MASTER: Four-Roller Power Dynamometer

Modern vehicles are equipped with an increasing number of technical functions in order to enhance safety, comfort and performance. Despite the increasing complexity, manufacturers expect short development cycles with a constant price-performance ratio. Therefor the four-wheel power dynamometer was integrated as a MASTER node in a real-time test and development environment, which allows to test products from different development stages. This leads a faster and more effective development of automobiles.

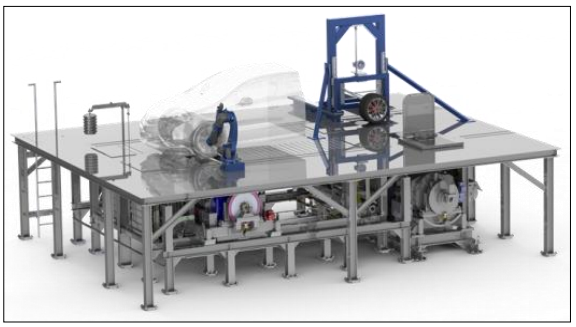
MASTER: Four-Roller Power Dynamometer

Technical Properties

- Test chamber (LxBxH) 12x7, 5x4,5 m
- Air conditioning -20 bis 45 °C
- Max. power 4x230 kW
- Roller diameter front 48“, rear 75“
- Wheel and axle load operation possible

Corner Module

- Examination of longitudinal-, transverse- and vertical-dynamic tire characteristics
- Analysis of electric drives up to 250 kW
- Experimental analysis of spring, damper and suspension characteristics

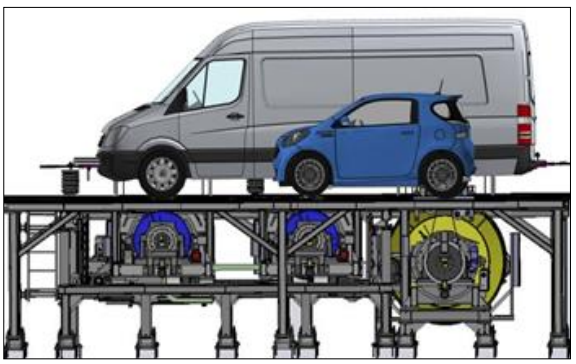


Environmental Analysis of Emissions

- Environmental analysis of exhaust and non exhaust particle emissions
- Automated measuring head positioning using an industrial robot
- Efficiency optimization / friction reduction on the subsystem level for reduced CO^2 emissions

Vehicle Properties

- Speed up to 250 km / h
- Spreading width 0.8 to 2.3 m
- Wheelbase 2.1 to 4.4 m
- Max. Wheel load 1.25 t



Testing Center for Suspension and Brake Systems

Testing center used for interdisciplinary research tasks with regard to driving safety, driving comfort and environmental protection.

- Simulation of heavy vehicles (transporters)
- High performance testing and comfort analysis (NVH)
- Investigations on braking systems, chassis components and complete axles

Specifications:

• Revs:	nmax = 2500 min-1
• Speed:	vmax = 310 km/h
• Momentum:	Mmax= 2300 Nm (up to 1100 min-1)
• Inertia:	Imax = 191 kgm²
• Air conditioning:	Qmax= 4200 m³/h -20 to +50 ℃; 15-85% air moisture

Experimental Platform for Real-Time Coupling

Model Roller Dynamometer

- Demonstrator for real-time coupling of roller test stands and simulation platforms
- Scaled illustration of test scenarios for drive and suspension technology
- Real-time coupling enables a reproducible, true-to-life test
- Investigation of complex physical phenomena

Model Brake Dynamometer

- Demonstrator for real-time coupling of brake test stands and simulation platforms
- Scaled illustration of test scenarios for brake technology
- Real-time coupling enables a reproducible, true-to-life test
- Consideration of complex tribological properties