Cambustion DXG

Burner-Based Aftertreatment Testing and Aging

Integrated System for HD Aftertreatment Testing

- Diesel fuelled burner
- Independent NO_x, SO_x, O_2, H_2O, oil consumption control
- Flow rates to 1600 kg/h and temperature to 900°C
- Accelerated aging cycles
- Integration with instrumentation for aftertreatment performance testing and mapping

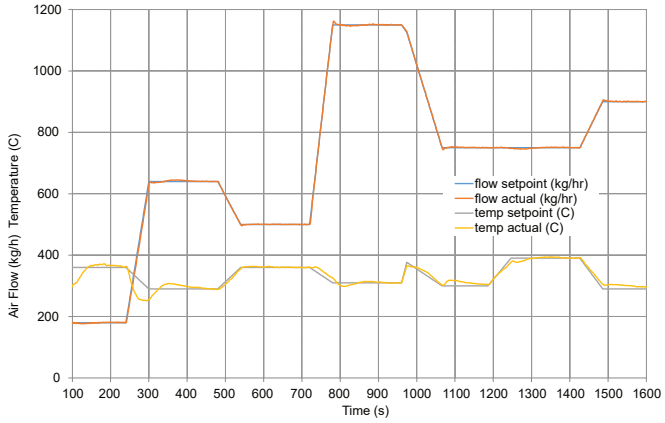
DXG Aftertreatment Aging and Testing System

The DXG uses Cambustion's proven Diesel burner-based test platform enhanced to generate real-world engine flows and temperatures for larger engines. The DXG integrates systems for:

- Generation of NO_x independent of burner conditions
- Control of O_2 and H_2O concentration
- Simulation of oil consumption in bulk and volatile pathways for generation of ash and other poisons such as Phosphorus.
- SO_x dosing to simulate full-lifetime exposure in accelerated cycles.

The DXG is controlled by flexible software which allows configuration of complex test cycles for long-term unattended operation. Cycles can include steady-state operation and the simulation of transient dynamics. Long duration durability or aging cycles can include periodic automated catalyst performance evaluation, without the need to demount the sample and test elsewhere.

Example DAAAC Aftertreatment Aging Cycle on DXG



DAAAC Accelerated Aftertreatment Aging

Heavy duty emissions legislation requires demonstration of compliance out to a long full useful life. The DAAAC Protocol provides a methodology for developing accelerated cycles to give equivalent aftertreatment system degradation to the full real-world lifetime with reduced duration and cost.

DAAAC derived cycles can be run on an engine, but this needs modifications to the engine to achieve the accelerated cycle conditions and requires expensive dynamometer facilities. Alternatively, the cycle can be reproduced on a test bench such as the Cambustion DXG. This reduces cost, avoids long-term commitment of valuable engine test benches, and improves reliability and reproducibility.

The capabilities of the DXG meet the requirements specified in Federal Regulation 40 CFR part 1065.1143 for test stands to reproduce aging cycles.

Aftertreatment Performance Testing

The Cambustion DXG integrates with gas analysis instrumentation for measurement of aftertreatment component performance.

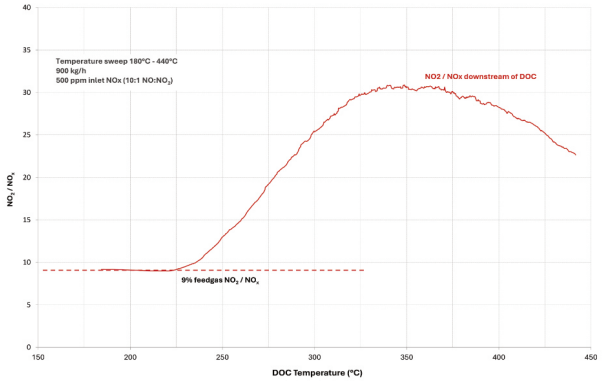
Cambustion **DXG** Aftertreatment Aging and Testing System

Independent control of gas flow, temperature and NO_x concentration allows analysis of NO_x aftertreatment components.

For example, DOC activity for NO > NO_2 oxidiation against temperature is quickly and repeatably tested:

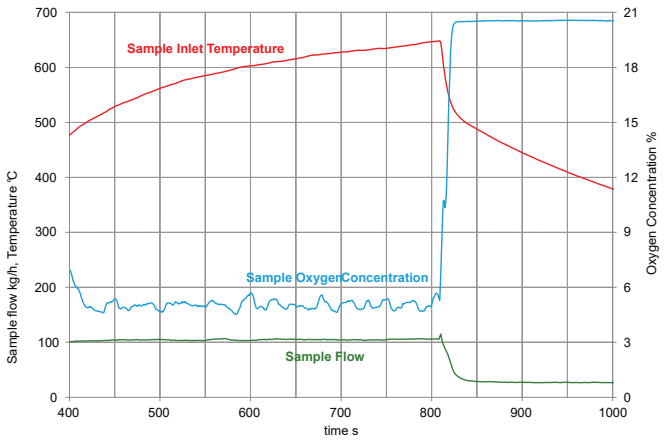
O_2 and H_2O concentrations are dynamically controlled by Exhaust Gas Recirculation so that transient events such as fuel shutoff or drop-to-idle can be simulated.

Catalyst Testing - DOC NO_2 / NO_x Ratio vs Temperature



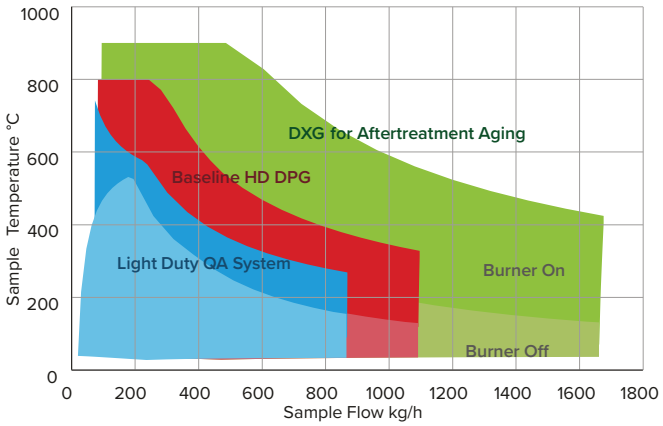
For emissions calibration applications, aftertreatment performance can be mapped on the DXG systematically and efficiently due to the independent control of operating parameters.

DXG Dynamic Oxygen Control - Regeneration Simulation



Cambustion can integrate control of aftertreatment functions such as DEF / AdBlue dosing with the DXG control software so that test protocols can include the functioning of these systems.

Cambustion Aftertreatment Testing System Example Flow Ranges



A Flexible System

The DXG system can be configured for testing parts from light duty up to heavy duty sizes.

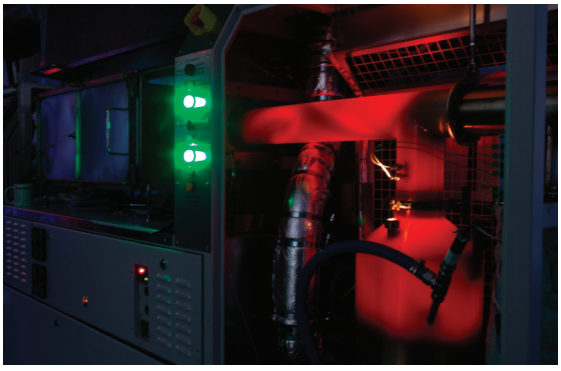
The same system can be used for R&D and QA tests and also for aging according to legislated protocols or proprietary cycles.

Installation requirements for a DXG system are much simpler than an engine test bench. Cooling air control is built-in and the system will draw fuel direct from a tank or barrel. Toxic gas detection is integrated.

Along with installation of DXG at customer sites, Cambustion also offer contract aging and testing at our facilities, where we also offer engine and vehicle testing.

Based on Cambustion's DPG Expertise

The DXG is based on the Cambustion DPG system for testing Diesel and Gasoline Particulate Filters which has been in use for over 15 years in OEM and Tier 1 production and R&D facilities around the world. The DPG has demonstrated performance and durability testing of these parts at lower cost and improved repeatability than engine testing.



Founded in 1987, Cambustion is an independent, employee owned company headquartered in Cambridge, UK.

We research & develop novel instrumentation, and offer bespoke measurement consultancy; helping our global clients to solve a wide range of particle and gas measurement challenges.

Cambustion

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