Following on from last months article, we explain the 3 different DPF regeneration modes used to clear the PM (soot) stored in the DPF:

1. **Passive Regeneration:**
   This takes place while driving when engine load elevates exhaust temperatures enough to burn small amounts of soot, from 200°C (392°F) to 600°C (1112°F), and requires no action from the driver or engine control system.

2. **Active Regeneration:**
   This can occur while driving or when stationary and the engine is idling to burn large amounts of soot. It's initiated by the engine management control module software. Temps range from 400°C (752°F) to 600°C (1112°F) and requires no action from the driver.

3. **Manual Regeneration:**
   This is the same as active regeneration; but is initiated using a diagnostic scan tool. There are 2 modes of Manual regeneration: Static and Dynamic. Static is when the vehicle is stationary, (some manufacturers are now disabling static due to high temps around the DPF) and only providing Dynamic (moving) regeneration, as driving the vehicle allows airflow under the vehicle to cool wiring and components close to the DPF.

Manual regeneration is often required, when vehicles are driven at insufficient speed to allow regeneration to be carried out automatically by the vehicles engine management control software. In these cases, the pressure in the DPF being monitored by the DPFE sensor continues to increase to a point, where the engine management control software illuminates the engine management and emission warning lights. The vehicle is already suffering with driveability and lack of power problems.

At this point, as long as the DPF is not severely blocked (over 90% capacity filled), a scan tool can be used to perform a Static (up to 60% capacity filled) or Dynamic regeneration to clear the PM (soot) levels in the DPF. In order for the DPF regeneration system to work successfully, all exhaust and engine management system components need to be in full working order. Otherwise the engine management control module software will disable Manual Regeneration, and provide a “failed or unsuccessful regeneration” message on the scan tool display.

**REASONS FOR **
**“FAILED OR UNSUCCESSFUL GENERATION” **ARE:

1. **DPF over 90% filled.** This requires replacement of the DPF, and will require scan tool to reset DPF values in engine management control software, after new DPF has been fitted.

2. **Diesel fuel level in tank under 1/4** (minimum of 20 litres of fuel required).

3. **On vehicles that use oil quality monitors,** if the quality of oil is degraded or diluted, oil will have to be replaced before regeneration can be carried out.

4. **Any fault codes in engine management system,** including “Glow plug circuit”, DPFE sensor, Exhaust temperature sensors, Lambda (02) sensors. The faults have to be repaired and fault codes cleared before regeneration can be carried out.

5. **Fixed life reached,** DPF is a renewable item and once the given mileage is reached it will not regenerate (can be as low as 75,000 miles). New DPF should be fitted and new DPF limits values in engine management control software reset.