

ENERGY comparison

It is now clear that the focus of the European Commission's next heavy-duty vehicle (HDV) emissions strategy – Euro 7 – will be CO₂ reduction.

Legislating to make that happen, though, presents challenges in terms of measurement and standardisation. So it is no surprise that, for the last two years, the EU's Directorate General for Climate Action (DG CLIMA) has been leading a project to develop VECTO (Vehicle energy consumption calculation tool), to certify HDV CO₂ emissions and offer operators a guide to their fuel economy.

Put the two together and we will have yet more emissions regulations and the means to assess compliance. However, operators are likely to pick up the tab.

Why the fuss? The EU says HDVs account for 6% of Europe's greenhouse gas (GHG) emissions and 25% of all road transport emissions, with trucks being main culprits. It wants a 20% reduction in transport-related GHG emissions by 2030. So something has to give.

Looking at VECTO, ACEA – the

As more is revealed about a forthcoming Euro 7 exhaust standard designed to reduce greenhouse gas emissions, operators may be facing clean-up costs – and sooner than they think. Peter Shakespeare reports

European Automobile Manufacturers' Association – has been providing major input into developing what is turning out to be a complex computer simulation. Complex because measuring and certifying CO₂ emissions from HDVs is not the same as that for cars. It's not simple for vans either, but that's another story.

At the recent IAA commercial vehicle show in Hanover, Volvo chief executive and ACEA president Martin Lundstedt set out the industry's concerns. "We must keep the EU focused on the fact that trucks are not big cars... They have different missions, and come in thousands of different sizes and shapes. Add to this the need to change

combinations on a regular basis and it is clear that the prime mover engine is only part of the story."

To this end, in addition to driveline influences, VECTO is taking into account truck and trailer combinations, as well as applications and payloads. And it's looking good, said Lundstedt. "Based on our global experience, we can say that VECTO is the most advanced, reliable approach – and the closest to real world. That's why we believe EU policymakers should continue on this track."

Given that a focus in favour of CO₂ is equivalent to cutting fuel consumption, operators stand to win with reduced operating costs. It's also the case that

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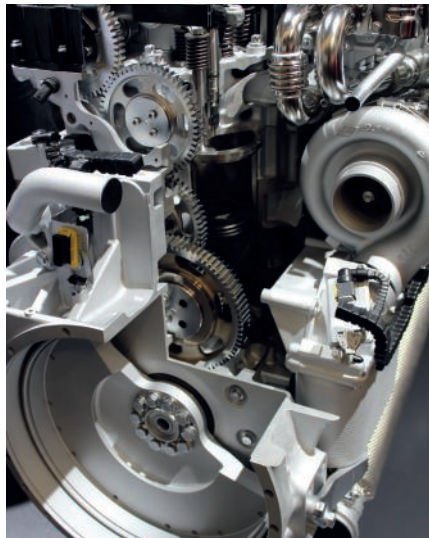
certified parameters under VECTO will deliver a level playing field for cross-manufacturer comparisons. That’s another potential game changer.

As ever, however, the devil will be in the detail. In order to score well in terms of energy (CO₂ emissions) certification, OEMs will need to re-optimize their vehicles, addressing all aspects that influence GHGs. These include engine performance, but also driveline efficiency, rolling resistance and aerodynamic drag.

And there’s more. Returning to Euro 7, there will almost certainly also be a requirement to further bear down on NO_x, NO₂ and particulate (PM/N) emissions below Euro 6. That’s another tough one, but the US is leading the way so it will happen over here.

But, as with all such emissions standards, there have been significant R&D costs. And these have largely been passed on to operators. It is likely this will be the case again – and well before Euro 7 – as the OEMs start vying with one other to certify their most fuel-efficient prime movers and combinations under VECTO.

Of course, transparent and reliable fuel consumption information that translates into real-world financial savings for operators means potentially happy conversations with the accountant. Upfront costs may be recovered – which has not automatically been the case



with Euro 3–6. But potentially, there is a far more serious impact from Euro 7: operator compliance.

REAL WORLD

A car or van currently carries a type approved duty cycle CO₂ rating. But that only translates on the road if the driver does his bit. With an HDV, the driver’s and operator’s influences are far greater. This has not escaped ACEA’s attention and it has commissioned European transportation specialist ERTICO ITS to conduct a study into the scope of intelligent transport systems for reducing CO₂ emissions while also increasing

safety of heavy commercial vehicles.

This, too, is important. If the EU wants the work it has done with VECTO and eventual vehicle certification to translate into real-world CO₂ reductions, it will need measures in place to compel HDV drivers and operators to co-operate.

The executive summary of the ERTICO report lists eco-driving, eco-routing, truck platooning, lane departure warning and in-vehicle hazard warning as systems that either reduce CO₂ or improve road safety. It also lists a series of infrastructure and back office-based applications that can have an impact. And for truck and bus operators, delivery space booking, intelligent truck parking and driver behaviour monitoring are also featured.

Most of these are currently available. However, they’re largely optional. So it is probable that the EU will need to legislate to ensure HDV operators do all they can by adopting such systems. And the upfront cost would be significant.

When it comes to society at large, bringing the most fuel-efficient CVs to market, and managing and operating them in the most fuel-efficient way, cannot be criticised. It helps the environment and ultimately makes road transport safer. But, given the tight margins operators have to endure, the financial impact of VECTO and Euro 7 looks likely to be serious. **TE**



The VECTO timeline

In order to create the parameters to issue HDV CO₂ certification, VECTO must pass a series of mileposts. While the EU is looking for certification to start from 2018, MAN’s executive responsible for the environment Ben Kraaijenhagen (left) has a more pragmatic view. Representing MAN on the VECTO project, he believes the basic architecture is now in place.

“The tool is there and encompasses seven classes of trucks and four classes of buses,” he explains. “But, given the multitude of applications and whole vehicle combinations, the next step is to build the simulation models to predict fuel consumption around all possible scenarios. This should be complete by 2018. By the end of 2019 real-world field monitoring will be complete. By 2020 the full picture will be assembled. Once all the data is there, the EU will be in a position to formalise the parameters so certification can commence.”

Kraaijenhagen says that, so far, VECTO only has a simulation ready for a 40-tonne box trailer combination on a variety of operating cycles. So there is a long way to go.