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Pre-production engines are Euro 6-ready, claims Scania

Scania is currently test running new Euro-6-ready five- and six-cylinder inline and V8 engines – heavily modified, but derived from its current Euro 5 units – in Sweden for its recently-launched R Series trucks.

Pre production engines are Euro 6 ready claims Scania And that's not just in R&D on its engine test bays and endurance rigs – the latter designed to prove compliance with the requirement for 700,000 km and seven years within Euro 6 specifications.

Pre-production Euro 6 engines are also being used to power some of the company's own Transport Laboratory mixed marquee haulage fleet, which tests developments while trucking assemblies from its Södertälje factory in Sweden to the Zwolle production plant in the Netherlands – with tractor units racking up around 340,000km per year.

Jonas Hofstedt, senior vice president of powertrain development at Scania, makes it clear that there are several major enhancements. For a start, unlike the current Euro 5 V8, for example, which uses only SCR (selective catalytic reduction) after-treatment technology to control engine-out NO_x, the new unit harnesses a combination of SCR (with exhaust temperature monitoring to keep it working), EGR (exhaust gas recirculation) and a closed diesel particulate filter to meet the stringent Euro 6 PN (particulate number) requirements, due to be imposed in 2013.

It also features a single variable geometry turbocharger and XPI, high pressure, digitally-controlled, multiple injection common rail fuel injection, developed with Cummins under the companies' existing engineering partnership.

So much for the obvious. Beyond that, Scania's Euro 6 V8 also takes advantage of technology developed for the 730hp Euro 5 SCR V8. For example, cylinder combustion pressures have been raised from 165bar on the earlier 15.6-litre V8 to 200bar on the new 16.4-litre power plant – necessitating a change to compacted graphite iron in the cylinder block.

Also, the XPI technology now takes injection pressures up to 2,400bar, and Hofstedt says that Scania has developed multiple recipes for its injection profiles, based on an HCCI (homogenous charge compression ignition), but, to date, using only pilot and main fuel charges.

Hofstedt worries that the EC's determination to bear down heavily on NOx and particulates in Euro 6 will compromise CO2 emissions and fuel consumption – not least due to the back pressure imposed by the now essential particulate filter, which alone reduces fuel efficiency by 3—4%.

He also concedes that the scale of new technology will inevitably add cost for operators. And he rails against the new world harmonised steady state and transient cycle standards, which are considerably at odds with typical Scania heavy duty truck operations, yet force adoption of some of the new technology.

However, he says: "You will be amazed. We are doing everything we can to ensure that transport engineers will not be disappointed by our fuel performance. Including other continuous improvements on the vehicles, consumption will be about the same as for Euro 5, despite the need for a particulate filter."

And that's without most manufacturers' current campaigns to focus on both aerodynamics and driver behaviour – both now proven to make very significant differences to fuel economy.

Incidentally, Scania also intends to continue permitting up to 100% biodiesel on all its engines – including Euro 6.

For its existing Euro 5 units with XPI injection, Scania requires a fuel filter cartridge (due to biodiesel's poorer cold temperature properties) and advises that, because biodiesel is a lower energy density fuel than diesel, consumption will be "slightly higher". It also confirms that, although Euro 5 certificates still apply, NOx emissions may rise by up to 17%, whereas particulate emissions can decrease by some 45%.

"Euro 6 engines compatible with up to 100% biodiesel will require a separate certificate," suggests Hofstedt.

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