

The METRIC system

European emissions rules require OEMs to boil down tractor performance into a single metric: its CO₂ production. Steve Banner outlines the system and considers what operators can learn from it

Anybody who has acquired a new 6x2 tractor unit produced since 1 January 2019 will have been presented with a customer information file (CIF). Generated by the European Commission's Vehicle Energy Consumption Calculation Tool (VECTO), it shows the unit's simulated fuel consumption and CO₂ emissions under different driving cycles; on long-haul work, on regional work, and either lightly laden or carrying what the tool views as a representative payload. Truck makers have to pay an annual licence fee to use it.

Separate references to Long Haul EMS and Regional Delivery EMS underline VECTO's EU roots. The initials stand for European Modular System and show the unit's simulated performance if it is used to haul two trailers and operated at a gross weight of 60 tonnes and an overall length of 25.25m. Such combinations are legal in a number of Continental countries, but not on this side of the Channel.

And, despite the country's departure from the EU, VECTO seems unlikely to be scrapped in the UK.

Since the start of last year, 4x2 tractor units along with 4x2 and 6x2 rigid grossing at 16 tonnes or more have been accompanied by a CIF too. Their lighter 4x2 counterparts grossing at 7.5 tonnes or more were caught in the VECTO net on 1 January this year. Rigid with 6x4 or 8x4 chassis were due to come into scope on 1 July. However specialised trucks such as refuse collection vehicles will not have to be accompanied by a CIF.

The EU introduced VECTO as part of its policy of driving down CO₂ emissions, with the reference period 2019/2020 used as a baseline, says Daimler (Mercedes-Benz) Trucks. The aim under Regulation (EU) 2019/1242 is to cut emissions from rigid and tractor units grossing at above 16 tonnes in particular by 15% in 2025, and 30% by 2030.

"Manufacturers must report data to the European Commission every year on a vehicle-by-vehicle basis," says Volvo's UK head of truck product management, John Comer. Progress has to be made towards reaching the EU's targets, with substantial financial penalties in store for companies that fail to achieve them. The regulation is designed to offer a system of credits to incentivise the introduction

of zero- and low-emission vehicles.

The information that manufacturers feed into VECTO includes the engine's capacity, power output, the fuel it uses, the type of transmission installed, the number of gears, and the axle ratio. It also embraces the average rolling resistance coefficient of all the tyres fitted and their average fuel efficiency labelling class, along with the cab's drag coefficient.

The EU aims to review the CO₂ regulations by the end of 2022 and will probably extend VECTO to cover buses, coaches and trailers. Light trucks grossing at from 5.0 to 7.5 tonnes are likely to be embraced too, suggests Daimler. Further targets could be introduced for 2035 and 2040.

REAL-LIFE EXAMPLE

Using the current metric, a DAF XF 480 FTG 6x2 tractor unit with a 469bhp 12.9-litre diesel married to a 12-speed automated manual transmission produces CO₂ emissions of 862.5g/km, according to its CIF. Fuel consumption is 33 litres/100km – 8.56mpg – at an average speed of 79km/h or 49.37mph. This assumes that it is on long-haul work



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shouldering a 19.3-tonne payload, has a 2.375:1 drive axle ratio and its tyres have an average rolling resistance coefficient of 0.0058. The truck is fitted with a sleeper cab and VECTO includes a measurement of its drag coefficient.

The same truck on the same work, but with a 2.6 tonne payload, produces a CO₂ figure of 657.7g/km. In that scenario, fuel usage is 25.1 litres/100km – 11.25mpg – at an average speed of 79.6km/h or 49.75mph.

“VECTO is a good tool to help support the selection of a fuel-efficient specification,” says Comer. “It can for instance show the effect of the change from C- to A-rated tyres on both fuel and carbon saving quite dramatically. They can make a 4% to 5% difference.”

Daimler makes the point that much of the CIF data has to be supported by independent testing conducted by external organisations. VECTO will not take the individual manufacturer’s word for it.

So far as tractor units are concerned, VECTO assumes that they are hauling a 4m-high tri-axle box-bodied semi-trailer. This is because most do. “They account for around 70% of the trailers sold around Europe, if you include fridge trailers,” says Derek Skinner. Formerly Schmitz Cargobull’s UK technical director, he is now an independent technical consultant.

However, businesses that regularly tow excavators around on low-loaders or operate double-deck trailers at a height of 4.9m might question a CIF’s relevance.

Daimler, too, says that it is concerned that VECTO relies on a standard configuration of semi-trailer which may be irrelevant to some operators, and that it does not fully take into account some of the fuel-saving measures introduced by truck manufacturers – start/stop, for example.

BENCHMARK

Regardless of their limitations, these reports offer a standard basis of comparison. With the relevant CIF reports in front of them, operators can compare the simulated CO₂ and fuel figures of one truck versus another. Manufacturers make the point that the comparison has to be as near an exact one as possible; axle ratios and (as Comer points out) tyre specifications can influence the figures significantly.

So, are operators considering CIFs when looking to acquire tractor units, or trucks in general? The consensus seems to be no. “We’ve got no evidence that customers are taking VECTO into account at present,” says DAF UK marketing manager Phil Moon.

“Usually they don’t,” says Renault Trucks product manager, Mike Stringer. “Some of the blue chip fleets look at the VECTO reports, but they’re few and far between.” He adds: “Where we are getting it requested is if we receive a tender document. If that happens then we may be asked to attach a copy of the VECTO data.” Such requests may be driven, not by the fleet, but by the fleet’s customers, if it hauls for third parties.

At DAF, Moon cautions operators about reading too much into the VECTO reports. He advises: “Always remember that the VECTO value should never be taken as an accurate prediction of the fuel consumption you will actually achieve. All sorts of variables have to be taken into consideration, including the weather, the road surface and the driver.”

Instead, he suggests operators should take advantage of OEMs’ driver training and demonstration trials to run demonstrators over familiar routes for which they already have fuel economy figures. That will give them figures closer to reality than any computerised simulation can achieve; and could help them make a more informed choice when it comes to selecting a truck.

Questions also come from trailer manufacturer Don-Bur, which points out that a 4.9m-high tri-axle double-deck semi-trailer might attract a fuel and CO₂ penalty of 1.5mpg and 167g/km compared to a 4.2m-high single-decker (9mpg and 832g/km). Yet the former can carry 52 pallets, which offers double the capacity of the latter’s 26.

“How does an operator compare the efficiency of these trailers based on the CO₂ output of the combination?” wonders Don-Bur group marketing manager, Richard Owens. “How is this relative to load?” He would like to see trailers bear labels that reflect their fuel efficiency in terms of both pallet and tonne litre/km. See also www.is.gd/onojoq for a recent initiative that did just that. 

