



E-machine test bench

250 kW | 575 Nm | 20.000 rpm



Bosch Engineering



BOSCH



Highly dynamic an fully automated load profiles

can be provided in four quadrants to ensure a targeted as well as resource saving development of electric drive systems



Up to 575 Nm (peak) and 20.000 rpm

can be realized up to an power output of 250 kW and enables us to test a wide range of drive systems



50 – 1.000 V

are covered by our battery simulation to test current as well as future drive technologies

PRODUCT BENEFITS

With our e-machine test bench, we offer you comprehensive options to develop, test and approve electric drive systems.

Our expertise and our state-of-the-art testing and measuring equipment enables us to support you in commissioning of first prototypes till series release of your product.

Our ability to emulate diverse and reproducible environmental conditions gives you the advantage of close to reality measurements.

We ensure a significant reduction of development time and costs while complying with your quality goals.

SCOPE OF SERVICE

- Individual implementation of special setups with virtual “live access” to the test bench control system
- Autonomous development of test cases and test strategies based on applicable standards and legal requirements
- Independent preparation, implementation and documentation of measuring campaigns
- Independent analysis and resolution of problems in close cooperation with the responsible software developers, application engineers and hardware developers
- Analysis of partial and overall efficiency as well as continuous performance of your drive system in fully automated driving cycles
- Validation of safety functions under testing conditions that can be controlled very precisely depending on the application and in the corresponding simulation environment
- Execution of short-term adjustments at our testbench setup or your drive system through the connected prototype workshop and HV-laboratory
- Provision of an inspiring working environment in the shape of an open workspace for your engineers, technicians and operators

BRAKE DYNAMOMETER

Rotational speed	20.000 rpm
Power output	250 kW
Torque (cont.)	400 Nm
Torque (peak)	575 Nm
Dynamic range	up to 40.000 rpm/s

BATTERY SIMULATION

Voltage	50 to 1.000 V (max. 250 kW)
max. current	600 A (max. 250 kW)
Power output	250 kW
Dynamic range	U_{nom} in 1 ms (1 kV per ms)

CONDITIONING

Coolant conditioning	<ul style="list-style-type: none"> ▪ two temperature- and flow-controlled independent coolant circuits ▪ automated control possible ▪ -35 - 130 °C 0,5 - 20 l/min
Inverter conditioning	<ul style="list-style-type: none"> ▪ atmospheric conditioning of the Inverter ▪ automated control possible ▪ -30 - 105 °C (atmospheric)
Oil conditioning	<ul style="list-style-type: none"> ▪ a temperature- and flow-controlled oil circuit ▪ automated control possible ▪ 0 - 150 °C 0,5 - 20 l/min

MEASUREMENT EQUIPMENT

Measurement-Channels	160 x temperature measuring points (type K) 16 x HV-insulated temperature measuring points 16 x analog outputs/inputs 8 x telemetry channel, axial or radial 4 x acceleration sensors (1-dimensional) 2 x coolant flow rate and differential pressure	NVH equipment	optional
Analzers	1 x Yokogawa WT3000 1 x Yokogawa DL950 (max. 100 Ms/s) for transient measurements	Setups	<ul style="list-style-type: none"> integration of AC-short-circuit and main contactors vehicle -like setups: >0,8 m AC cable length atmospheric Inverter conditioning quick-change technology
		Interfaces	ASAM, CAN, CAN-FD, FlexRay, LIN, XCP, Ethernet, Ether-CAT, Profibus
		Transducers	1 x HBM T12 1 kNm

SYSTEM OVERVIEW

