

New cars tests are a big step forward – but only part of the solution

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New tests are not a panacea

The introduction of the new car tests, the WLTP and RDE tests, marks an important milestone in the battle to ensure cars comply with environmental limits on the road and to end the cheating that has become endemic in emissions testing. But new tests are not a panacea and will need to be further refined to ensure they are really representative of how cars are driven. The forthcoming decisions on how and who approves cars for sale will be key to ensuring the system of approvals is independent and rigorously enforced.

1. Background

The new RDE (Real-Driving Emissions) test for diesel NOx emissions and particulate numbers from gasoline cars and the new WLTP (World Light Duty Test Protocol) for CO2 emissions) come into force on the 1.9.17.

The new tests will only apply to new types of cars (entirely new models or significant upgrades initially). RDE will not apply to all new cars until 1.9.19 & WLTP until 1.9.18.

Few carmakers are expected to homologate (get approval for sale) of new cars in 2017 preferring to wait as long as possible before having to introduce the new tests – we therefore expect to see relatively little WLTP and RDE data initially.

2. WLTP

The WLTP test is a huge improvement over NEDC, the obsolete test it replaces. The test is much longer and car driven much more dynamically (faster accelerations) that are more realistic on real-world driving. The car is moving for a much higher proportion of the test and the high speed section of the test more representative of highway driving.

More important than changes to the test are a much stronger test protocol. These eliminate many of the practices that carmakers have used to artificially lower NEDC test results such as charging the battery before the test, over-inflating tyres, etc. It also requires cars to be tested at the maximum and minimum weight (depending on the level of optional equipment fitted to the vehicle), all of these developments make the WLTP test result more representative.

However, the WLTP is still a laboratory test and does not accurately represent real-world emissions that are estimated to be 23% higher. The gap arises from test flexibilities (10%); technologies that perform

better in the test than on the road (8%); and the non-use of auxiliary equipment during the test (5%). This gap is expected to grow to 31% by 2025 as more test flexibilities are exploited (15%); technologies performing better in the test (10%); and more equipment fitted to cars 6%.

To avoid this widening gap T&E proposes that the forthcoming car CO₂ regulation scheduled for November should include real-world checks for fuel consumption as was successfully done for air pollution. This regulation will be essential to drive down CO₂ emissions on the road that have been effectively flat for the past five years. The new regulation should be based upon the WLTP test but a secondary real-world CO₂ test should be performed that can be no more than 10-15% greater than the measured WLTP value.

3. RDE

The RDE test will make a significant contribution to lowering diesel NO_x emissions and particulate emissions from gasoline cars. It is a real-world test in which the emissions are measured using a portable emissions monitoring system.

The test is more representative of real-world driving than a laboratory test – but slightly less reproducible. However, it requires the car to be tested under a wide range of operating conditions testing the technology in a range of ways.

The RDE test has exposed that real-world emissions of new diesel cars are typically five times the 80mg/km limit but can be 10 or more times higher.

The RDE limits will apply in 2 steps:

1. Step 1 – 168g/km from 2017/19
2. Step 2 – 120g/km from 2020/21

The RDE and limits will therefore reduce diesel NO_x emissions but levels will remain twice as higher as from new gasoline cars even after 2021.

The Stage 4 of the RDE test procedure – extending the test to in-service vehicles is scheduled to be completed by the end of 2017. This is important as it will require cars to continue to comply with lower limits after they have been sold.

4. T&E priorities

1. A real-world CO₂ test to complement the WLTP test along with a not-to-exceed limit of 110% of the WLTP value;
2. A Euro 7 standard that eliminates traffic-related breaches or air pollution standards and sets common limits for diesel and gasoline cars using the RDE test procedure;
3. That the software / emissions control systems for all 35 million dirty diesel cars on the EU roads are upgraded to reduce emissions;
4. That design flaws in the RDE test are tackled to ensure it is truly representative of real-world driving.