The Off-Road Market is characterized by its great variety in operating cycles and applications. The most pronounced sectors within the Off-Road Market are Industrial, Agricultural, Marine and Rail.

**Off-Road Applications**

A strong background in development and production of after treatment systems for On-Road Heavy Duty applications is the foundation of Ecocats new family of products designed for use in Off-Road applications.

A history of more than 20 years developing after treatment products for the automotive sector has lead to the launch of Ecocat’s new cluster of catalysts designed to service the tightly regulated off-road market.

Rapid implementation and enforcement of emission limits for these applications has required innovative design and quick development. The resulting products target emissions emitted from engines that operate at long idle periods with low exhaust gas temperatures.

Ecocats portfolio reflects the synergy of carefully designed substrates and advanced chemistries in order to provide efficient and compact solutions to applications where installation space is restricted.

The Off-Road sector has a large varieties of fuels with the most common being Diesel, Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG) and Bio-Fuels.

These can be operated under stoichiometric or lean conditions.
Delivering solutions for:

- Agricultural machinery
- Marine applications
- Rail engines
- Construction equipment

Off road applications are typically engines running on diesel. Therefore, the most common type of emission controls used are Diesel Oxidation Catalysts (DOC), Particle Oxidation Catalysts (POC®), Diesel Particulate Filters (DPF) and Selective Catalytic Reduction (SCR). We also offer a Hydrolysis Catalyst (HyCat™) in combination with our SCR system.

The Ecocat portfolio covers the whole range of emission control systems required in diesel applications. Metallic substrates are available at almost any diameter and shape and are manufactured in-House. Not every application requires a metallic unit though and for these cases Ecocat provides ceramic alternatives.

Given the current state of the legislation and depending on the emission control strategy, these applications require more than one catalyst component to comply with emission limits. A common array may contain DOC, HyCat™ and SCR or alternatively DOC and DPF only. In both cases Ecocat is able to provide the substrate and the coating. Also, by working in close cooperation with dosing manufacturers, the SCR solution can be offered including the dosing system.

Ecocat is Integration

Ecocat offers a wide range of products applicable to the Off-Road Sector. These include metallic and ceramic DOC’s, SiC wallflow filters, metallic open filters as well as Hydrolysis and SCR catalysts.
Ecocat SCR products have been successfully used in a variety of applications from tractors and harvesters to lifting equipment.

**SCR Products & Systems**

The current Ecocat SCR technology is vanadium based and can be coated onto metallic or ceramic substrates. Our product shows high conversion, resists thermal ageing for temperatures up to 700°C and keeps the ammonia slip below 10 ppm. Even after extensive testing in the field with long hours of operation the NOx conversion levels remain high.

Ecocat’s SCR technology is designed to reduce NOx emissions at low temperatures with the aid of NO. The substrates can be small due to the large surface area of the substrate and high washcoat amount. This makes it an attractive option for applications where space is limited.

In order to provide the whole system, we work in close cooperation with dosing suppliers and canners to bring an integrated solution to every application.

In addition to SCR catalysts, Ecocat also offers the HyCat™, which allows for complete hydrolysis of the injected urea. It also prevents urea deposits forming in the exhaust line and reduces the required mixing length from dosing unit to SCR Catalyst.

Metallic SCR products are available in a wide variety of shapes including square, round, annular and race track shapes.

Ceramic SCR substrates are available as round monoliths and square shaped blocks.
Marine and Rail applications are Market segments where the use of EcoXcell® substrates and Ecocat DOC, POC® sets are proven solutions.

**Tough Applications, Tough Substrate**

In certain applications, such as installations close to the turbocharger where catalysts are subject to excessive temperatures and vibrations, an exceptionally durable substrate is required.

EcoXcell® meets this requirement due to its unique foil structure and manufacturing principle. Stacked Foils with angled channels, are welded together and provide a rigid unit which can withstand almost any environment. By applying a specially designed mantel which acts as a stabilizing frame, the substrate keeps its integrity even under the most extreme conditions.

As a result, EcoXcell has an outstanding track record as the substrate of choice for these applications providing great CO and THC oxidation with low to high sulfur diesel.

**PM on Rail & Marine**

Ecocat’s approach to solve the issue of particulate matter emissions is the DOC, POC® set and represents an effective and maintenance free solution. This combination is designed to provide maximum NOx formation at the DOC in order to promote effective and fast passive regeneration of the POC.

The backpressure contribution is small when compared to other components such as Diesel Particulate Filters (DPF). Conversion efficiencies are between 50% and 70% with these sets.
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