Electric Car Testbed

The electric car testbed consists of four controlled drives directly connected to the axes of a Roading Roadster Electric car. Both the car drive and other components, as well as the external torque applied to the axes, can be controlled, while the complete state of the car sensors is registered. The station can be used to simulate desired driving conditions and evaluate the performance of wheel drive control algorithms in fully-controlled, reproducible environment. Moreover, the station contains an augmented reality system, which can be used to control the car in a life-like way and allow safe testing of autonomous driving solutions.

Key Features

- Regulations: speed control / torque control / driving load simulation
- Power electronics: Sinamics S120-CM
- Power electronics: 4 inverter modules from common DC link 260kW feed/recovery power
- Vehicle test bench, for testing dynamic driving behavior with real environmental conditions by means of driving simulation
- Engine test bench, for testing drive components and powertrain systems

Possible Applications

- Analysis of the human driver behavior in a highly-controllable, repeatable way
- Different levels of abstraction, from the low-level controllers of the car components (e.g. slipping control systems), up to monitoring driving control of the entire vehicle

Access information

Corresponding infrastructure	Technical University Munich Robotics and Embedded Systems
Location	Boltzmannstraße 3, 85748 Garching bei München, Germany
Unit of access	Working day

Technical specifications

Torque	1500 Nm / 2100 Nm (overload S6-40%)
Shaft Power	80 kW / 170 kW (overload S6-40%)
Maximum speed	3000 RPM
Dimensions	Maximum weight 3000 kg, Wheelbase of 1,2-2,0 m, Gauge of 1,5-4,0 m, Maximum vehicle height 2 m
Mechanics (3)	Direct connection to wheel hub, thus highly dynamic measurements possible
Mechanics (2)	Realizable steering angle: ±18°
Mechanics (1)	Mechanical compensation of steering angle and tire drop over stable articulated arm construction and support bearing
Drive Technology (1)	3~asychronous machine
Drive Technology (2)	Moment of inertia approx.: 1.0 kgm2 (corresponds to that of a tire)
Weight	approx. 1700 kg
Noise	about 93 dB (A)

Additional information

Roading Roadster Electric car (more details can be seen here)