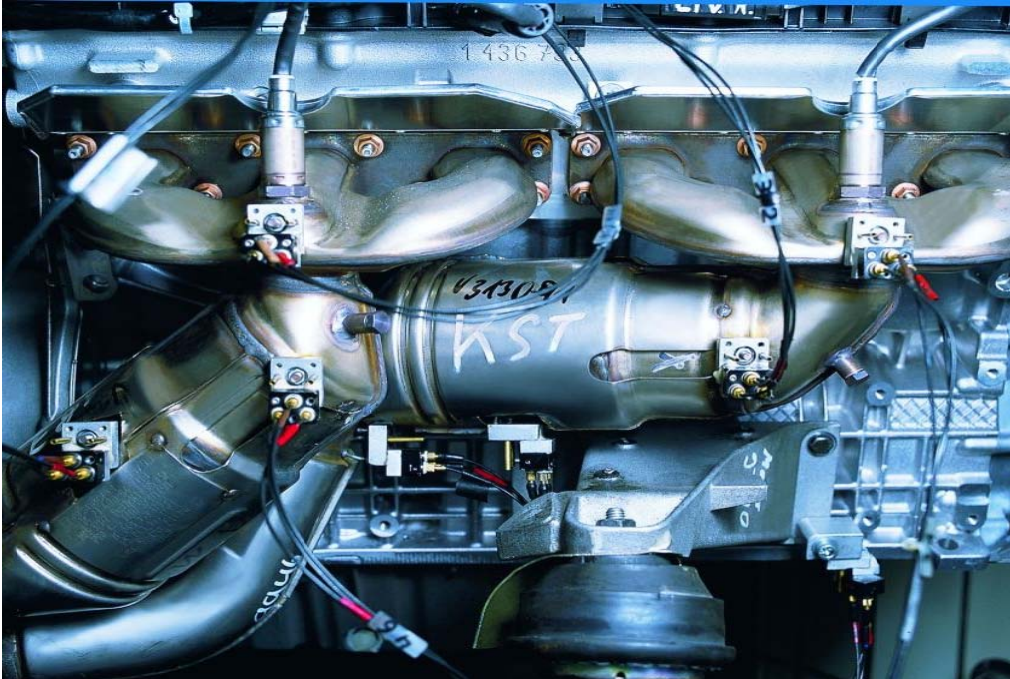


## Exhaust System Development



At our exhaust gas test bench we simulate the required structure of the exhaust system down to the last detail and run resonance durability tests such as vibration analyses or thermal shock tests.

Testing of exhaust gas systems with assembly with vehicle-compliant assembly:

### Engine

- Engine mounting position
- Vehicle transmission
- Engine support arm and mountings

### Exhaust system

- Without mechanical changes
- Original suspension brackets
- Calibration according to vehicle coordinates
- Stiff design of mounting

## **Thermal shock tests**

To simulate combined driving situations (hot operating, post-heating and thermal shock parts, during motoring, we can simulate driving with open throttle valve.

For thermal shock tests of exhaust systems or components of the system running independent of the engine, hot gas test benches with exhaust gas flow rates of up to 1800 kg/h at 1200 °C (exhaust back pressure of up to 5 bar) are available.

Water spraying equipment or immersion tools are components of the test bench equipment.

## **Vibration, strain, and temperature measurements**

- Modal and operational vibration analysis on the complete engine test bench
- Resonance durability run with resonance tracking

In connection with the vibration analysis, resonance tracking is simulated during durability tests (resonance tests).

## **Hot gas bending cycle test benches (component testing)**

The mechanical component safety against cracking and fatigue fractures is established by applying multi-axle alternating loads.