

Ahead of the deployment of Euro 6-engined tractor units in any significant volumes, John Challen finds out what technicians can expect to deal with when diagnosing the electronics issues

# Diagnostic dilemmas

It's difficult to guarantee that 2014 will signal a happy new year for the truck industry, given the impending arrival of Euro 6 engine legislation on 1 January and the need to conform to a new range of emissions limits on vehicles so equipped. Operators will be getting used to new specifications and running costs, while, in the workshop, technicians are set to face more complex diagnostic obstacles on these cleaner vehicles.

The act of diagnostics itself might not change, but the skills that are required of the technician will have to be broadened. The combined introduction of SCR (selective catalytic reduction), cooled EGR (exhaust gas recirculation), DPF (diesel particulate filter) and VGT (variable geometry turbocharger) in one engine will mean more sensors, thereby leading to added complexity.

"In order to make the most accurate diagnosis, technicians will need not only to understand the overall system, but also how to use diagnostics to interrogate the vehicle ECUs, using fault codes to examine the live data," states Paul Sinderberry, European product manager, diagnostics and tooling, at component supplier Delphi.

Pressure – on the part of the engine, as opposed to the technician – will be one of the big issues, he warns. "Euro 6 engines can have fuel pressure exceeding 2,500bar. To put this into context, you only need 1,379bar to cut steel, so the pressures associated with Euro 6 engines are high."

Sinderberry points out that, because of the new

technologies and advances involving multiple sensors and actuators found on Euro 6 vehicles, a good understanding of the system is essential, now more than ever.

"With the advances in diagnostic equipment and enhanced 'brain power' of the truck ECU, the amount of data available from that ECU is even greater," he maintains. "So technicians can access more detailed fault codes and more live data, allowing them, for example, the ability to activate more actuators to help diagnose faults more effectively."

## Legal requirement

All of that should be accessible by everyone in the industry. Sinderberry indicates Article 6 of the Euro 6 regulation 595/2009, which states: 'Manufacturers shall provide unrestricted and standardised access to vehicle OBD [on-board diagnostics] information, diagnostic and other equipment, tools including any relevant software and vehicle repair and maintenance information to independent operators.'

The directive goes on: 'Manufacturers shall provide a standardised, secure and remote facility to enable independent repairers to complete operations that involve access to the vehicle security system. In the case of multi-stage type-approval, the manufacturer responsible for the respective type-approval shall also be responsible for communicating repair information relating to the particular stage to both the final manufacturer and independent



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operators. The final manufacturer shall be responsible for communicating information about the whole vehicle to independent operators.'

### Help on its way

As minimising downtime is key to keeping vehicle fleets running as efficiently as possible, Sinderberry says his company has developed its product range accordingly. "Delphi developed functionality in its current diagnostics programme that allows technicians to quickly scan the vehicle for faults using the ISS (Intelligent System Scan) during routine inspections," he explains.

So, in a short space of time, the operator should be able to scan truck ECUs ranging from additive systems to ABS/EBS, and even check brake pad wear on some truck applications. "As these systems become more common in fleets, it will become necessary to make sure that technicians have

modern diagnostic equipment, in order to make the best diagnosis, fastest," he says. "It is going to be very difficult to diagnose faults correctly without the latest equipment."

And he adds: "To make sure that a technician has diagnosed the fault correctly, he will need a thorough knowledge of the system and a diagnostic tool that not only displays fault codes, but also provides accurate live data. With most electronic components on modern vehicles, the replacement part will probably need to be either coded or adapted, too. So, again he or she will need a diagnostic tool to carry out this operation."

### Training technicians

From a training point of view, current issues include getting hold of new vehicles on which the technicians can hone their Euro 6 skills. One person experiencing this very predicament is Steve Ball, technical trainer at diagnostic tools developer Texa, who has only had very brief exposure to the engines. "I've had a look at the [Mercedes-Benz] Actros Euro 6 engine and I've seen a Scania unit, but I didn't get a chance to plug into it. It looks like they've put every bit of technology that we've had for cars, vans and trucks and thrown it all at Euro 6," he warns.

"The motor industry has, in the past, been guilty of looking at a fault code, replacing a component and hoping it fixes it," continues Ball. But he believes that, because of the cost of new components is higher, diagnosis will have to be more accurate than ever to change that approach. "The exhaust temperature sensors used to be a standard unit, but there are now three or four going into one module, which is CAN-communicated back into the ECU. CAN plays a bigger role on the new engines. So understanding the CAN side of things will be key for technicians and for them to properly test, as opposed to roughly guess, what the issues are."

Ball also advises that there is the potential for trucks to be off the road longer, with operators demanding further investigation into faults before committing to investment in expensive, and potentially unnecessary, new components.

"The cost of the parts is a lot higher than before, so you need to be more accurate with your diagnosis, simply by testing things properly."

It is early days, but already he has some sympathy with Euro 6 engine technicians' likely predicaments: "There seems to be a massive lack of training and people are expected to fix things that they know nothing about. We are currently doing a course on AdBlue and a lot of the people who come along may have been working on the systems since 2006, yet they still don't really understand how they work." **TE**

## Not all doom and gloom

Guidance from a Mercedes-Benz spokesperson aims to alleviate some servicing fears with the new engines. "When you look at Euro 5 and Euro 6 engines, the only real servicing difference is the requirements of the DPF. For us, all other service levels are the same."

In addition to work on the filter itself, a new lead seal is needed (sealing the filter to the exhaust and an anti-tamper security seal) and the Mercedes-Benz spokesman reckons the service time is 1.6 hours. "Only one specialist tool is needed, this being a DPF trolley jack support. The DPF filter needs to be lifted and sealed in place securely. Hence the need for the new jack."

And he continues: "Each DPF is numbered and logged to the individual vehicle. This enables the correct service/maintenance record/requirement, and maintains the warranty. If the wrong filter is fitted, or if it's not sealed correctly to the vehicle, you could run into warranty issues."