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Guide

# Catalyst Poisoning Testing Package

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## How to embed poisons/additives on aftertreatment systems to understand the effect on emissions performance?

With stricter emissions regulations being implemented, additives and lubricants manufacturers are faced with the task of introducing lubricant systems that meet the challenges of the new legislation.

Engine oil and fuel additives are sought to provide a wide range of benefits, from increase in lubrication to improvement of overall fuel economy. However, it is important that these additives are also compatible with current emissions control systems.

Aftertreatment emissions expert CATAGEN deliver advance solutions to assess additives impact on systems performance through a unique testing methodology, metrics and data interpretation.

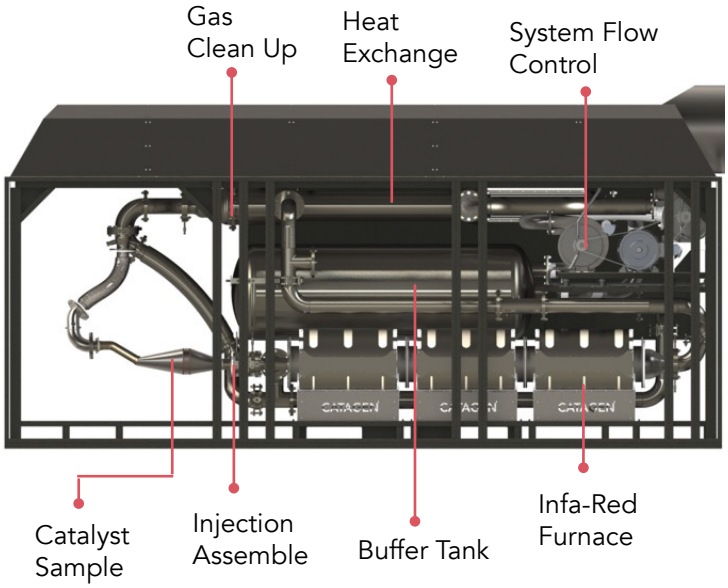
Using the OMEGA technology, CATAGEN can embed poisons/additives on the aftertreatment system surfaces to understand the effect on emissions performance.

## Catalyst Poisoning – The Offering

Using the OMEGA technology, CATAGEN can embed poisons/additives on the aftertreatment system surfaces to understand the effect on emissions performance.

A two-step procedure, ageing followed by poisoning, or a single-step procedure, simultaneous ageing and poisoning, can be implemented for either full system capability or individual bricks.

Poison injection rates can be calculated to match an OEM requirements with a high level of delivery accuracy for the duration of testing.




Additives or constituent additive compounds can be injected to understand cumulative or individual effects on aftertreatment system and emissions performance.

The effects on performance can be studied using light-off tests (fast/slow), Lambda / Air Flow Ratio Sweep (AFR) and destructive testing.

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## Performance Assessment - Characterisation

Characterisation tests are a key aspect in assessing aftertreatment systems performance after thermal ageing and poisoning:

Light-Off Test (Fast / Slow): Assesses the aftertreatment system ability to convert harmful exhaust emissions (NOx, CO, THC)

Oxygen Storage Capacity Test (OSC) : Determines the aftertreatment system ability to store and release oxygen which assists with conversion.This is the only performance metric monitored by the vehicle diagnostic

Lambda Sweep: Assesses aftertreatment system performance over a range of lambda values (air/fuel ratio)

Space Velocity Sweep: Assesses aftertreatment system performance over a range of flow rates

## Destructive Testing

Destructive testing gives an in-depth look at the aftertreatment system surface to understand what constituent parts of the washcoat/DPF/ GPF are being affected by poisons or additives.

Typical tests carried out are:

Inductively Coupled Plasma (ICP) - Precious metal loading testing

Transmission Election Microscopy (TEM) - Precious metal diameter measurement

Scanning electron microscopy (SEM) - Washcoat/DPF/GPF thickness measurement

X-ray diffraction – Material structure testing

Brunauer Emmett Teller (BET) - Surface area measurements

**Want to find out more?**
Contact one of our technical experts

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