



ADAC position on the post-Euro 6 emissions standard for passenger cars

Background

A stakeholder event hosted by the EU Commission in November 2018 sparked off the public debate about the future legislation on the reduction of pollutant emissions from passenger cars and on the development of the Euro 6 emissions standard. However, the EU Commission is not expected to present a legislative proposal before 2021.

With a view to a future Euro 7 emissions standard, the issues under debate specifically include:

- Real driving emissions (RDE): test environment and test cycle, introduction of real driving fuel consumption measurement.
- Use of remote sensing devices (RSD) for measuring emissions of passing vehicles.
- In-use/on-board emissions monitoring.
- Particle number limit (PN) for ultrafine particles of less than 23nm (current projects under the HORIZON 2020 programme aim at developing new measuring methods, etc.).
- Limits for uncontrolled emissions such as nitrogen dioxide (NO₂), ammonia (NH₃), aldehydes, isocyanic acid (HNCO).
- Limits for non-exhaust particle emissions such as those originating from brake/tyre wear or road dust resuspension.
- In addition to carbon dioxide (CO₂), factoring in any type of greenhouse gas emissions (GHG), incl. nitrous oxide (N₂O, commonly known as laughing gas) and methane (CH₄).
- Revision of the roadworthiness inspection scheme.
- Emissions calculations based on a car's usual life cycle and in compliance with the in-service conformity (ISC) requirements.

The automotive industry (manufacturers and suppliers) call upon the legislator to put a special focus on the following issues when developing the new emissions standard:

- The RDE Euro 6d is currently the toughest standard worldwide and actually equals a Euro 7 emissions standard.
- Before tightening the legislation further, a comprehensive impact assessment of RDE Euro 6d must be performed to identify the measures that actually need to be taken in the next 15 to 20 years. Also, a comprehensive cost-benefit analysis is required.
- Prior to introducing limits for pollutants not yet controlled today and for secondary emissions, the EU Commission is to commission scientific studies.
- If standards are tightened further, the industry must be given sufficient lead time to prepare.
- Tighter emissions standards must be in synch with the CO₂ regulations.
- Limits should reflect technology and fuel neutrality. Global adjustments would be reasonable.

ADAC position

ADAC is open to ideas for revising the Regulations on the reduction of pollutant emissions from road vehicles.

To reach the planned air quality and air cleanliness objectives, ADAC also welcomes the further adjustment of emission limits. However, in our opinion, much needs to be discussed before adopting stricter limits. The developments over the last few decades have shown considerable reductions in terms of particulate matter and nitrogen oxide emissions. So far, the EU Commission has not published anything that could serve as a basis for drastically reducing some pollutant limits for all new vehicles. Emissions limit values should be technically feasible and not push internal combustion engines to the side lines.

Optimised verification procedures

ADAC recommends that the verification procedures – developed gradually over the past – be subjected to intense scrutiny. Type approval and the relevant verification procedures are not always cost-efficient for automobile manufacturers.

The legal requirements for assessing conformity of production (COP) involve quite an effort even if type-specific observations are the exception rather than the rule. Hence, such verifications should be abandoned. This also applies to the bundling of test temperatures and vehicle criteria (family) under the type approval procedure. Then again, it is reasonable to include RDE measurements in the approval procedure and in-service conformity monitoring as well as any consequences of non-compliance.

To make lab tests less costly, temperature in the Type 1 test should be reduced from the current 23°C to the European average temperature (10°C). And the additional Ambient Temperature Correction Test (ATCT) for the determination of CO₂ emissions under representative regional temperature conditions should be cancelled.

In addition, RDE measurements should be advanced. The focus should be on developing a measuring method for determining fuel consumption. As far as the intended conformity factor (CF) verification in connection with RDE measurements is concerned, measurement uncertainty should be reduced further. The target CF should be 1.0.

Remote sensing unsuited for vehicle type approval

ADAC sees no need for the use of remote sensing devices (RSD) to measure the emissions of passing vehicles for the purpose of type approval. RDE measurements are sufficient, i.e. emissions in real-life conditions.

However, remote sensing technology can be used to determine the RDE emissions of passing vehicles to assess whether or not the emission laws are effective. In addition, it may be useful in the development of national and international central vehicle registration databases or the design and improvement of methods for the use of real-life remote sensing technology to improve the emission factors which are required for air quality modelling and other applications.

ADAC recommends to evaluate the findings of the recently introduced ISC (in-service conformity) procedure before defining new type approval requirements for RDE monitoring.

Cross-technology limits

Identical limits for both petrol and diesel across technologies have been fundamental ADAC demands for decades. Moreover, engines should comply with the limits in any operating mode.

In this context, ADAC specifically recommends that the applicability of the particulate matter (PM) and particle number (PN) limits be extended to indirect injection petrol engines. Time and again, the ADAC Ecotest shows that vehicle models powered by this type of engine have increased particle emissions. The PM and PN limits defined in the emissions standard currently only apply to diesel and direct injection petrol engines.

Particle number limit for ultrafine particles

The size of soot particles that form in a combustion engine ranges between 10nm and several hundred nanometers. The PN limit should cover any particle emitted by an engine – regardless of the size.

ADAC sees no need to consider non-exhaust particle emissions such as those originating from brake/tyre wear in the vehicle emissions legislation. The limits for such emissions should rather be defined in the tyre or vehicle component regulations.

Limit for ammonia emissions

With respect to uncontrolled pollutants, ADAC calls upon the legislator to introduce a limit first and foremost for ammonia (NH₃) emissions which is in analogy to the emissions standards for heavy goods vehicles. The reduction of ammonia emissions does not require too much technical effort. The legislator should prevent the unnecessary emission of this gas that causes irritation and is critical in the formation of secondary aerosols.

Reasonable regulations on greenhouse gas emissions

In addition to carbon dioxide (CO₂), the greenhouse gas (GHG) emissions measurements should factor in methane (CH₄). Methane emissions may be quite high especially in CNG vehicles. As far as ADAC is currently aware, nitrous oxide (N₂O) is being produced only in small quantities. However, this agent's climate harming potential is 298 times higher than that of CO₂. The metrics and methodology being identical to those for NH₃, its indexation in the course of the introduction of a NH₃ limit would be reasonable.

Life-cycle greenhouse gases

Because it is reasonable to consider the entire life cycle of a vehicle with a view to carbon dioxide (CO₂) and greenhouse gases, ADAC has called upon the legislator to take this approach in the CO₂ fleet emissions standards for many years. A similar approach seems, however, much less feasible when it comes to controlled pollutants such as nitrogen oxides (NO_x), particulate matter or carbon monoxide (CO).

Euro 7 emissions standard without differentiation

The requirements and limits of the new (Euro 7) emissions legislation should be defined in no more than one standard. The great differentiation and, in some cases, very short lead times of the Euro 6 standard – Euro 6a, 6b, 6c, 6d-TEMP and 6d as well as the further differentiation of Euro 6d-TEMP (Euro 6d-TEMP, Euro 6d-TEMP-EVAP, Euro 6d-TEMP-ISC, Euro 6d-TEMP-EVAP-ISC) and Euro 6d (Euro 6d-ISC, Euro 6d-ICS-FCM) – have resulted in numerous new type approval procedures for the car manufacturers and caused tremendous confusion and irritation especially among consumers/vehicle buyers.

Emission limits to be defined in the ordinary legislative procedure

Moreover, an amendment to and/or the introduction of new emission limits should in principle be subject to the ordinary legislative procedure, i.e. involve the EU Parliament and the Council of Ministers. ADAC rejects the idea of empowering the EU Commission to adopt delegated acts concerning the above measures like we saw in some cases in the past. The latter procedure is questionable, and the General Court (EGC) ruling annulling the nitrogen oxide (NO_x) conformity factors confirmed it.

Safeguards against manipulation in the roadworthiness inspection

As has been the rule, the revision of the roadworthiness inspection scheme should be subject to a separate legislative procedure. The focus should be on ensuring that vehicles are sufficiently tamper-proof since this is the only viable solution for preventing vehicle manipulation by the manufacturer or the owner. This starts with the odometer and includes the engine control unit and emissions control system as well as driver assistance systems, vehicle connectivity and automated driving functions and is a prerequisite for the entire vehicle.

To further develop the roadworthiness inspection, ADAC supports the inclusion of an inspection/test for confirming the use of approved hardware, firmware, and parametrisation in the engine control unit and emissions control system. The legislation must impose efficient testing of such systems and the adequate testing requirements.

Therefore, ADAC asks for inclusion of an international provision granting type approval only for tamper-proof systems, components and separate technical units for vehicles. Evidence that must be submitted to prove that systems are sufficiently tamper-proof should be based on the transparent and internationally recognised Common Criteria.

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