Stationary Engines

Stationary Engines operate under steady state conditions, often at fixed temperature and load points, and are typically run on gas or diesel. The absence of transient operation conditions results in a harsher environment for the catalyst as it needs to withstand high temperatures for long periods of time.

Ecocat has developed a wide range of products tailored to the specific needs of stationary engines with outputs from low to high power. Applications include power generation, cogeneration and gas compression engines.

Stationary engines are used in many different types of applications ranging from power generation and cogeneration to gas compression. They can be fired using natural gas, diesel, gasoline or biofuels.

These engines are available at various sizes and can operate under either lean or stoichiometric conditions. The absence of transient loading makes the catalyst design simpler as it can be developed specifically for the operating temperature and mass flow rate of the system. However, the continued exposure to high temperatures for very long operating hours requires a tough substrate with a robust coating.

Therefore, the two main requirements for a catalyst to be used in the stationary engines:

- Fast heat up: The quicker the catalyst heats up, the faster it will reach the emissions light-off
- Temperature tolerance: The resistance of the coating and substrate to thermal ageing

Ecocat’s metallic catalysts fulfill both of these requirements resulting in exceptionally high conversion rates even after long operating hours.

These are products designed to manage emissions coming from engines operating under fixed conditions while delivering high conversions and long durability.
Metallic substrates have several advantages:

- Heat distribution
- Mechanical strength
- Flexibility in design

The Ecocat Open Foil Coated (OFC) Substrate was introduced 20 years ago and provided the first stepping stone for Ecocat’s metallic product line.

OFC substrates exhibit excellent heat distribution and superior mechanical strength with almost unlimited design options. The Coating is sprayed onto the foils prior to substrate rolling allowing for a high quality, evenly distributed coating.

Constant improvement has led to its evolution and today it comprises all of Ecocat’s major design developments. OFC substrates are available with straight or angled channels and are designed to cope with the demands of engines with high power output.

To prevent telescoping, a process where the center of the substrate gets pushed out as a result of high exhaust gas flow rates, pins and supports as well as intermediate mantels are installed. OFC is available in a variety of materials and the concept can be adapted to applications where there is a risk of corrosion through the use of stainless steel materials.

Diameters range from 50 up to 2000 mm with standard lengths of 50, 74.5, 90, 120 and 150 mm. Cell densities range from 50 all the way up to 1200 cpsi.

Ecocat is Variety

Our product portfolio caters for both natural gas and diesel applications and includes Oxidation, 3-way, PM, SCR and Hydrolysis catalysts.
Ecocat application engineers work in close cooperation with design and production departments in order to ensure the perfect solution is delivered to each customer.

**A simple but powerful solution**

The EcoCat® substrate has a self-locking mechanism designed to ensure mechanical integrity without the need for pins, supports or brazing. Furthermore, grooves used for the self-locking mechanism promote turbulent flow in the channels of the substrate resulting in better mass transfer rates and higher conversion efficiencies with a minimal impact on back pressure.

The EcoCat® substrate is the standard solution in applications such as power generation and cogeneration where the engines power output ranges from low to medium. When it comes to integrating the product into the line, the EcoCat® substrate can be framed or welded directly into the exhaust pipe, making it easy to install.

The combination of EcoCat® with the wide array of chemical coatings and chemistries developed in-house, creates a product which can be used in almost any application.

It is available in a variety of diameters ranging from 50 to 1200 mm at standard lengths of 50, 74.5, 90, 120 and 152 mm. Cell densities are obtainable at 85, 120, 200, 300, 350, and 500 cpsi.

The simplicity of the design makes this product a cost effective solution for any stationary application.

The EcoCat® structure is the ideal solution for low to medium power output engines.

Flexible, compact and easy to install, EcoCat® products are the combination of Engineering Ingenuity, Inspiration and Simplicity.
In applications where mechanical durability is a must, our EcoXcell® substrate is the preferred option: Durable, robust and compact.

**EcoXcell®: Durability at its best**

Not all stationary engines operate under the same set of conditions. For example, on compression engines the mechanical durability requirement of the catalyst is higher when compared to most other applications. For these cases, Ecocat has developed the EcoXcell® structure. Designed for high durability, this substrate combines excellent mechanical resistance, superior mixing properties and a high surface area into one product. The angled channels promote mass and heat transfer effects, thus improving the chemical reactions which occur within the coating.

As with all Ecocat substrates, EcoXcell® can be coated with all our available chemistries making the combination of substrate and coating suitable for lean or stoichiometric applications. The EcoXcell® structure is available as readily assembled substrates or as modular units to be used in applications which require large catalyst volumes.

**POC®: When PM is the question**

In applications where conversion targets of Particle Matter (PM) are within 40 to 70%, Ecocats partial filter technology, the Particle Oxidation Catalyst (POC®), is the answer. Our standard package consists of a passively regenerating system with the oxidation catalyst in front and the POC® at the back.

This approach allows for a maximum PM conversion of up to 70% while providing maintenance free and easy installation with a minimal increase in backpressure.
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