

Testing services

Dynamic hot-gas test bench

Bosch Engineering



BOSCH

Invented for life

PRODUCT BENEFITS

- ▶ Test and check the durability of complete systems and individual components for use in the exhaust-gas system
- ▶ Develop a design for waste-heat recovery systems
- ▶ Achieve reliable test results thanks to the high reproducibility of the measuring environment
- ▶ Develop functions, optimize operating strategies, calibrate control units

up to

400 kW

heat power makes it possible to test a broad range of commercial-vehicle powertrains.

TASK

Only by making proper use of all technological potential can we hope to achieve further reductions in emissions and fuel consumption. Together with our clients, we develop tailored testing services for optimizing, protecting, and implementing innovative operating strategies. Our offering covers the full process – from concept to implementation, documentation, and beyond to interpretation of results.

On our dynamic hot-gas test bench, we can test complete exhaust-gas systems and their individual components under reproducible conditions in a safe and secure environment. And we are not restricted by a limited selection of components or fluids. Our hot-gas tests can simulate an internal-combustion engine across a wide output range – from idling all the way to full load. Temperature can be adjusted independently of the mass flow. In our tests, we apply standard driving cycles such as the NEDC and FTP75, as well as highly dynamic cycles such as the NRTC.

FUNCTION

Our hot-gas test bench is divided into two parts: in one building, an air compressor helps generate process air, which is then heated. System-wide automation allows the free configuration of temperature and mass flow. The test gas is then channeled into a second building, which houses a test chamber and an electric motor. The test object can be driven and braked in 4-quadrant operation. Because the cooling water can be adjusted to any temperature, it is possible to simulate a realistic vehicle cooling system. A closed testing room and a powerful suction system permit handling of explosive process media.

almost any system

can be tested and optimized due to the unlimited range of usable fluids.

transient testing cycles

can be represented with a temperature gradient of 200K/s and a mass flow gradient of 250kg/h/s.

TECHNICAL CHARACTERISTICS

Heat power	up to 400 kW
Hot-gas temperature (max.)	1,200 °C
Mass flow range	50 – 2,000 kg/h
Compressor pressure ratio	PI = 2.5
Cooling tower capacity	up to 600 kW (conditioning of the cooling water up to 95 °C depending on the ambient temperature)
Specific cooling output	8 kW/K
Mechanical/electrical power sink	up to 40 kW
Temperature gradient	200 K/s
Mass flow gradient	standard 250 kg/h/s
Fluids	no limitations
Sampling rate for generating measurement data	up to 1 kHz

Functional overview of the hot-gas test bench

