Contributions to the Development of Exhaust Gas Emissions

Source: BMW

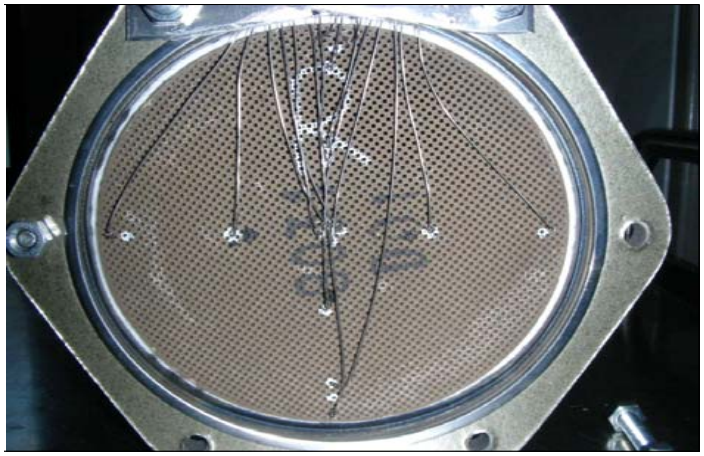
Contents

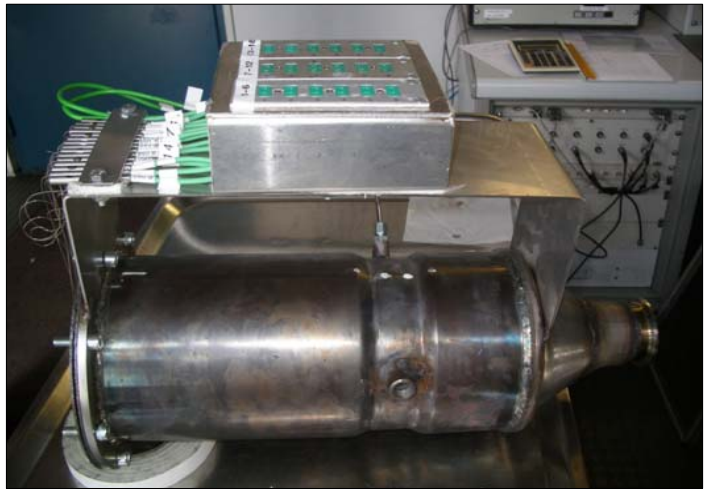
- DPF Development
- Urea Injection Systems
- Catalyst Development
- Thermal Imaging
- Stream Lab
- High Temperature Oven

DPF Development

DPF Testing / Ageing

- Regeneration behaviour at different soot and ash accumulation conditions
- Regeneration options under worst-case conditions

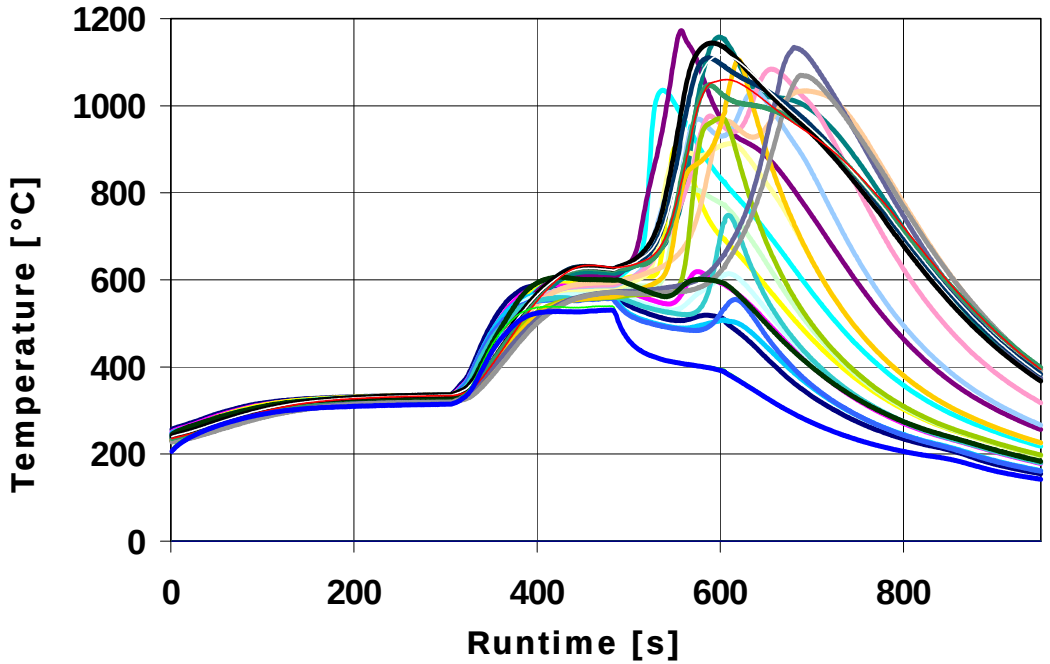




DPF Development

Soot Accumulation

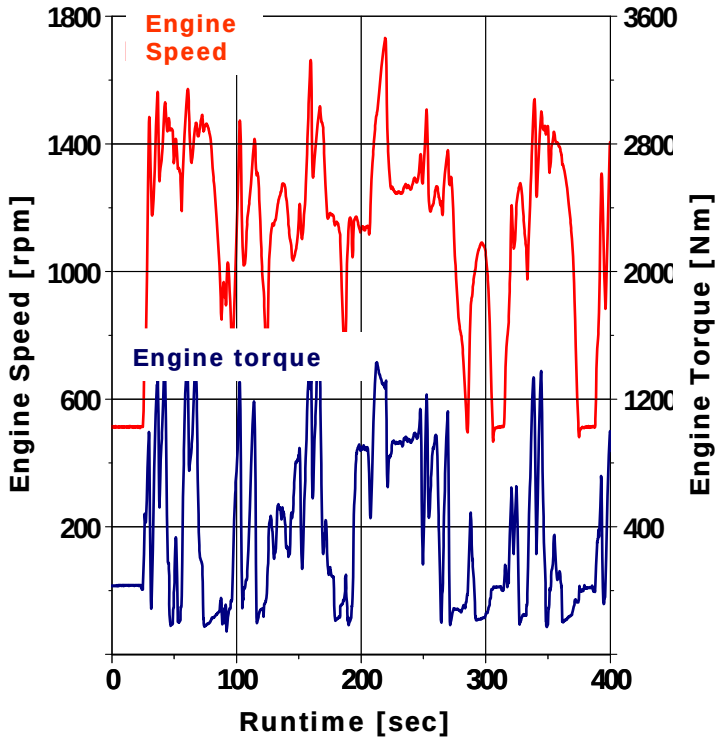
- Cycles according to customer specification
- Automated ageing and regeneration cycles
- Event-related program sequence via Inca communication



Temperature Gradients during Uncontrolled Regeneration

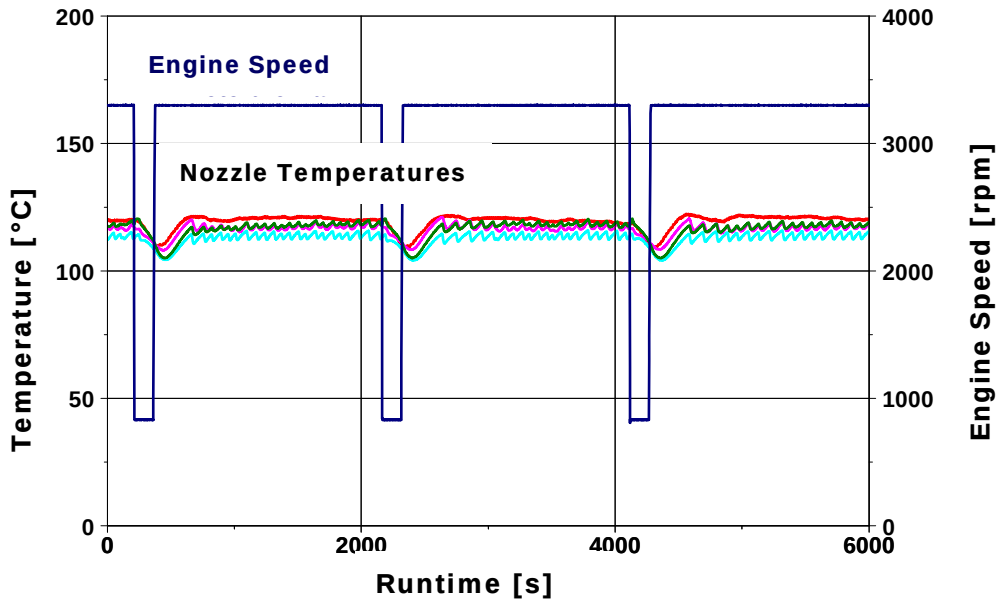
DPF Development

- Ash accumulation cycles with accumulation-related regeneration
- Characterization according to defined ash accumulation
- Rating of regeneration behaviour
- Certification according to ECE, US and further guidelines



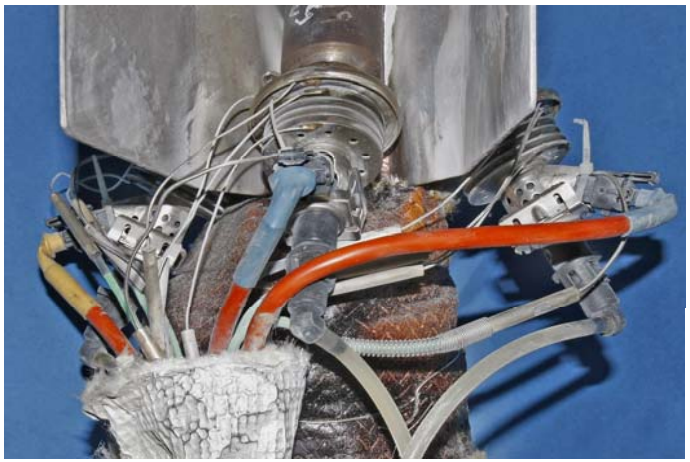
Section of ETC Cycle

Urea Injection Systems



Temperature Characteristics at Top of DeNox Nozzle

Urea Injection System



Equipment of Exhaust Gas System with several DeNox Injectors

Cooling Element of a DeNox Injector with Thermocouples

Catalyst Development

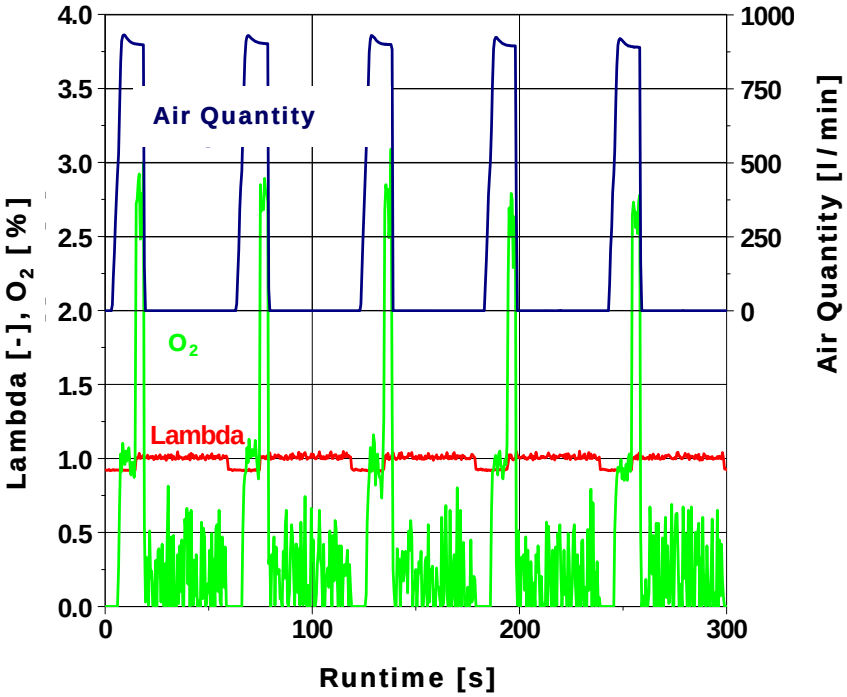
Catalyst Testing

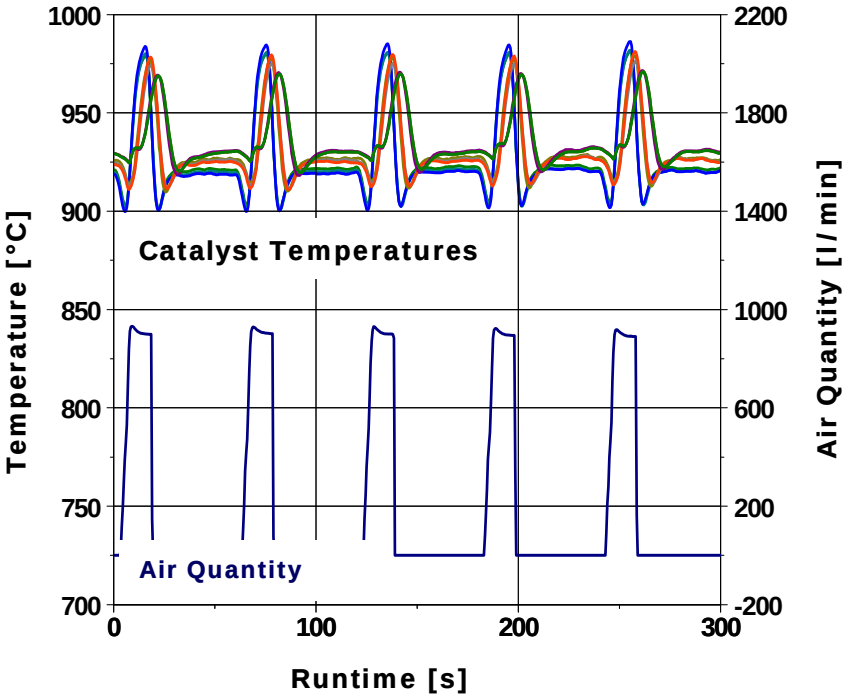
- Development of driving cycle with lambda leaps
- Air injection for increase in temperature
- Testing of several samples within one exhaust line
- Exhaust gas analysis via 2-line exhaust gas measurement device

Catalyst Ageing of several Samples within one Exhaust Line

Catalyst Development

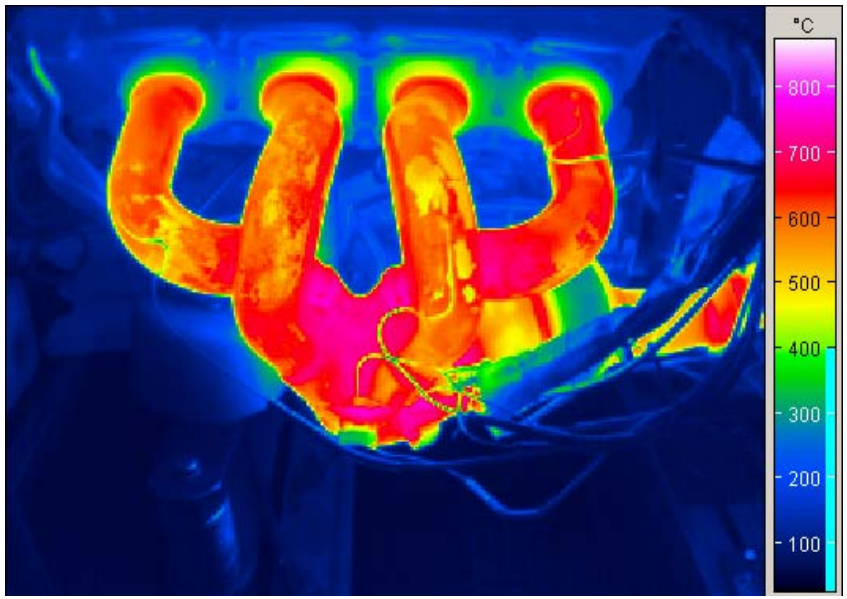
Measuring Cycles with additional Air Injection and Lambda Leaps

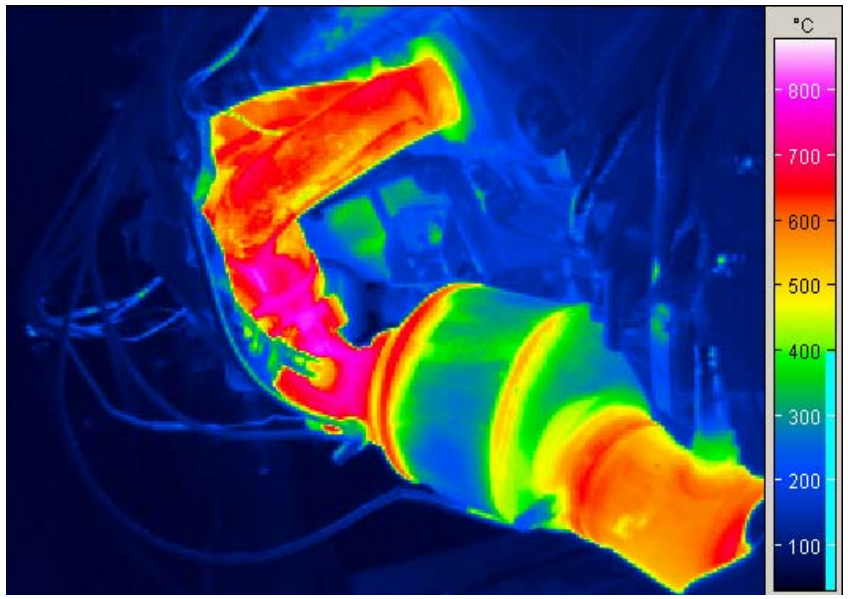




Thermal Imaging

Thermal Imaging of Exhaust Gas Components





Temperatures at Nominal Output

Stream Lab

- Adjustment of exhaust mass flow rate and exhaust gas back pressure
- Optimization of geometry of flow
- Spatial twist and tumble measurement
- Maximum mass flow rate: 400 kg/h

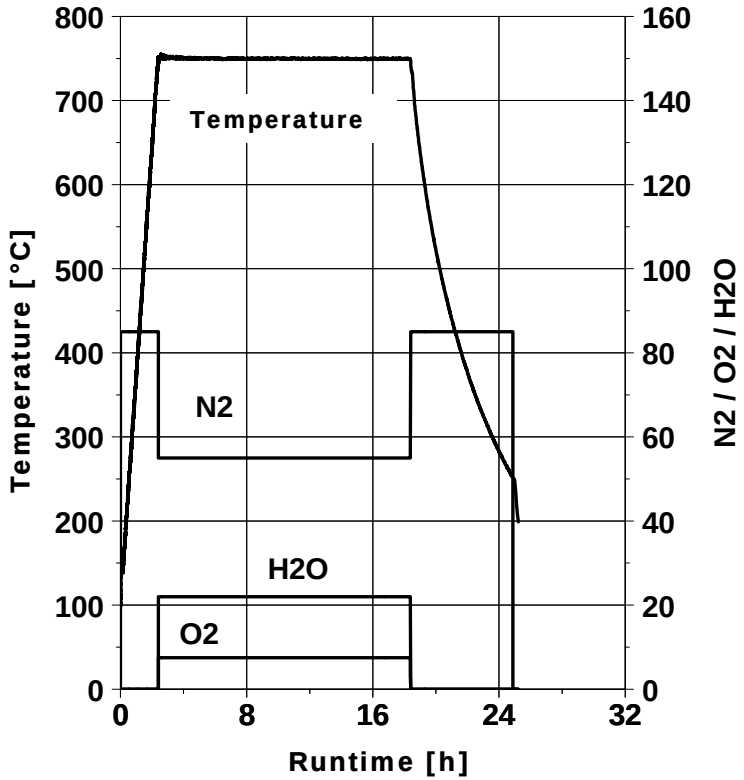
Tippelmann Test Bench

High Temperature Oven

- Preconditioning
- Stabilization
- DPF regeneration
- DPF and catalyst ageing
- Artificial atmosphere

Technical data:

- Maximum temperature: 1200 °C
- Usuable space: 50x50x70 cm
- Injection of N_2, O_2 and H_2O



Temperature Characteristics at DPF Preconditioning

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