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Surprise engineering on the drive for Euro 6

Just as we report on the planet's first test drive of a Euro 6 engined truck (a Scania R480 6x2 tractor unit, with the new DC13 engine) – providing insights into the experience and equipment that matters to transport engineers (page 27) – so Iveco amazes the world by launching Euro 6 Cursor and Tector engines, using SCR (selective catalytic reduction) technology alone.

They're both surprise moves. Scania has little to gain, other than kudos, from presenting a full-blown Euro 6 engined test truck, when the deadline for compliance is still two and a half years away (December 2013). Few operators are likely to buy one, when the on-cost is likely to be around £10,000 per chassis, and with little or no prospect of an RPC (reduced pollution certificate) style government cost-saving incentive.

Meanwhile, Iveco's move, with Fiat Industrial-owned powertrains specialist FPT Industrial, flies in the face of received wisdom, which holds that no viable Euro 6 commercial vehicle engine can be produced without throwing every technology in our armoury at it – specifically including SCR and EGR (exhaust gas recirculation) in combination. Iveco indicates that the secret is "optimised combustion and after-treatment systems", using "breakthrough patented control technology, in which a very high NOx conversion efficiency [more than 95%, compared with typically 80–85%] is achieved" (page 35).

Intriguing though the latter's revelation is, it may yet be regarded as an engineering, rather than a commercial, feat. Iveco's and FPT's approach also involves new AdBlue dosing and thermal management technologies, as well as higher cylinder and injector nozzle pressures – the latter up to 2,200 bar, and the former achieved through changes to the crankcase and cylinder head designs that improve structural rigidity, increase coolant flows and uprate swept volumes. Beyond these, the partners' solution requires a new ECU to manage both the engine parameters and the after-treatment, effectively integrating engine, SCR and full-flow DPF (diesel particulate filter) functions. And, as for the SCR box itself, Iveco talks of a compact system, integrating DOC (diesel oxidant catalyst), DPF, SCR and CUC (clean-up catalyst). So this development isn't going to come cheap.

It also sounds remarkably similar to Scania's (and, for that matter, Mercedes-Benz's) new Euro 6 after-treatment design, which includes upstream NOx sensors, the DOC, full-flow DPF, AdBlue mixer, twin parallel SCR catalysts, ammonium slip catalysts (ASC) and downstream NOx sensors – all with temperature and pressure monitoring, and built into a compact unit, equivalent to a silencer box. What's more, Scania insists that AdBlue consumption on its Euro 6 power plant will fall, from 5–6% on its existing Euro 5 SCR-only engines, to 3–4% on the new Euro 6 SCR/EGR units, because of the EGR contribution.

Clearly, the engineering pundits have been proved wrong: Iveco has beaten the unbelievers and shown that Euro 6 can indeed be achieved without the additional price tag inherent in extra EGR provision. However, even with some upfront savings, it seems probable that operational cost differences may well even out over a truck's lifecycle. Watch this space.



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