Carbon bureaucracy

Vehicle OEMs are now being measured on a weighted average of emissions of the vehicles that they produce. The new rules show the extent to which the EU's decarbonisation plans are starting to bite, reports Toby Clark

The EU has set stringent targets for CO_2 emissions reduction from trucks, requiring manufacturers to reduce emissions per truck (over 16 tonnes GVW), compared with 2019 levels. Recently the EU published the first set of figures from its survey of the corporate average CO_2 emissions of the major European truck manufacturers, with the aim of establishing those baseline levels.

James Boley of the SMMT explains that these "will be the 'reference figures'. The EU has set a target for each manufacturer to reduce average CO_2 emissions by 15% from the 2019-2020 reference figures by 2025, and by 30% by 2030. These figures are therefore important to OEMs, as they demonstrate the benchmark by which they will be assessed in 2025."

And despite Brexit, Boley says the EU targets will have an impact on UK truck buyers: "Although these figures are EU-wide and the target is an EU target, last year the UK passed Statutory Instrument 2020:1402, which transposes these targets into UK law."

The baseline figures, which in fact covered the 'reference period' 1 July 2019 to 30 June 2020, can be seen in the table overleaf. They contain some mystifying terms, such as the 'zero- and low-emissions factor' and the 'CO_2 emissions reduction trajectory', but the figures mean little by themselves: they form part of an ongoing process of monitoring and incentivising manufacturers to reduce their trucks' CO_2 emissions – ultimately leading to financial penalties for producing vehicles which don't meet the standards.

However, this hasn't stopped Scania making bold claims: in a press release, the firm says that the results "confirm that Scania is by far the best among the heavy vehicle manufacturers to reduce CO_2 emissions." This seems surprising, given that Scania is well-known for heavy-duty, high-powered V8 tractors (pictured above).

The EU's CO_2 emissions figures are represented in grams per tonne-kilometre (g/tkm) – a measure which tends to favour larger vehicles and particularly those on trunking operations. Smaller distribution vehicles on stop-start operations will inevitably give a worse g/tkm figure than a tractor-trailer combination, let alone the sort of heavyweight drawbar combinations used in some European countries.

STAKES ARE HIGH

And what is at stake? If a manufacturer doesn't hit its CO_2 targets after 2025, it will have to pay a hefty premium: €4,250 (around £3,600) per g/tkm per truck. So if it's 2g/tkm off target, and it sells 2,000 trucks in the UK and EU, that's around £14.4m. And from 2030 onwards, as the CO_2 limits go down sharply, the penalty also goes up, to €6,800 (around £5,800) per g/tkm per truck.

And while the measures will apply to most classes of trucks above 16 tonnes GVW, the reference results are only derived from rigid chassis and tractive units – either 4x2 or 6x2 – and only those involved in urban delivery ('UD'), regional delivery ('RD') or long-haul ('LH') operations. No eight-wheelers, no 6x4s, no refuse collection vehicles, no mixers or other 'vocational vehicles'.

In an attempt to make the results

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John Comer

properly comparable, a weighting factor is applied to vehicles of different types according to their load capacity and utilisation. Here the baseline vehicle is a 4x2 sleeper-cab tractor with at least 265kW (355bhp). This '5-LH' truck gets a 'Mileage and Payload Weighting Factor' (MPW) of 1.000, defined as the product of the typical vehicle mileage and average payload (and a normalising factor to bring the number to 1.000). Here group 5 indicates a 4x2 tractor and LH indicates a vehicle with a sleeper cab and the more powerful engine.

So an otherwise identical 6x2 tractor (with a lower payload at the same GVW) would be classified '10-LH' and given an MPW of 0.922. A day-cab 4x2 tractor ('5-RD') gets an MPW of 0.498, to recognise that it is likely to cover less distance at a lower loading factor, while a '4-UD' 4x2 rigid of under 170kW/225bhp gets an MPW of just 0.099.

The MPW is used to multiply a vehicle's CO_2 output (in g/tkm), so that CO_2 reductions in class 5-LH are weighted over ten times higher than class 4-UD. As the International Council on Clean Transportation puts it: "Consider a hypothetical manufacturer that sells an equal number of vehicles in sub-groups 4-UD and 5-LH, and sells no vehicles in the other sub-groups. To comply with the 15% reduction CO_2 target in 2025, this manufacturer could reduce by 20% the CO_2 emissions in sub-group 5-LH and not be required to reduce the CO_2 emissions in sub-group 4-UD."

CO_2 RESULTS PER MANUFACTURER

Manufacturer	Average specific CO_2 emissions	ZLEV factor	CO_2 emissions reduction trajectory	Emission credits	Better/worse than trajectory?
	G/TKM		G/TKM	G/TKM	
Daimler Truck AG	53.97	1.000	53.16	-	1.5%
DAF NV	53.38	0.999	53.64	8,154	- 0.5%
IVECO Magirus AG	53.43	1.000	51.87	-	3.0%
IVECO SpA	33.91	0.998	31.16	-	8.8%
Ford Otomotiv Sanayi	53.06	1.000	49.40	-	7.4%
MAN Truck & Bus	51.58	0.999	51.49	-	0.2%
Renault Truck SA	52.19	1.000	50.72	-	2.8%
Scania CV AB	51.02	1.000	53.54	77,096	- 4.7%
Volvo Truck Corp	54.38	1.000	53.89	-	0.9%

SOURCE: COMMISSION IMPLEMENTING DECISION (EU) 2021/781, PUBLISHED 10 MAY 2021

REACTION

John Comer, Volvo's UK head of truck product management, comments: "The baseline is based on the manufacturers' model mix – the EU baseline will be affected due to the predominance of tractors, which account for 51% of the market. The big factor with regard to weighting is the LH long haul category. Given that 8x4 is measured, but not in the baseline figures for 2025, in effect 10-LH accounts for 70% of the score."

The 'CO_2 emissions reduction trajectory' figure is simply a way to see if a manufacturer is on target to achieve the appropriate CO_2 levels by 2025 and 2030 – assuming a straight-line reduction in CO2 levels. If the OEM is bettering the 'trajectory', it can claim CO_2 credits which will offset any potential penalties; at the moment it looks like Scania and DAF are banking these credits, but they can only be used in 2025.

Further credit can come from producing zero- and low-emission vehicles (ZEVs and LEVs) – usually electric or alternative-fuel trucks. Each of these is counted as more than one vehicle, and is known as a 'super-credit multiplier'. A battery-electric truck (ZEV) certified for 0g CO_2/km counts as two vehicles, while a LEV (<350g CO_2/km) counts as between 1 and 2 vehicles, and a LEV producing 175g CO_2/km counts as 1.5 vehicles. These are used to calculate the zero and low-emission (ZLEV) factor, which multiplies the average specific CO_2 emissions. Although the ZLEV factor is capped at a minimum of 0.97, an OEM would still benefit from the overall reduction in average CO_2 emissions of ZEVs and LEVs.

Andrew Scott, head of electric mobility for Renault Trucks UK, says: "We offer the widest range of fully-electric commercial vehicles of any UK provider, which will have a positive impact on forthcoming VECTO measurements and will contribute significantly to achieving the 2025 and 2030 CO_2 emission reduction target".

The EU's CO2 monitoring system is not a perfect measure of truck emissions – and it may not be fair to every manufacturer – but it will certainly have a vital role in reducing CO_2 emissions from trucks over the next decade. TE