Technical specifications

High-speed Prime Mover

- Power nom./max.: 293 / 440 kW
- Speed nom./max.: 7000 / 20000 rpm
- Torque nom.: 400 / 575 Nm
- Excitation frequency: max. 600 Hz
- Rotor inertia: 0.063 kgm²

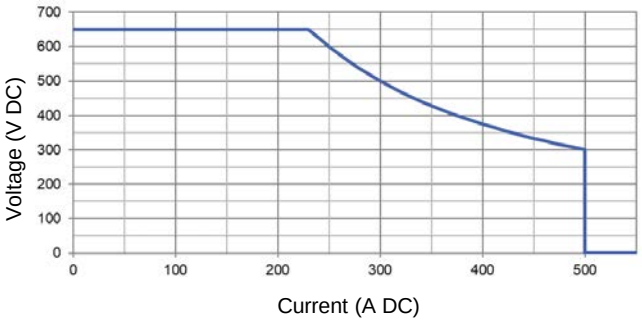
Wheel Dyno

- Power nom.: 2 x 240 kW
- Speed nom./max.: 1000 / 2500 rpm
- Torque nom./max: 2300 / 2875 Nm
- Rotor inertia: 0.75 kgm²

Battery Simulator

- Output voltage max.: 650 V DC
- Power max.: 150 kW (approx.)
- Residual ripple: 1 V (peak to peak)
- Rise time: 0 to ± 500 A in 2 ms

Battery Simulator Power Supply



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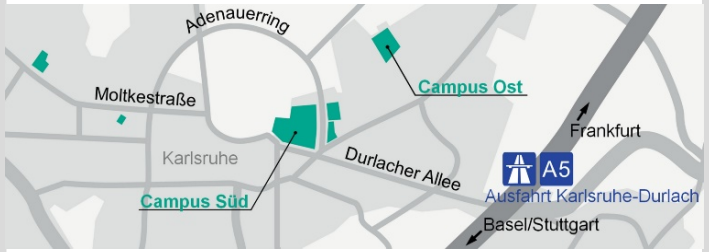

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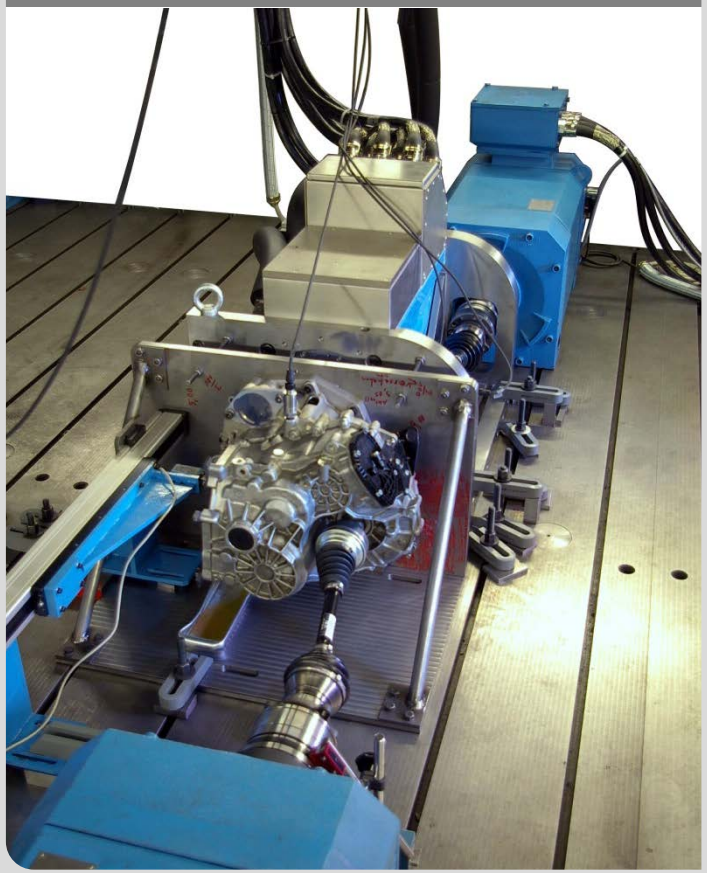
eDriL

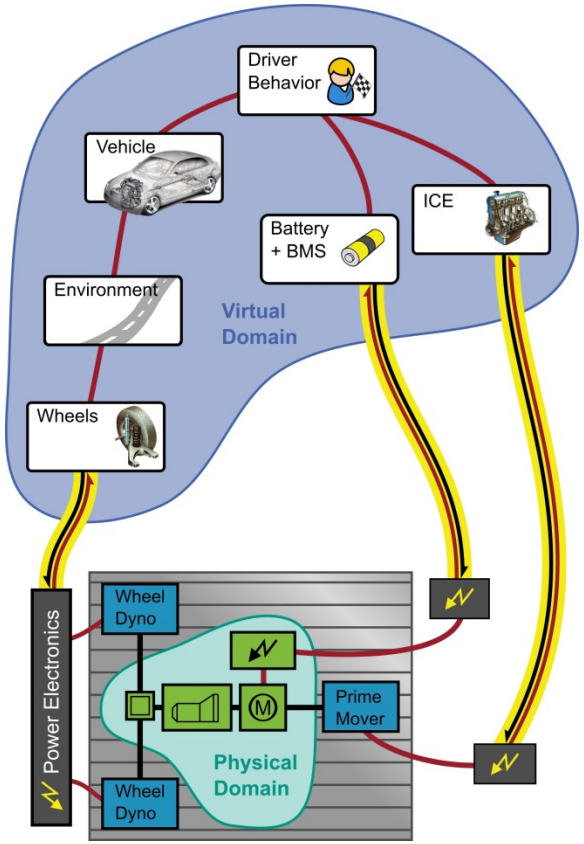
eDrive-in-the-Loop Test Bench

IPEK ▪ Institute of Product Engineering

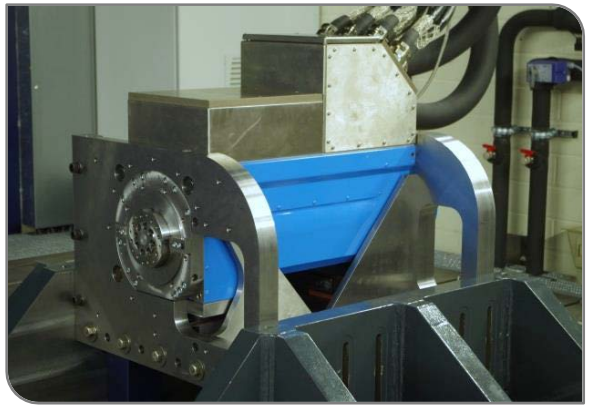


Validation Environment

Highly dynamic Test bench for investigation of conventional, hybrid or electrical drive trains



Physical and virtual domain in the validation environment of the eDriL test bench



High-speed Prime Mover

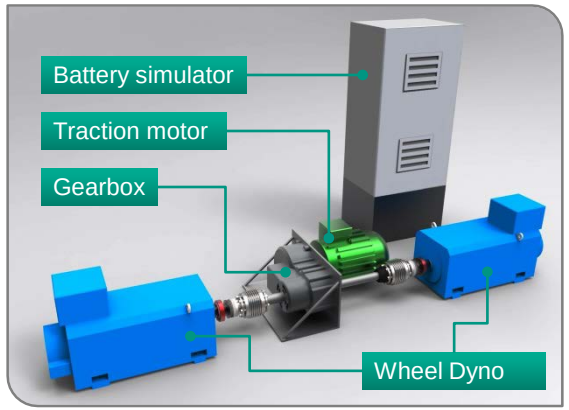
Test Bench Control

- Jäger ADwin-Pro II: Real time simulation of the drive train und digital signal processing
- Open and closed loop control using flexible MATLAB®/Simulink® models
- Automatic operation, e.g. for endurance tests
- EtherCAT Realtime-Ethernet for data transmission
- Various analogue und digital interfaces
- CarMaker® interface

Test bench setup with electric vehicle

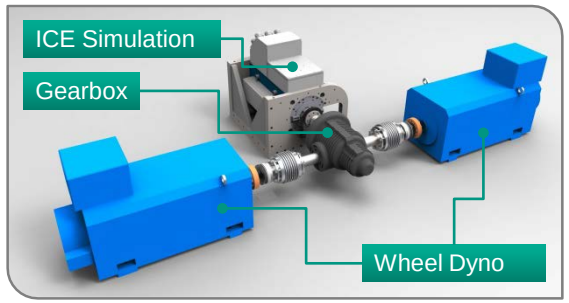
Exemplary Research Topics

- Drive train validation of electric vehicles with physical traction motor and gearbox as well as virtual battery simulation
- Traction motor investigation in Back-to-back configuration up to 20000 min^{-1}
- Analysis of hybrid drive train with virtual internal combustion engine and battery simulation



Test bench setup for drive train validation of electric vehicles

- Investigation of the physical drive train of vehicles with internal combustion engine



Test bench setup for efficiency determination of conventional vehicle gearboxes