**Exhaust Gas Recirculation (EGR)**

Exhaust Gas Recirculation (EGR) is a technology used in many cars to reduce the generation of NOx (nitrogen oxides). It is not a new technology, and has been in widespread use since the early 1970s, but today it is much improved. In Euro 6 cars, EGR is one important aspect of a wider emissions control system. It is often used in tandem with other NOx reducing technologies, including SCR (Selective Catalytic Reduction) or Lean NOX Traps.

EGR involves rerouting some of the exhaust gas back into the engine’s combustion chamber. This dilutes the air/fuel mixture just enough to have a cooling effect on combustion temperatures. Keeping these temperatures below 1,500 degrees centigrade reduces the reaction between nitrogen and oxygen that forms NOx, therefore significantly limiting these emissions.

When a car is driven under more severe load or in more challenging conditions – for example in lower temperatures, at high speed, during aggressive driving or on a steep gradient in heavy congestion – the engine has to work extra hard to maintain performance. In such situations, the normal operation of the EGR could damage the engine so the function must be reduced or occasionally switched off temporarily.

Because this function is in place to protect the engine and ensure safe vehicle operation, Exhaust Gas Recirculation is a legitimate technology, permitted under EU Regulations and a crucial tool that significantly reduces NOx emissions.

**Diesel Particulate Filter (DPF)**

The diesel particulate filter (DPF), which traps 99% of particulates (or soot), is part of the exhaust system on Euro 5 and Euro 6 diesel cars. It is a legal requirement for all cars first registered since 2011.

The filter is made from ceramic and metal honeycomb plates through which the exhaust gas is passed. Its design means particulates are deposited on the filter’s walls rather than into the atmosphere. This important development has helped virtually eliminate diesel vehicles’ particulate emissions.

It is an offence under the Road Vehicles (Construction and Use) Regulations (Regulation 61a(3)) to remove a diesel particular filter that was fitted to a car as standard, and any such vehicle will fail its MOT test and could result in a fine for the registered keeper or owner of up to £1,000.

**Lean NOx Trap (LNT)**

A Lean NOx Trap (or NOx storage catalyst) combines a stainless steel catalytic converter with special materials, usually precious metals such as platinum, which act like a sponge. Via a process of adsorption, NOx molecules bind to the materials so they are captured and stored in the exhaust system rather than being emitted from the tailpipe**.**

The trap is purged by injecting diesel fuel, which causes a reaction between the hydrocarbons in the fuel and the NOx to produce water and nitrogen. LNT technology does not require the use of an additive and can be used alone or in conjunction with other technologies.

**Selective Catalytic Reduction (SCR)**

Selective catalytic reduction (SCR) is a highly effective NOx emissions reduction technology used in modern diesel vehicles. This specialist catalytic converter is a bit like a chemistry set within the exhaust system.

A high pressure injection system sprays a synthetically-produced aqueous urea-based additive called diesel exhaust fluid (often referred to by brand name AdBlue) into the exhaust stream setting off a chemical reaction that converts NOx into harmless nitrogen and water.

The diesel exhaust fluid is stored in its own tank and is topped up, either at service time, or by the driver when necessary. SCR alone can achieve NOx reductions of up to 90%.