

Test Bench for Vehicle Axles

Technical data

- Two Siemens air cooled induction load machines with two Siemens Sinamics S150 Inverter (600 V DC-Bus, 380 A max. current)
- Moment of inertia similar to that of real tyres

Nominal power ¹	190 kW
Peak power ^{1,2}	279 kW
Nominal speed	800 rpm
Maximum speed	3300 rpm
Nominal torque ¹	2268 Nm
Maximum torque ^{1,2}	3331 Nm
End torque ¹	500 Nm

¹Data per machine, ²S6 - 40%



Equipment

- Water conditioning system: Huber Unichiller 080T-H4
- Rapid Control Prototyping System: dSPACE DS1103 PPC Controller Board
- Inverter Device Under Test: Semikron SKAI 45 A2 GD12-WDI
- Communication via CAN-Bus (Central emergency shutdown concept, control of inverter and load machines)
- Acceleration Sensors
 - Uniaxial: Metra Mess- und Frequenztechnik MMF KS95B-10
 - Triaxial: PCB Piezotronics 356A03

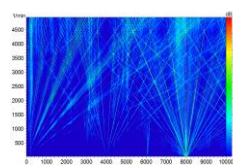
Measurement capabilities

Torques	HBM T12 – 500/1000/3000Nm (accuracy class 0.03)
Speed	HBM T12 – 360 per rev.
Voltages, Currents	Yokogawa WT1800
Power maps	Yokogawa WT1800

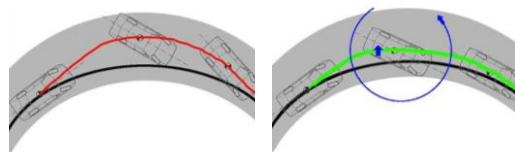
Current application/ Opportunities

- Measurements taking the whole drivetrain consisting of electrical machine, gearbox, side shafts and subframe into account
- Metrological evaluation of the drivetrains NVH behavior

Acceleration on machinesurface



- Measurements on hub wheel drives
- Experimental validation of high dynamic control strategies of electric drives (e.g. Torque-vectoring control) under realistic conditions to improve the vehicle dynamic behavior



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