

Executive Summary

The legislation of emissions from internal combustion engines is becoming ever more stringent and with more attention from the public and legislators alike, the development of aftertreatment systems has become one of the most important activities in the powertrain development process

“Catagen is the only ageing partner that can provide the assurance that the cat can be aged within a 2% reproducibility threshold”

Challenges

When developing an effective aftertreatment system a number of key areas need to be considered:

Cost The price of precious metals has increased substantially over the past few years and this trend is set to continue. For example, the price of Rhodium has increased by 1125% in the past 3 years (at the time of writing). Such increases have the potential to negatively impact production costs.

Compliance Compliance means that engine manufacturers not only guarantee emissions performance at the point of sale but throughout the lifetime of the vehicle in real life scenarios with a range of changing variables, for example how people drive, type of journeys, etc.

Legislation Emissions legislation has become more stringent with each introduction of new legislation across many global regions. This has led many engine manufacturers to not only decrease the size of their engines but also to over specify their aftertreatment parts.

Solution

The services offered by Catagen provide powertrain engineers an insight into their aftertreatment systems in the following ways:

- Detailed Chemical analysis – provides a detailed chemical breakdown of the aftertreatment device, focusing on key components such as the PGM and washcoat composition.
- Reproducible Performance testing – provides the activity analysis of the aftertreatment part, giving an understanding of how well the part will perform.
- This analysis conducted across the lifecycle of the aftertreatment device provides extremely valuable insight into not only what is in the part (PGM etc.) but how the specification is performing.

This knowledge and insight will inform vitally important decisions such as:

Can the PGM of the part be reduced?

Can the physical size of the part be changed?

Can I substitute in a cheaper component and get the same result?

Will the part meet legislation targets?

Will this part work with the next generation of engine?



Results

CATAGEN's testing services answers the above questions, providing a substantial benefit to the engine manufacturers, providing clarity, confidence and understanding of their parts. With this knowledge in hand an optimisation strategy can reduce cost of the part and of the vehicle.

This provides a more informed starting position for the next generation of powertrain, reducing development time and cost in the future.