

EMISSION MEASUREMENTS IN THE AUTOMOTIVE SECTOR

COMPARING EU AND US CAR EMISSIONS LEGISLATION

BACKGROUND

In September 2015, the US Environmental Protection Agency (EPA) found that Volkswagen had installed illegal software in diesel cars in order to cheat emission tests, thus allowing NOx emissions well above the legal limits. These revelations at the same time highlighted differences in emissions testing in the US and the EU, as well as between emissions test and real-world emissions.



FOCUS OF THE STUDY

[This study](#) compares the differences between the EU and US legislation on emissions in the automotive sector, covering the emissions standards themselves; the systems for their implementation and enforcement, including approval systems for vehicles; and the respective regimes for prohibiting the use of defeat devices.

KEY FINDINGS

1. Emissions standards



US federal emissions standards are broadly **more ambitious** for key **local air quality pollutants**, particularly **NOx**, than EU standards. A key difference is that the US applies a **single set of standards to petrol and diesel vehicles**, while the EU allows higher levels of air quality pollutants to diesel vehicles. In addition, **California**, and a number of other states which chose to adopt California's rules, apply emissions standards which are more ambitious than federal standards.

With respect to **greenhouse gas emissions**, **EU** fleet average targets for CO₂ emissions are currently more ambitious than those adopted for emissions in the US.

2. Test regimes

The **test regimes** used in the EU and the US are **different**, which affects the **stringency** in practice of emissions standards. The EU's use of the New European Driving Cycle has hampered the effectiveness of emissions standards. Not only is there a gap between test cycle emissions and real-world driving emissions, but the gap has been growing significantly over time. The newly applied **Worldwide Harmonized Light Vehicles Procedure** is **closer to the US Federal Test Procedure** and to real-life driving conditions.

3. Type approval

The current **type approval** system in the EU has a number of weaknesses in comparison with the US system deriving in part from its origins as a single market instrument. In particular, the **flexibility for manufacturers**



to **choose** between **type approval authorities** and **testing facilities** (including the flexibility to choose different authorities for different elements of type approval) creates a clear risk that manufacturers will use what they perceive to be the least stringent regulator. The **US system** has a **single regulator**, the federal Environmental Protection Agency (EPA), which has, in contrast to most Member State type approval authorities, a mission focused on the protection of human health and the environment.

3. In-service conformity

There are significant contrasts in the stringency of **in-service performance verification**: While the **US EPA** has a **systematic approach** to the testing of vehicles at different stages of their life, **surveillance in the EU is dependent on the individual Member State**, with only very limited efforts to introduce systematic surveillance systems observed. (The EU type approval system is currently under review).



4. Defeat devices

The **definitions of defeat device** in the US and the EU legislation are **fundamentally similar**, with a similar range of allowed exemptions. The **key difference lies in implementation**. In the EU, manufacturers are not obliged to seek prior approval for their reliance on exemptions for defeat devices, or even to identify any such devices when applying for type approval. In the **US, manufacturers are required to provide full details of any auxiliary emissions control devices** to the EPA. And while in the EU there has been no clarification of how the definition of defeat devices should be implemented, the **EPA** has provided manufacturers and evaluators with a **range of advisory circulars providing further interpretative detail**.

5. Recommendations for the EU

- **Remove the flexibility** for manufacturers to **choose** their regulator;
- Place **oversight of implementation** of environmental standards in the hands of organisations with a clear environmental mission;
- Require manufacturers to provide **full information on the use of emission control devices** to regulators, and seek **prior approval** of the use of any defeat devices under specific derogations;
- Provide greater clarity on the duties of regulators, both to **monitor in-service performance**, and to **identify and pursue cases of non-compliance**;
- Introduce improved **EU-level monitoring** of the **performance of type approval authorities (TAAs)**, with the option of suspending a TAA's right to issue type approvals in the event of persistent weaknesses in performance.



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