



Those operators currently running a Euro 6 diesel van or car could be forgiven for wondering whether they are helping or harming local air quality, compared to running petrol-powered equivalents. The key pollutant is nitrogen oxides (NOx), which are thought to be so harmful to health that many UK city centres are planning to restrict the access of older models.

Official Euro 6 NOx limits vary by vehicle type. They are: 0.08 versus 0.06g/km for diesel and petrol vehicles respectively up to 1,305kg gvw (category M and N1-I); 0.105 vs 0.075g/km for 1,305-1,760kg gvw vans (category N1-II); and 0.125 vs 0.082g/km for vans up to 12t gvw (category N1-III and N2). Trucks over 12t gvw compliant with Euro VI (class N3: either 0.40 or 0.46g/km, depending on the test used) still emit five times as much NOx as a Euro 6 diesel car. But while HGV operators can be confident that their trucks' actual emissions match the stated values, things are much murkier at the lighter end of the vehicle market.

Nick Molden, founder of independent emissions tester Emissions Analytics,

IN A FOG

Confused about the emissions benefits of your van's Euro 6 engine? It's hardly surprising, given the complexity of the situation and a failure by the government to clear up the uncertainty. Chris Tindall investigates

sums up the situation: "The regulations for cars have failed so badly. The problem with cars and vans is the lack of real-world testing, until September 2017, when an on-road component of the certification test began to be introduced. Up until then, it was all done in the laboratory and on a New European

Drive Cycle (NEDC) - and that was a very easy cycle for very low loads."

According to Molden, the NEDC, invented in the 1970s, never evolved to keep up with the advances in vehicle technology. He continues: "Even worse, the regulations had many loopholes built into them; they were very badly written. Manufacturers used these loopholes to spend very little money. The vehicle would comply in the lab, but take it on the road and on average there was five times more NOx."

But Molden points out that all manufacturers are not necessarily to blame. Once one manufacturer started to exploit the loopholes, the market's competitive pressures made it difficult for others not to follow suit. "The regulations should be setting a level playing field. That was what happened in trucks, and that's changing now." The new test cycle is called Worldwide Harmonised Light Vehicle Test Procedure, WLTP (see link, p54).

This change began with the introduction of Real Driving Emissions (RDE) - road testing - for new cars in September 2017. Testing of all new cars according to WLTP is to start in

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September this year, and by September 2019 they will have all undergone WLTP and RDE testing. Testing of new models of light commercial vehicles according to WLTP and RDE is required by September 2018, and testing of all models by September 2019.

That means that right now, the emissions of a Euro 6-compliant engine could vary hugely. Molden says that some vehicles meet current limits and some are up to 15 times over the limit.

According to Andy Eastlake, managing director of the Low Carbon Vehicle Partnership, the current situation is complex because it is in transition. He comments: “The real issue is that there are actually four versions of Euro 6 for cars and vans. First is early Euro 6 tested on NEDC with no RDE. Second is Euro 6 tested on NEDC with some RDE testing, but no limits applied. Third is current Euro 6d-TEMP tested over the new WLTP cycle and with RDE limited to about twice the lab test result. Finally, from January 2020, Euro 6d will be tested over WLTP with full RDE, requiring the vehicle to basically meet the same limits everywhere within the measurement capability of the RDE system.”

One might wonder why RDE was introduced part of the way through a new emission standard, and without limits. But Eastlake says it is not unusual to introduce a new measurement process with reporting-only levels, while negotiations continue over what those limits should be. He points out that one of the challenges of any new technique is having sufficient robust data on which to base limit decisions. He adds: “The RDE testing has been a long time coming, and the VW scandal accelerated the introduction, so the requirement to monitor came in only a short while before the limits were applied.”

For buyers, the result has been widespread confusion. Eastlake says there is very little understanding of the complexities involved in these radical

EMISSIONS FUDGE

From September 2017, a not-to-exceed emissions limit for RDE emissions of new car models was set with a conformity factor of 2.1 for NOx. This factor will apply to all new cars in September 2019.

The 2.1 number consists of two terms: a conformity figure of 1.0 and a margin of error of 1.1, or 110%, due to the lack of repeatability of the portable emissions measurement system (PEMS) equipment used to perform RDE tests (pictured, p53). From January 2020 and January 2021, the conformity factor is reduced to 1.0 plus an error of 0.5, or 50%, for new car models and all new cars respectively.

A result of 119mg/km could still pass the test at that point, but as Eastlake points out, this is only for PEMS and is not a carte blanche for OEMs to exceed the 80mg limit.

changes to emission testing, and adds that the slump in diesel sales is primarily down to this confusion, coupled with mixed signals from governments and local authorities.

“I would say at the moment fleets are holding out until there is both clarity on the clean air zone policies cities will

implement and on the local anti-diesel rhetoric, which seems to have gathered momentum,” comments the LowCVP managing director.

So far, a plan for RDE emissions levels (see box) is all that has been formally agreed, although there is a view to bringing down the conformity factor to 1.

And then what? Emissions Analytics’ Molden says that a Euro 7 regulatory stage is being mooted, and there is a strong desire to equalise NOx levels for diesel and petrol engines. After that, Molden believes that electrification is inevitable, with a significant proportion of hybrid vehicles on the roads by 2025.

Eastlake concludes: “For any fleet that is able, now is a good time to adopt zero- and near-zero-emission vehicles within their operations, since they have arguably the greatest support grants they will get, and there is a clear trajectory of policy for zero-emission requirements in city centres in the not-so-long term.” [TE](#)

FURTHER INFORMATION

Euro 6/VI fuel standards, by the ICCT – <https://is.gd/uceriq>

WLTP and NEDC comparisons – <https://is.gd/ehiquy> and <https://is.gd/jepobo>

