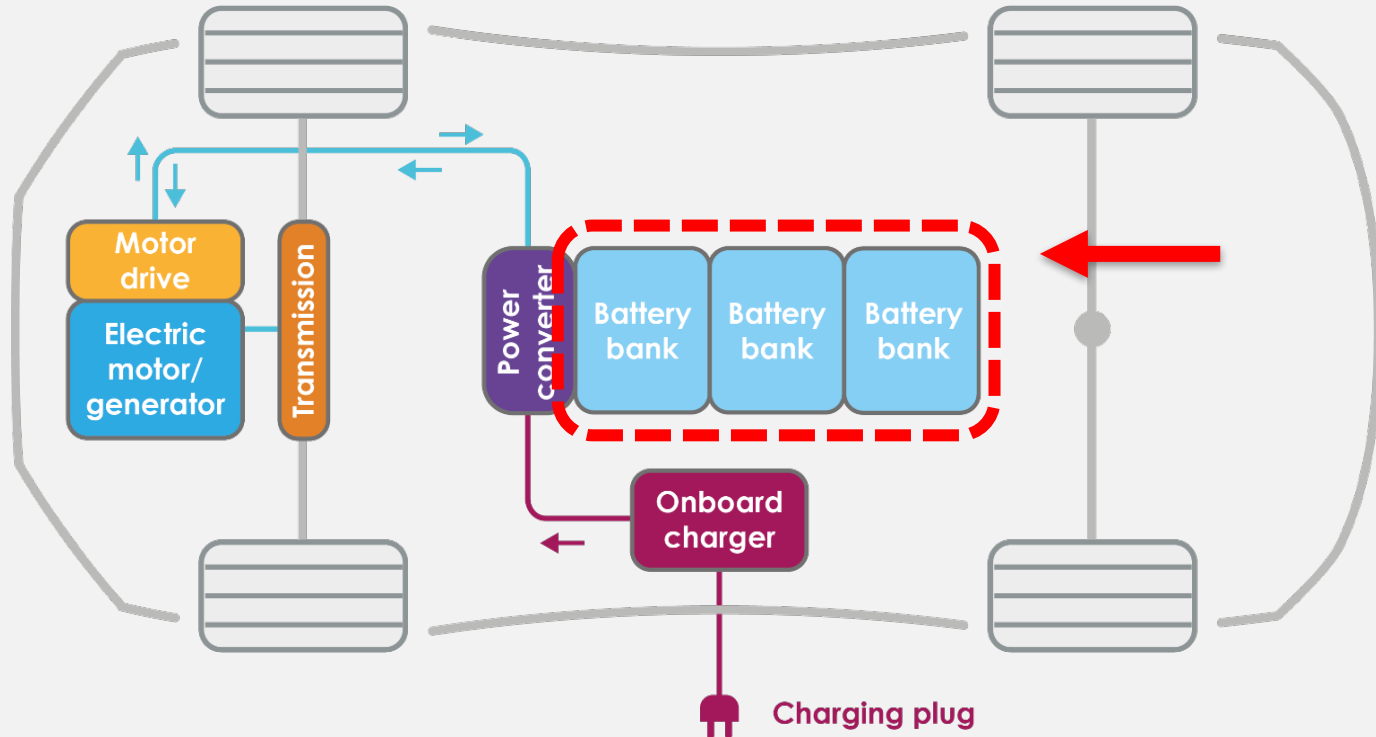
Traction battery bank



Traction
Battery bank

Traction battery bank

- Battery management system
 - Typically 10-100 kWh



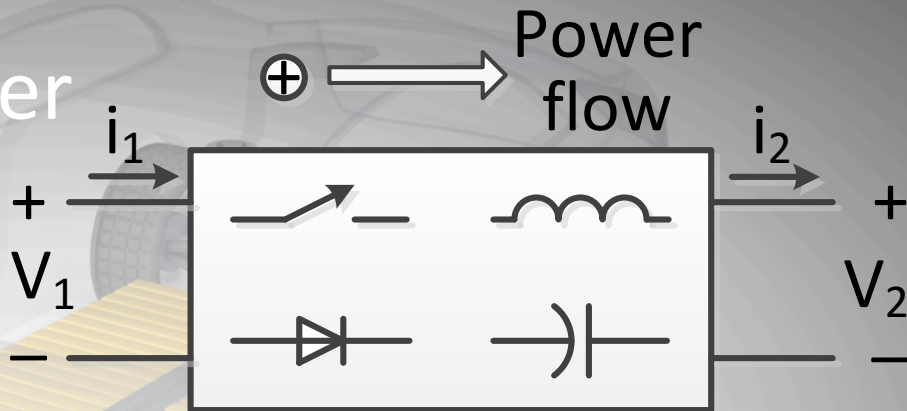
Battery types

- Lead acid
- Nickel based: NiMH, NiCd
- Lithium based :
 - Lithium-ion (Li-ion) and
 - Lithium-polymer (Li-poly)

Weight of 20kWh battery

Lead acid	550 kg
Nickel Cadmium	500 kg
Nickel Metal Hydride	350 kg
Lithium Ion	180 kg

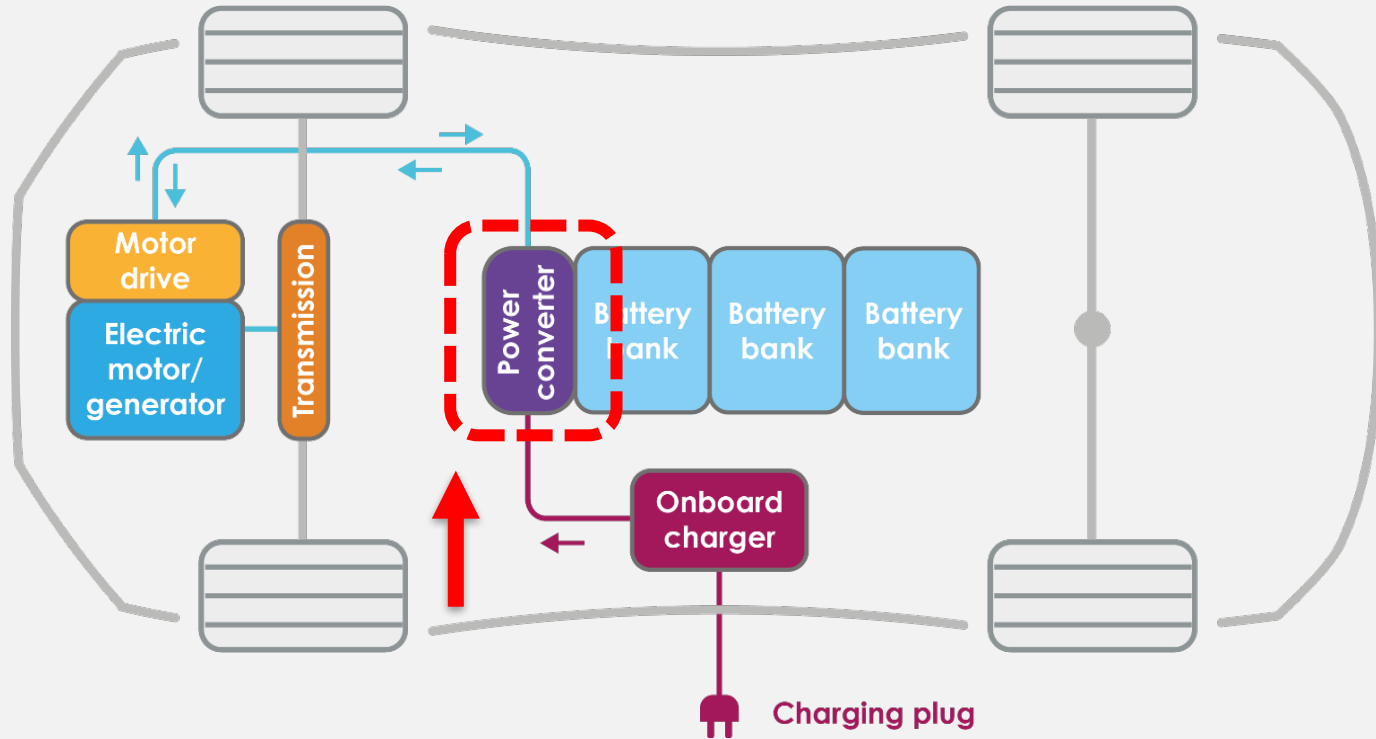
Battery power converter



control signals

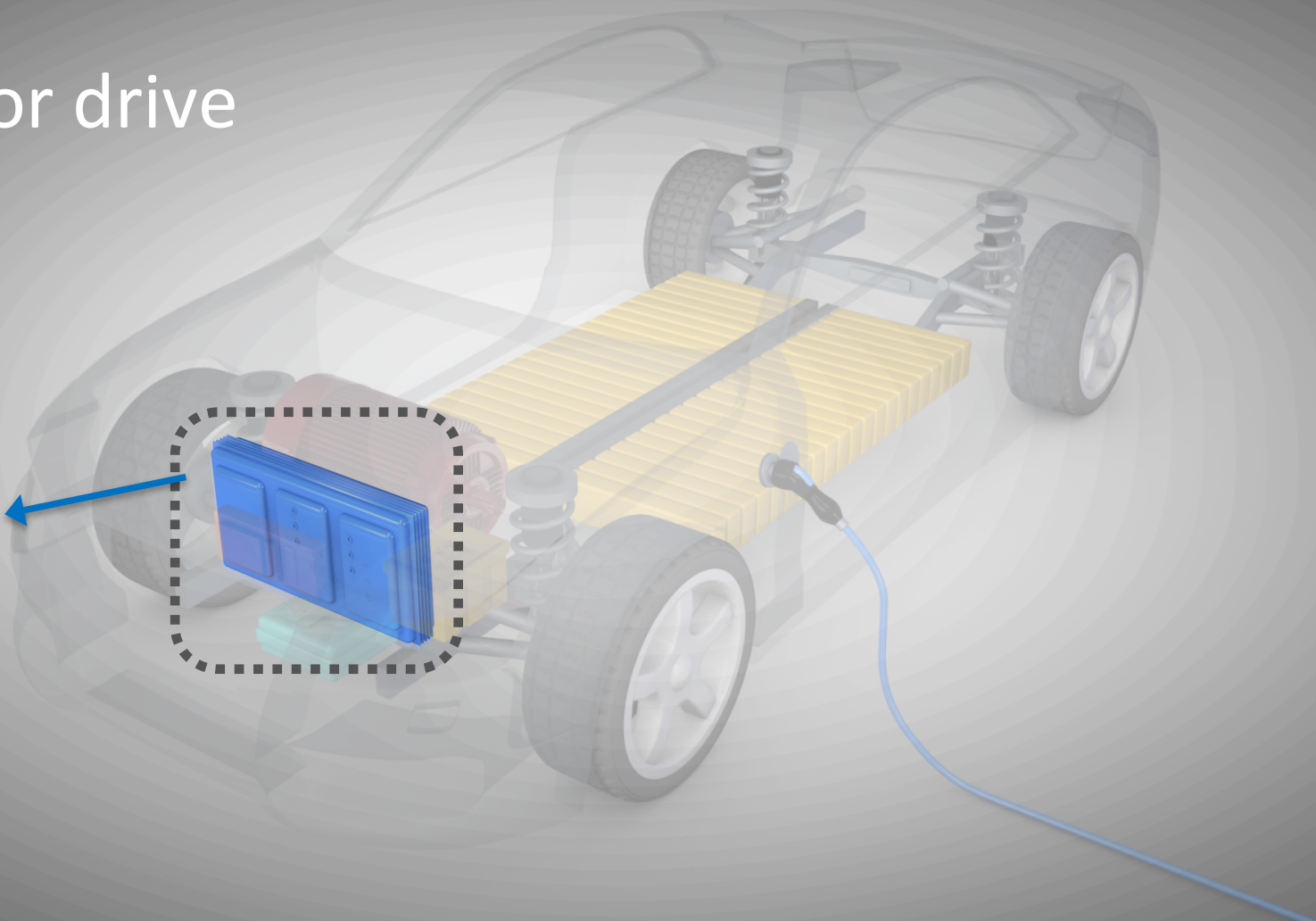
Battery
converter

Battery power converter

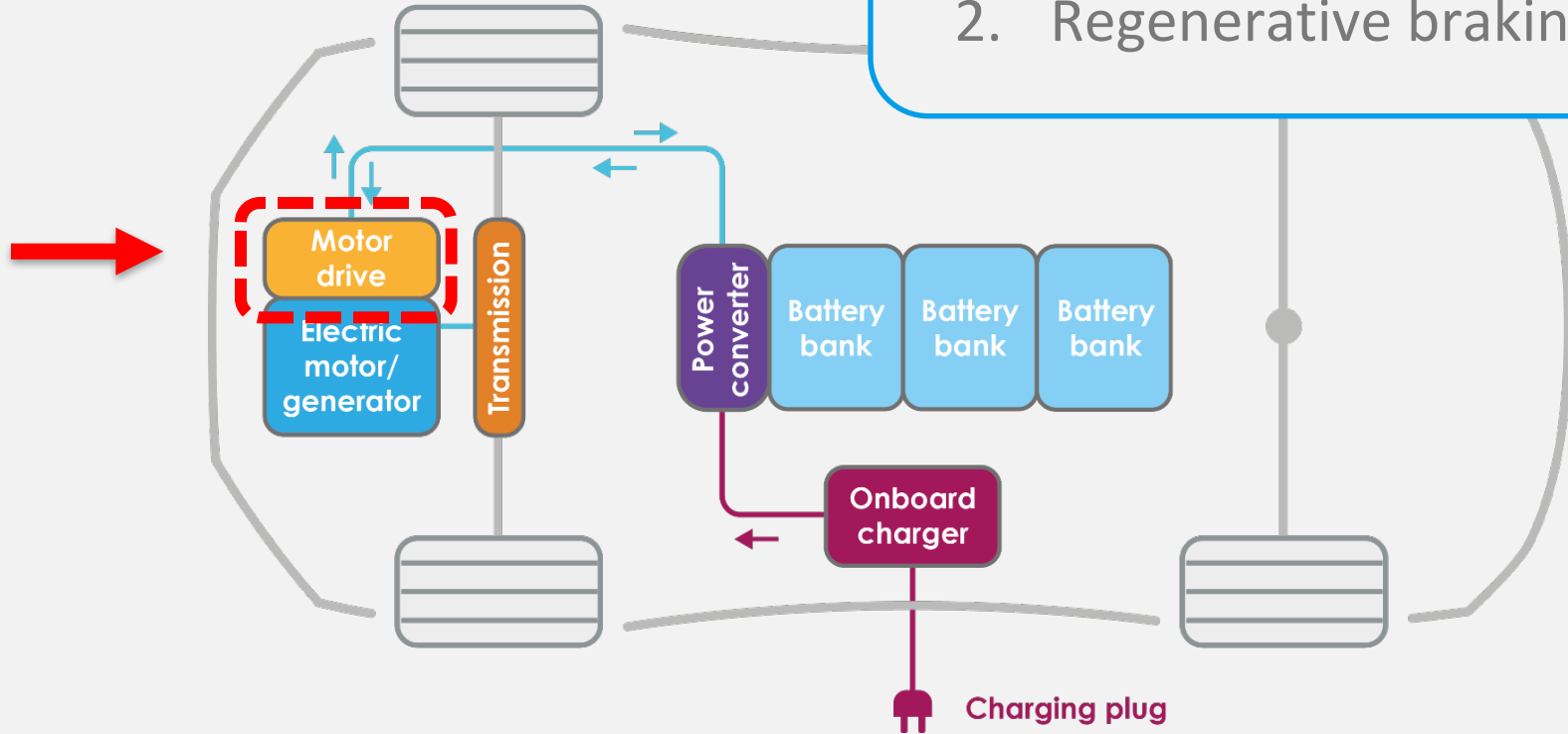


Motor drive

Motor
drive



Motor drive

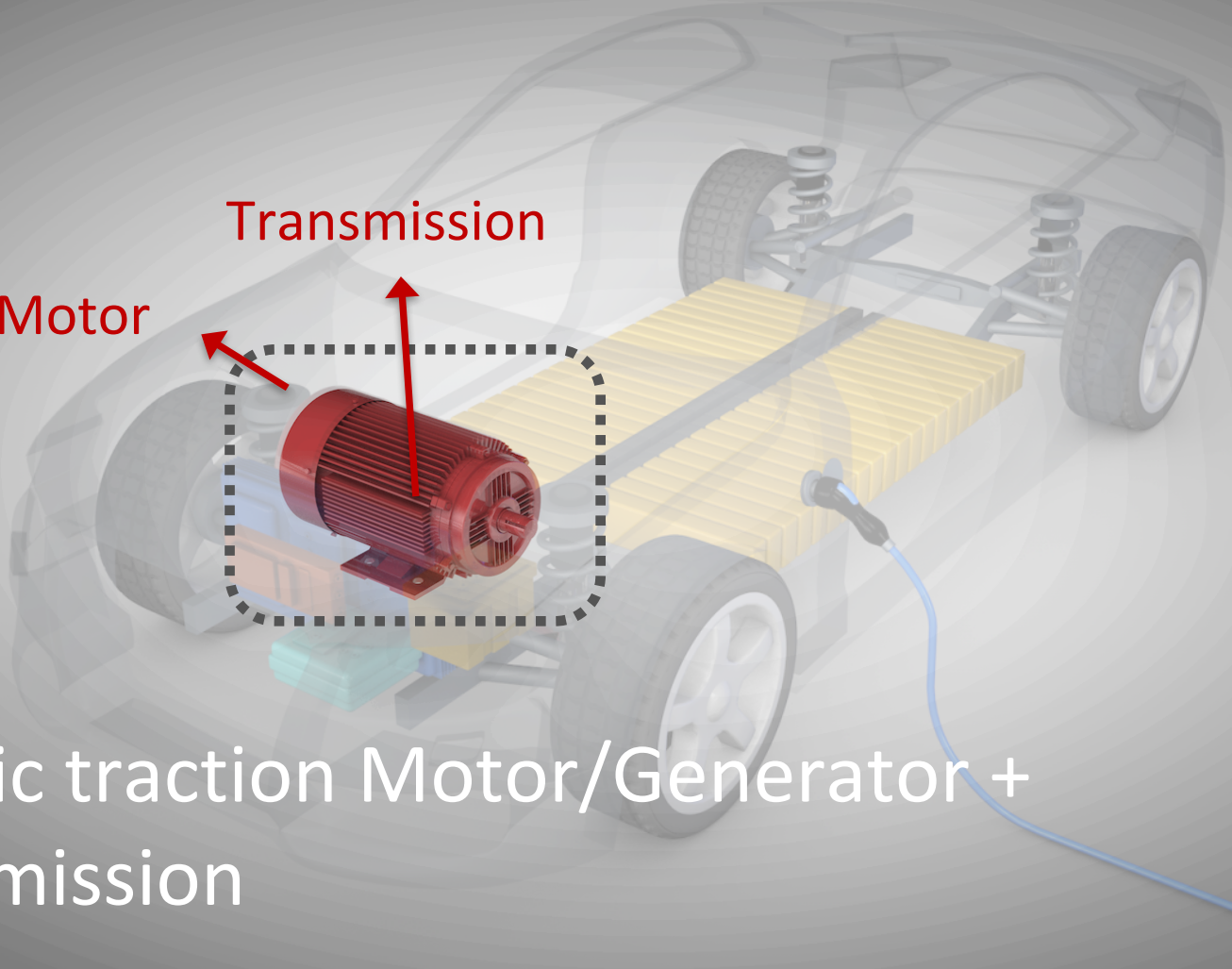


Bidirectional:

1. Driving mode
2. Regenerative braking mode

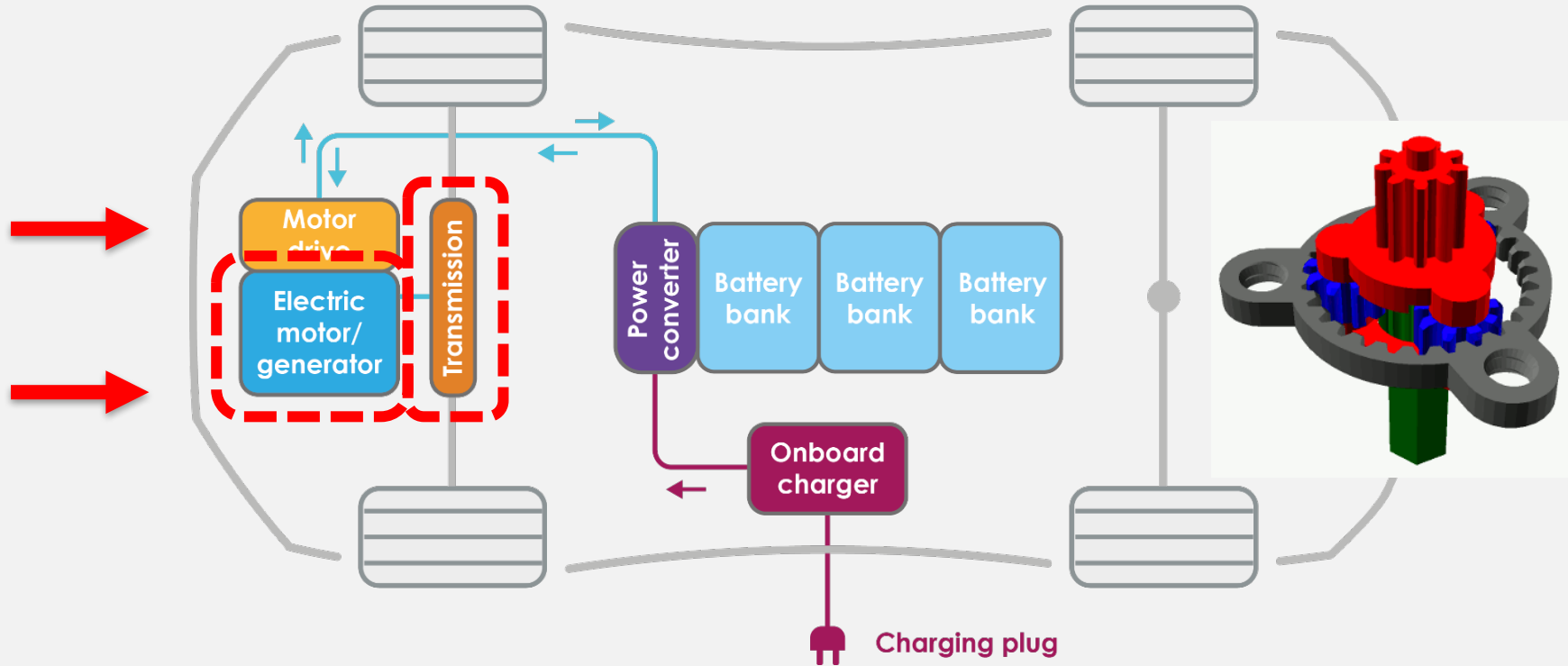
Electric Motor

Transmission

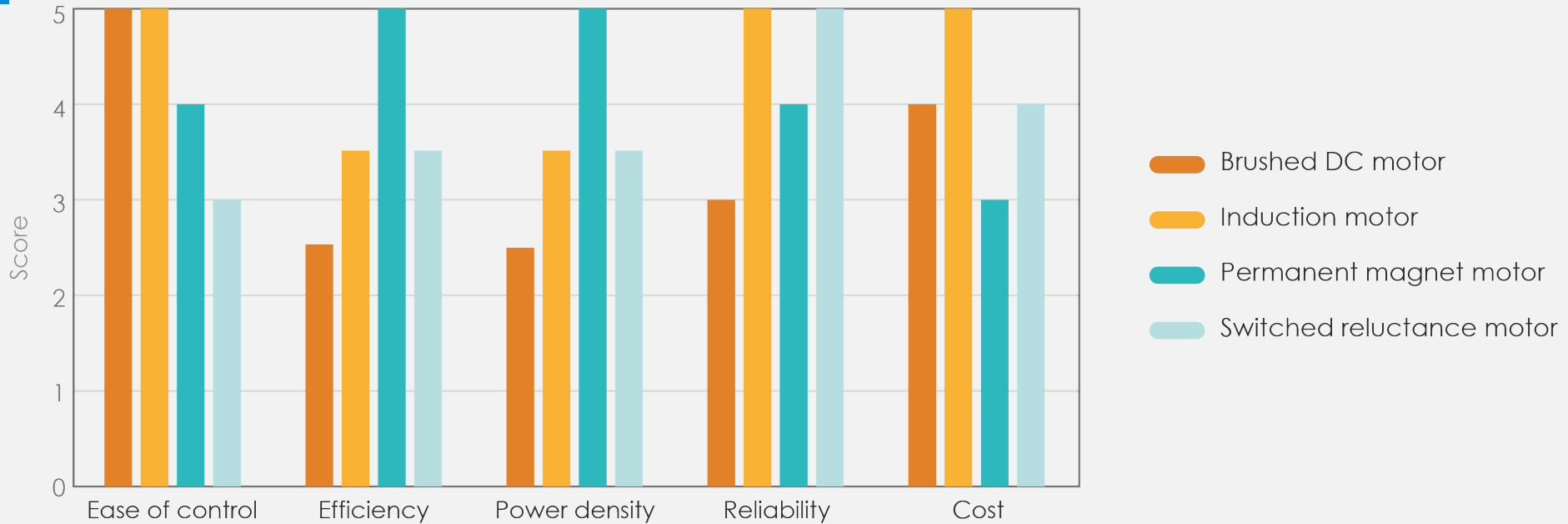


Electric traction Motor/Generator +
Transmission

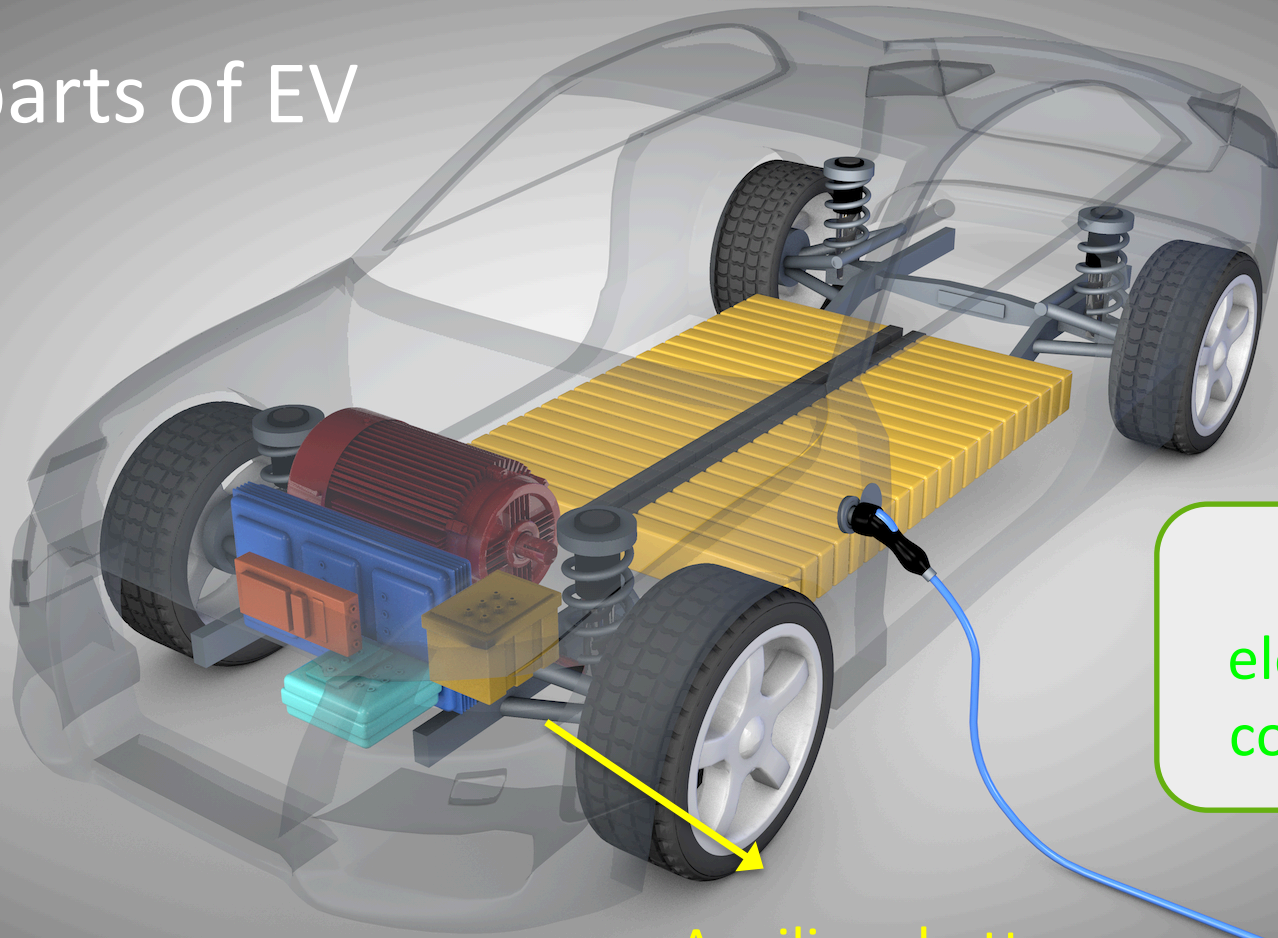
Electric Motor/Generator + Transmission



Commonly used electric motor types



Key parts of EV



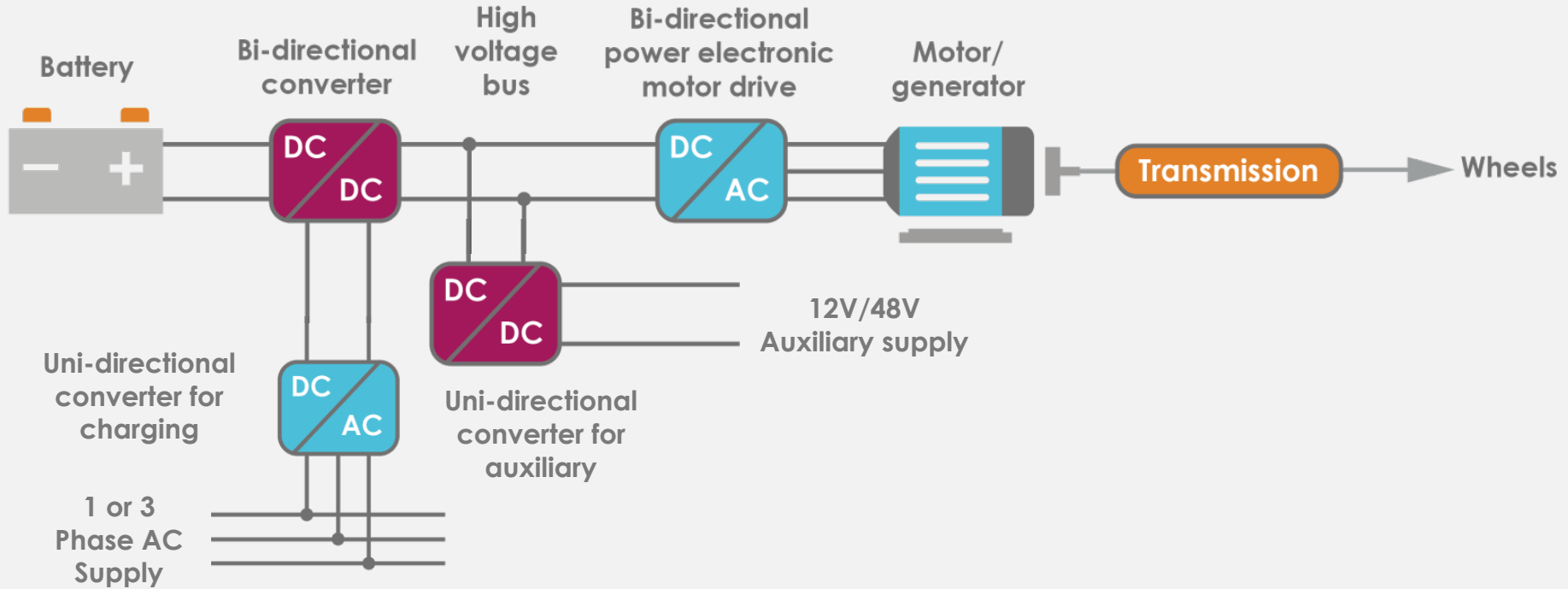
Power
electronic
controller

Auxiliary battery

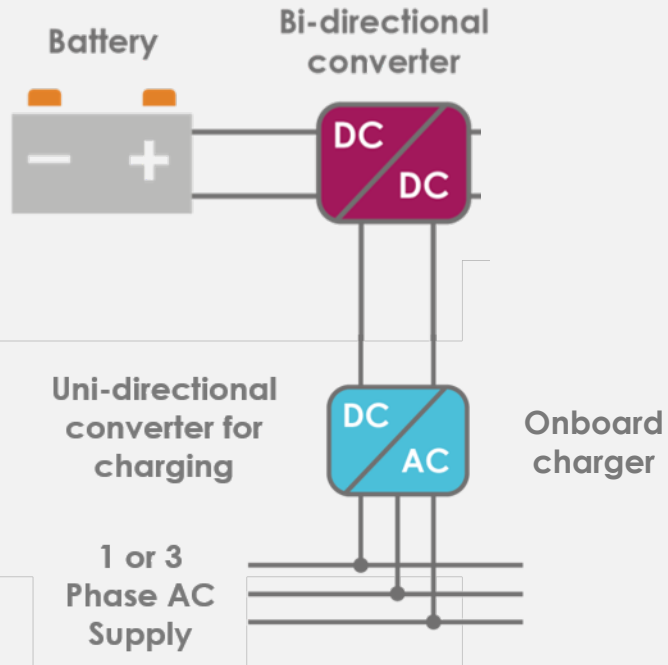


Electric car: Power flow

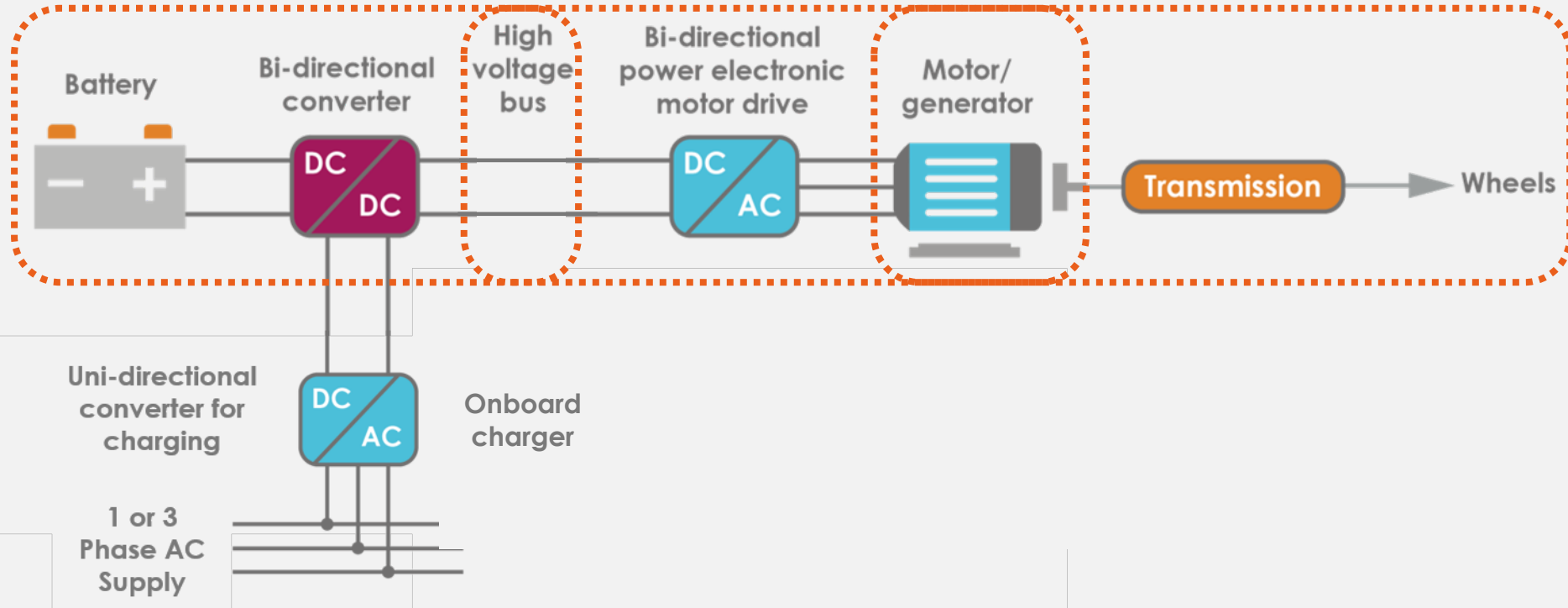
Electric car: Power flow



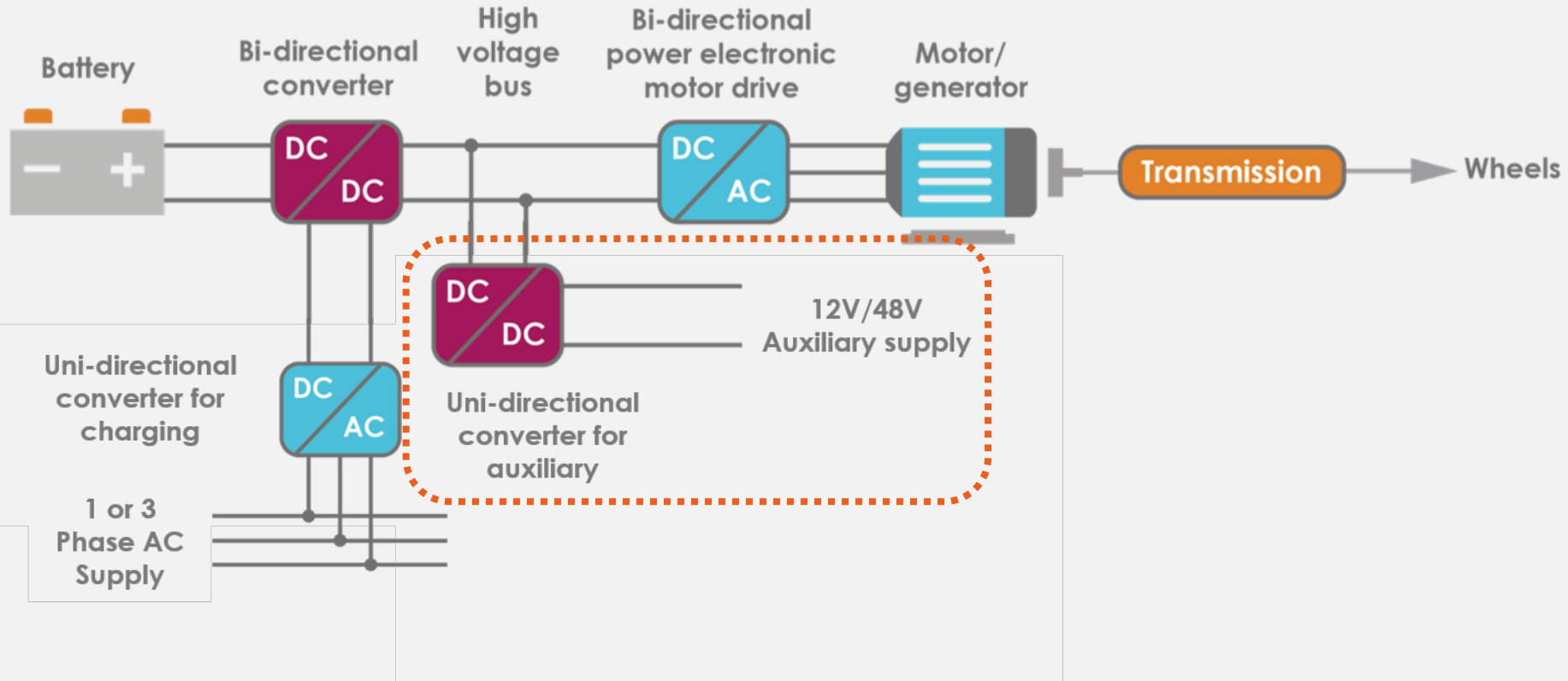
Electric car: Power flow



Electric car: Power flow



Electric car: Power flow



What's inside an electric car

Prof. Dr. Pavol Bauer, Delft University of Technology

