

# RETROFIT OF PASSENGER CARS AND LIGHT COMMERCIAL VEHICLES

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As a potential measure to achieve the European Union (EU) urban air quality targets there is a discussion on possible soft- and hard-ware retrofitting measures to reduce NO<sub>x</sub> emissions, mainly from Euro 5 and older diesel passenger cars and light commercial vehicles.

In the public debate, hardware retrofitting is considered as the most effective way to reduce NO<sub>x</sub> tailpipe emissions of vehicles in the current fleet (namely Euro 5 vehicles). Several technical retrofit demonstration programmes using Selective Catalytic Reduction (SCR)-based systems have shown its general feasibility.

As an industry association that strives to foster state-of-the-art emissions control technology, AECC believes that the following technical and certification procedural elements need to be carefully considered to ensure any retrofit/upgrade programme will truly deliver benefits to urban air quality:

- Technical elements to be considered:
  - SCR-based retrofit systems will need to be integrated with the vehicle/engine system from both packaging (space needed for extra catalyst and urea tank system) and controls perspective
  - Clear definition of NO<sub>x</sub> reduction targets and its verification for both fresh and aged systems
  - Durability must be demonstrated
  - Therefore, close involvement and cooperation with the original vehicle manufacturer is mandatory
- Certification elements to be considered:
  - A regulatory framework must be established specifying targets, durability and warranty requirements
  - Type-approval procedures must be adapted to also cover such retrofit schemes, at minimum national but preferably EU-wide approval needs to be granted for each retrofitted vehicle

For example, uniform provisions have been developed by the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29) concerning the approval of Retrofit Emission Control devices (REC) for heavy-duty vehicles, agricultural and forestry tractors, and non-road mobile machinery equipped with compression ignition engines<sup>1</sup>. Similar principles as in UN Regulation No 132 should apply for retrofit of light-duty vehicles. For instance, a national framework<sup>2</sup> was put in place in Germany for particulate filter retrofit. The validation procedure should include some durability testing requirements rather than refer to fixed Deterioration Factors.

Should you need more information, you can contact AECC at [info@aecc.eu](mailto:info@aecc.eu).

## References:

<sup>1</sup> UN Regulation No 132, [www.unece.org/trans/main/wp29/wp29regs121-140.html](http://www.unece.org/trans/main/wp29/wp29regs121-140.html)

<sup>2</sup> Straßenverkehrs-Zulassungs-Ordnung (StVZO) Anlage XXVI (zu § 47 Absatz 3a), [www.gesetze-im-internet.de/stvzo\\_2012/anlage\\_xxvi.html](http://www.gesetze-im-internet.de/stvzo_2012/anlage_xxvi.html)

*AECC is an international non-profit scientific association of European companies operating worldwide in the research, development, testing and manufacture of key technologies for emissions control. Their products are the ceramic substrates for catalysts and filters; catalysts (substrates with catalytic materials incorporated or coated); adsorbers; filter-based technologies to control engine particulate emissions; and speciality materials incorporated into the catalyst or filter. Members' technology is integrated in the exhaust emissions control systems of cars, commercial vehicles, buses, non-road mobile machinery and motorcycles in Europe. More information on AECC can be found at [www.aecc.eu](http://www.aecc.eu).*

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