

The NBR 6601/FTP-75 is the sole driving cycle required for certification testing. In contrast, the United States has adopted The Supplemental Federal Test Procedures (SFTP), which require additional testing over driving cycles with operating modes not well represented in the FTP-75. It includes emission testing on cycles representing aggressive, high-speed driving and operation at high ambient temperatures with an air conditioning load. The SFTP enhance the representativeness and strength of the U.S. certification test program.

Type approval testing in the European Union is conducted over the New European Driving Cycle (NEDC), with more periods of constant velocity and acceleration. The EU is in the process of transitioning from NEDC- to the Worldwide Harmonized Light Vehicles Test Procedures (WLTP) which were designed to be more characteristic of real-world driving conditions. Europe is also taking steps to address longstanding disparities between type approval and real-world emissions performance.

The RDE test will gradually take effect in 2017. It will apply to all new cars by the beginning of 2021 and all new vans by the beginning of 2022. The new procedure will complement the current laboratory certification of vehicles with on-road testing under more realistic real-world conditions. Instead of testing the vehicle only in a laboratory, additional testing will be conducted on the road under normal driving conditions. Vehicle emissions will be analyzed and recorded using portable emissions measurement system (PEMS) equipment.

## DIESELGATE SCANDAL

Recently, evidence has emerged showing deliberate actions by auto manufacturers to cheat in the emission tests through the use of defeat devices. The Environmental Protection Agency (EPA) found that many cars being sold in America had a "defeat device" - or software - in diesel engines that could detect when they were being tested, changing the performance accordingly to improve results. EPA discovered that 482,000 (from a Germany company) diesel cars on American roads were emitting up to 40 times more toxic fumes than permitted - and the company has since admitted the cheat affects 11m cars worldwide.

It means far more harmful NOx emissions, including nitrogen dioxide, have been pumped into the air than was thought - between 250,000 to 1m extra tonnes every year. The hidden damage from these vehicles could equate to all of the UK's NOx emissions from all power stations, vehicles, industry and agriculture.

EPA has notified vehicle manufacturers that it will be expanding its compliance oversight activities by testing vehicles in unpredictable ways to deter similar actions by manufacturers in the future. The European Union has adopted a real-

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