

THE FINAL DRIVE

As Euro 6 moves from the future to the here and now, an expert panel at the IRTE Conference gave delegates the full picture they can expect. Ian Norwell reports



Euro 6 test cycles have all been harmonised with the USA and Far East
Andrew Nicol



There is clearly no need to pass acidic exhaust gas through the engine again
Martin Flach

Delegates at the session on Euro 6 emissions legislation looked for all the world like turkeys queuing up for Christmas, with an air of resignation. They'd heard the technology arguments before, so the concerns now were around costs, payload and any issues in service. And with the deadline for Euro 6 walking up the front path, there were understandable worries.

Five speakers were on the panel: four from the truck manufacturers (DAF, Iveco, MAN and Scania), complemented by Andrew Nicol, technical specialist on engine performance and calibration with world-renowned Ricardo. All the truck makers started out with one or other of the main emissions-busting technologies – EGR (exhaust gas recirculation) or SCR (selective catalytic reduction) for Euro 5 – but have necessarily combined them to achieve Euro 6. All, that is, except for Iveco and Scania, which are achieving compliance for heavy truck engines with SCR alone – all of Iveco's and two of Scania's 9-litre engines. So this was going to be interesting.

Nicol gave a brief, but detailed, reprise of the route to Euro 6, widening the discussion a little by putting our domestic emissions legislation into perspective. He reminded delegates that the emissions test cycles have not only changed to accommodate the much tougher NOx and particulates limits of Euro 6, but also to harmonise

with regulations in the USA and the Far East. Some comfort can be derived, then, from the knowledge that SCR and EGR have benefited from the best engineering brains the global truck and engine manufacturers could muster.

That said, from his neutral standpoint, Nicol felt that the rare reliability issues around some EGR systems might lead manufacturers to refine their systems, over time, to minimise its use, or remove it altogether. He acknowledged that such a move would be, at least initially, at the expense of higher AdBlue consumption, which is currently up to 9% on cooler duty cycles, where Euro 6 engines rely on SCR alone. However, ever higher fuel injection and combustion pressures are expected, which, along with tighter monitoring and control of ammonia after-treatment injection and exhaust temperature management, may help to change that.

To recirculate, or not

But that's for the future. For now, Iveco UK technical director Martin Flach was confidently paddling a lone, but sturdy, canoe, explaining his company's choice to delete EGR and develop Hi-eSCR (high efficiency SCR). Iveco's rationale, he said, was simplicity and cost saving. "It's all about avoiding complexity wherever possible, and we have been working on SCR systems for seven years, so this is not new," he insisted. "As soon as we knew we could refine the

urea dosing system, with a much finer spray, and improve the catalyst rate to attain Euro 6, without pushing acidic exhaust gas through the engine for a second trip, we knew it was the best method.”

His was a powerful argument but, while some operators feel the attendant higher AdBlue rates are a price worth paying, not everyone is convinced. Des Evans, CEO at MAN Truck & Bus, countered that the added plumbing of EGR causes neither reliability nor maintenance issues. And he put his company's money where its mouth is, stating that Euro 6 R&M contracts for MAN will be pegged at Euro 5 levels.

duty cycle, to avoid any downtime penalty. As Euro 6 gets established, large fleets may well be advised to invest in the cleaning equipment themselves, and have a few spare filters on standby.

The message was don't panic. And an additional consideration is that the mileages involved mean this will primarily be an issue for second-life users, not those who wear out the first set of tyres. But there's clearly an incentive, with Euro 6, to let manufacturers take care of maintenance worries.

On one issue, however, the expert panel was united – that of fuel quality. It will be of little concern to



Euro 6 R&M contracts will cost no more than their equivalents at Euro 5
Des Evans



Poor quality fuel in the Eastern Bloc may cause injectors and DPFs to block
Phil Moon

Delegates questioned his ability to do this, with the undeniable equipment additions. The answer to this is not altruism, either from MAN or any other manufacturer, but the fact that other maintenance tasks have been either reduced, time-extended or designed out. These savings, and MAN's proven reliability record on both systems (albeit separately) in service with Euro 5, balance the scales. If nothing else, that point underscores the fact that Euro 6 is not just about engines.

But there's more to it than EGR and SCR. The most obvious addition to the truck chassis at Euro 6 is the DPF (diesel particulate filter), and delegates were concerned that this represents a maintenance time bomb. Bus operators with cold duty cycles were particularly anxious. Flach was swift to point out that the emissions regulations for bus engines are just the same as for trucks, and that part of the legislative framework puts a duty on engine manufacturers to guarantee that emission levels will be maintained throughout a vehicle's life, with 700,000km being the benchmark.

OBD (on-board diagnostics) will ensure that this is the case by flagging departures and forcing attention. Also, criticisms of Euro 4 and 5 urban cycles have been addressed, with Euro 6 criteria containing a strong element of cold cycle work. In practice, DPFs are most likely to be cleaned on a service exchange unit basis at 350,000–450,000km, depending on

domestic operators, but the further east continental hauliers travel, the greater risk they run of drawing poor fuel. Phil Moon, product marketing manager for DAF trucks, echoed his fellow speakers in raising this alarm. “Poor fuel in the Eastern Bloc, Russia and certainly Africa, will give Euro 6 engines even bigger issues than already exist at Euro 5. Clogged injectors and DPFs will be potentially expensive,” he warned.

Moving on to chassis packaging, one delegate worried that Euro 6 would compromise body options even on rigid chassis. The panel conceded that it's been a challenging task to re-assign fuel and additive tanks, batteries, air reservoirs and the like, all in the face of bulky after-treatment pipe work and steel boxes. However, if a 6x2 tractor can absorb the clutter, it shouldn't be an issue for a rigid, they said.

Perhaps the most significant closing comments surrounded telematics. MAN's Evans said that fuel improvements from Euro 6 chassis are reliant on exploiting a system, either from a truck manufacturer or the aftermarket. “Without a telematics package that is ruthlessly managed, along with driver development and training, it is just not possible to achieve the best fuel economy,” he insisted. Clearly, getting drivers on-board is more important than ever.

As delegates filed out of the session for a coffee break, it looked like the turkeys might not be voting for Christmas, but they felt better about the quality of the tin foil. 