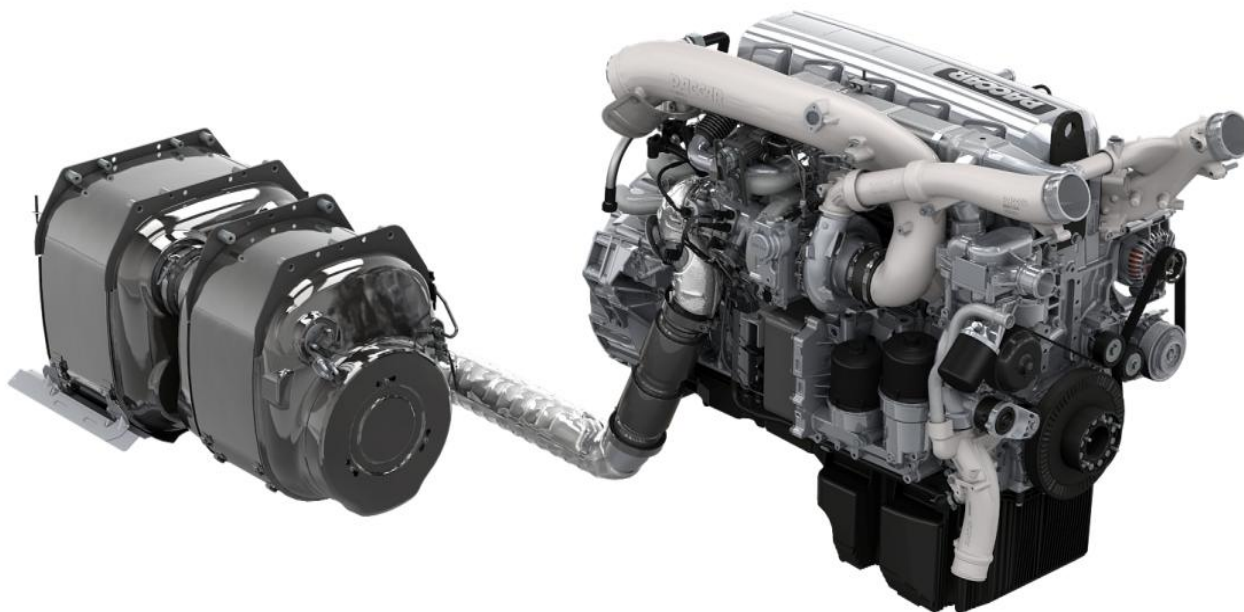


DAF Euro 6 Engine Aftertreatment System

For an ultra clean environment



Aftertreatment system

In the aftertreatment system the NOx and PM (particulate matter - particles) levels are reduced to meet the Euro 6 emission requirements.

For maximum flexibility in the chassis lay-out, the after treatment unit is composed of two different boxes, namely a filter box and an SCR box. The two boxes can be built together as one unit, or each be mounted on a different side of the chassis.

Filter box

From the engine the exhaust gases pass through an insulated downpipe to the filter box. The filter box contains the Diesel Oxidation Catalyst (DOC) and the Diesel Particulate Filter (DPF).

In the DOC part of the particles in the exhaust gases is removed via a chemical process. The remaining particles are collected in the DPF.

From the filter box the gases go on to the SCR box.

SCR box

The SCR box consists of an exhaust silencer with ceramic Selective Catalytic Reductor (SCR) and Ammonia Oxidation Catalyst (AMOX).

Airless dosing of the required amount of AdBlue (urea solution) takes place in the mixer tube between the filter box and the SCR box. In the SCR catalyst the NOx content in the exhaust gases is converted to harmless nitrogen (N₂) and water H₂O.

In the AMOX catalyst the excess ammonia (NH₃ - ammonia slip) is also converted to nitrogen and water, after which the cleaned exhaust gases can be safely released into the atmosphere via a diffuser.

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Regeneration of the DPF filter

If the conditions (temperature and NOx level) are favourable, which largely depends on the duty cycle of the vehicle, most of the collected soot in the DPF will burn passively. If the soot level in the DPF becomes too high (indicated by the pressure drop over the DPF), the system will start an active regeneration.

Active regeneration

The engine switches to the regeneration mode to augment the temperature in the DOC. As soon as the temperature reaches 250 °C a fuel/air mixture is injected upstream of the filter box. As a result the temperature in the DPF will rise to above 500 °C and the soot will be burned. When the filter is clean, the fuel/air dosing stops and the engine switches back to the normal operating mode.

Active regeneration whilst driving will not be noticed by the driver.

Forced stationary regeneration

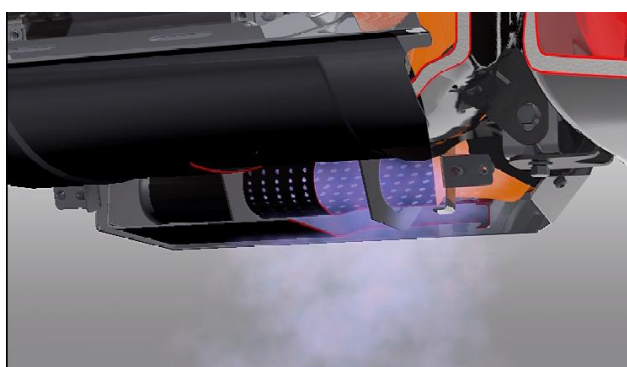
In operating conditions where the temperature in the DPF remains too low to initiate an automatic regeneration (low engine load), often accompanied by a high soot output (transient drive cycle), the driver may have to start a regeneration manually. This is indicated by three successive warning levels on the instrument panel:



- Soot level high (regeneration required)
- Soot level very high (regeneration required immediately)
- Soot filter full (engine power limit - regenerate now!) The driver has to park the vehicle in a safe place and press the button to initiate a regeneration. The engine will switch to the regeneration mode and the regeneration process will go off as described previously.

Exhaust diffuser

To enable safe release of the exhaust gases an exhaust diffuser is mounted at the end of the aftertreatment system. In the diffuser the exhaust gases are mixed with air and spread out in order to cool down the exhaust gases and dissipate the heat.



Aftertreatment Control Module (ACM)

The whole process of aftertreatment and regeneration, as well as the exhaust emission at the tailpipe is monitored and controlled by the Aftertreatment Control Module together with the engine control unit (PMCI - PACCAR Multi-Control Injection).

The input for the ACM is given by various temperature sensors in the aftertreatment unit, a differential pressure sensor on the DPF filter, a NOx sensor and a PM sensor at the exit side and an AdBlue quality sensor and a level sensor in the AdBlue tank