



## **AECC POSITION ON THIRD REAL-DRIVING EMISSIONS (RDE) REGULATORY PACKAGE**

AECC welcomes the publication in the EU Official Journal of the first two regulatory packages on Real-Driving Emissions (RDE), namely Commission Regulations (EU) 2016/427 and (EU) 2016/646. They set the basis for enhancing the Euro 6 Regulation (EC) 715/2007 on emissions from passenger cars and light-duty vehicles.

In readiness for the discussions and vote in the upcoming TCMV meetings, AECC wants to provide the position of the European catalyst and filter industry to contribute to the **third regulatory RDE package that is expected to define the procedure dealing with a Conformity Factor for Particle Number (PN) on-road emissions, the assessment of real-driving emissions after engine start (“cold-start RDE”), and the RDE testing procedure for hybrid and light commercial vehicles.**

The industry that AECC represents believes that in general the **RDE procedure should be realistic and as simple as possible** to ensure it is robust, transparent and delivers the air quality benefit needed by EU Member States, local authorities and citizens.

**AECC test programmes show that both Diesel Particulate Filters (DPF) and Gasoline Particulate Filters (GPF) gave real-world PN emissions below a Conformity Factor of 1.0 under the conditions tested.**

In 2015 AECC evaluated the performance of the first commercially-available passenger car equipped with a GPF<sup>1</sup> and confirmed that GPF technology offers the most effective route for controlling Particle Number (PN) emissions from Gasoline Direct Injection (GDI) cars under a wide range of driving conditions.

In 2016 AECC conducted a further test programme to evaluate the performance of a GDI vehicle with and without a GPF, under a variety of driving conditions<sup>2</sup>.

DPF technology was shown to be effective for reducing particulate emissions under real world conditions in a diesel Euro 6 RDE test programme<sup>3</sup> conducted by AECC in 2015.

**At this stage, for simplicity and transparency AECC supports the inclusion of cold-start emissions directly in the assessment of RDE emissions in the urban phase without weighing factors.**

It is essential that all real driving emissions are controlled by the RDE procedure, including those from the first few minutes from engine start, as the European Commission has established<sup>4</sup> that more than 30% of trips made in cars in Europe cover distances of less than 3 km and 50% of trips are less than 5 km long. Warm-up and thermal management strategies are in place to bring the emission control system components up to operating temperature under urban driving conditions and their effectiveness in controlling emissions should be included in the requirements of RDE legislation.



AECC believes that soaking the vehicle under moderate ambient conditions is an appropriate preconditioning for the cold-start RDE assessment.

Adding the emissions from the currently excluded first five minutes of the RDE test to the urban result shows a significant contribution to urban raw emissions, up to 38% diesel NOx<sup>5</sup> and up to 86% PN for a GDI car not fitted with a GPF<sup>2</sup>.

Just adding the cold-start data to the urban RDE is the current preferred option in view of the limited data available to construct a robust new procedure within the timeframe of the third RDE regulatory package.

To ensure a level playing field AECC believes that Light Commercial Vehicles (LCVs) should be treated equally to passenger cars.

For simplicity and transparency AECC believes that hybrid electric vehicles should be tested for RDE with the battery at minimum state of charge as a first step as data is not yet available to justify a more complex procedure.

After the monitoring phase, when more RDE data becomes available, the RDE procedure should be simplified to ensure the credibility of EU emissions legislation. RDE data collected could then be used to reconsider and enhance the assessment of real-world urban emissions and the RDE testing of hybrid vehicles. In addition the original RDE data post-processing tools EMROAD and CLEAR must be re-assessed to ensure they are transparent and necessary following the inclusion of complementary dynamic driving boundary conditions (Appendices 7a-b to Annex IIIA of Regulation (EC) 692/2008).

30.06.2016

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

#### References:

- [1] 'Real Driving Emissions of a GPF-equipped production car', Bosteels et al., IQPC 3<sup>rd</sup> International Conference Real Driving Emissions, Berlin, October 2015, [www.aecc.eu/content/pdf/151027%20IQPC%20RDE%20-%20AECC%20RDE%20of%20a%20GPF-equipped%20production%20car\\_final.pdf](http://www.aecc.eu/content/pdf/151027%20IQPC%20RDE%20-%20AECC%20RDE%20of%20a%20GPF-equipped%20production%20car_final.pdf).
- [2] 'Real-driving emission results from GDI vehicles with and without a GPF', Demuyne, IQPC 4<sup>th</sup> International Conference Advanced Emission Control Concepts for Gasoline Engines, Bonn, May 2016, [www.aecc.eu/content/pdf/160511%20IQPC%20conference%20RDE%20GDI%20with%20and%20without%20a%20GPF.pdf](http://www.aecc.eu/content/pdf/160511%20IQPC%20conference%20RDE%20GDI%20with%20and%20without%20a%20GPF.pdf) and 'Particles Emissions from a Euro 6 Gasoline Direct Injection (GDI) Passenger Car', Favre et al., 12<sup>th</sup> Integer Emissions Summit, Brussels, June 2016, [www.aecc.eu/content/pdf/160621%20AECC%20Integer%20Emissions%20Summit%20Europe.pdf](http://www.aecc.eu/content/pdf/160621%20AECC%20Integer%20Emissions%20Summit%20Europe.pdf).
- [3] 'New results from a 2015 PEMS testing campaign on a Diesel Euro 6b vehicle', Favre et al., 11<sup>th</sup> Integer Emissions Summit & AdBlue<sup>®</sup> Forum Europe 2015, Brussels, June 2015, [www.aecc.eu/content/pdf/150618%20Integer%20conf%20AECC%20RDE%20Program%20presentation%20final.pdf](http://www.aecc.eu/content/pdf/150618%20Integer%20conf%20AECC%20RDE%20Program%20presentation%20final.pdf).
- [4] 'Cycling: the way ahead for towns and cities', European Commission, 1999, [http://ec.europa.eu/environment/archives/cycling/cycling\\_en.pdf](http://ec.europa.eu/environment/archives/cycling/cycling_en.pdf).
- [5] 'Euro 6 Vehicles' RDE-PEMS Data Analysis with EMROAD and CLEAR', Demuyne et al., 6<sup>th</sup> International MinNOx Conference, Berlin, June 2016, [www.aecc.eu/content/pdf/160622%20%20AECC%20MinNOx%20PEMS%20analysis.pdf](http://www.aecc.eu/content/pdf/160622%20%20AECC%20MinNOx%20PEMS%20analysis.pdf).
- [6] 'Analysis of High Mileage Gasoline Exhaust Particle Filters', Lambert et al., SAE 2016-01-0941.
- [7] Daimler press release, 27 May 2016, <http://media.daimler.com/marsMediaSite/ko/en/10932250>.



[8] Volkswagen press release, 22 June 2016, [www.volkswagen-media-services.com/en/detailpage/-/detail/Matthias-Miller-We-have-launched-the-biggest-change-process-in-Volkswagens-history/view/3710903/7a5bbec13158edd433c6630f5ac445da?p\\_p\\_auth=XlaMC9Fw](http://www.volkswagen-media-services.com/en/detailpage/-/detail/Matthias-Miller-We-have-launched-the-biggest-change-process-in-Volkswagens-history/view/3710903/7a5bbec13158edd433c6630f5ac445da?p_p_auth=XlaMC9Fw).

*AECC is an international non-profit scientific association of European companies engaged in the development, production and testing of catalyst and filter based technologies for vehicle and engine emissions control. This includes the research, development, testing and manufacture of autocatalysts, substrates and speciality materials incorporated into the catalytic converter and filter and catalyst-based technologies to control engine emissions. Members' technology is incorporated in the exhaust emission control systems on new 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).*

*AECC's members are: BASF Catalysts Germany GmbH, Germany; Ibiden Europe B.V. Stuttgart Branch, Germany; Johnson Matthey PLC, United Kingdom; NGK Europe GmbH, Germany; Solvay, France; and Umicore AG & Co. KG, Germany.*

*AECC is registered in the EU Transparency Register under n° 78711786419-61.*