Emission standards in the **European Union** for heavy duty vehicles

Table 1: EU emission standards for heavy duty vehicles in g/kWh

Tier	Date	CO	HC	NO_x	PM
Euro I	1992	4.5	1.1	8.0	0.36
Euro II	1996	4.0	1.1	7.0	0.25
Euro III	10/2000	2.1	0.66	5.0	0.1
Euro IV	10/2005	1.5	0.46	3.5	0.02
Euro V	10/2008	1.5	0.25	2.0	0.02
Euro VI	2013/2014	1.5	0.13	0.4	0.01

Summary of the proposed action for Euro VI

- The main aspect of this Regulation is that it requires a further tightening of vehicle emission limits for particulate matter (PM) and nitrogen oxides (400mg/kWh NO_x limit).
- It is planned to introduce at a later stage a new standard limiting the number of particles that can be emitted.
- A reduction of 66% in the mass of particulate emissions from compression-ignition engined vehicles will be required.
- For compression-ignition engined vehicles, a reduction of 80% in NO_x is planned. To comply with this emission limit, internal engine measures (e.g. Exhaust Gas Recirculation - EGR) and after-treatment devices (e.g. Selective Catalytic Reduction - SCR) will be needed at the current state of the art.
- The proposal is also introducing requirements for the type-approval of exhaust after-treatment components such as catalysts and diesel particulate filters (DPFs).
- The proposal includes a requirement that vehicle on-board diagnostic (OBD) information and vehicle repair and maintenance information be made available through websites in the standardised format developed by a technical committee of stakeholders (the so-called ‚OASIS format').

Introduction of World-Wide Harmonised requirements is an important element in order to reduce the testing costs of the automotive industry and will favour the competitiveness of the European engine and vehicle manufacturers. In this context, this proposal is introducing requirements, developed in the framework of the UN-ECE WP.29 – World Forum for Harmonisation of Vehicle Regulations – relating to:

1. Use of world-wide harmonised steady state (WHSC) and transient (WHTC) driving cycles for the evaluation of pollutant emissions.
2. Emissions testing and measurement methodology.
3. World-Wide Harmonised on-board diagnostic (WWH-OBD) systems

Entry into force

This regulation shall apply from 1st April 2013.
With effect from 1 October 2014, national authorities shall, in the case of new vehicles which do not comply with this Regulation, prohibit the registration, the sale and entry into service of such vehicles. With effect from the same date and except in the case of replacement engines for in service vehicles, national authorities shall prohibit the sale or use of new engines which do not comply with this Regulation

The emission standards apply to all motor vehicles propelled by a compression ignition or gas engine, with the exception of vehicles of category M1 * with a technically permissible maximum laden mass less than or equal to 3,5 t.

*Category M1: Vehicles designed and constructed fo the carriage of passengers and compromising no more than eight seats in addition to the driver's seat.

European Union emission regulations for heavy duty vehicles are specified in the Directive 88/77/EEC. This basis Directive was amended a number of times, some of the most important amendments including:

- Introduction of Euro I standards in 1992,
- Euro II regulations in 1996.
- Euro III standards (required from 2000) - Directive 1999/96/EC
- Euro IV/V standards (required from 2005/2008).
- Directive 2005/55/EC adopted in 2005 introduced durability and OBD requirements, as well as re-stated the emission limits for Euro IV and Euro V which were originally published in 1999/96/EC.
- Proposal for Euro VI emission standards was published in December 2007. The new emission limits, comparable to the US 2010 Standards, would be come effective from 2013/2014