

AECC-IPA Event on Real-world Zero-impact Pollutant Emissions for Euro 7

Tuesday, 27 September 2022, Autoworld, Brussels

1 Background

This document provides an overview of replies to the most frequently asked questions during the technical seminar, driving event and networking.

2 Questions and answers

➤ How do you define zero-impact emissions?

We refer to research work at the [FVV](#). Zero-impact means the emissions are low enough, so the ICE no longer has a negative impact on local air quality. The maximum permissible emissions for individual vehicles depend on the respective driving and traffic situation. Such zero-impact emission level is evaluated for each traffic situation as an average level for all the cars passing by. It is expected that the AECC-IPA demonstrator vehicles are an example of what is needed to achieve that. The data measured in the demonstrator projects is however not directly comparable to these 'on average' definitions as focus was on testing the most challenging cold-start conditions within the 'not-to-exceed' concept of RDE.

➤ Can you share more details about specific catalyst technology used?

AECC works with generic systems as one example of what is possible with a certain hardware package available. Specific catalyst details are confidential and the knowhow of the technology supplier. AECC selects technology anonymously from its members to ensure neutrality.

➤ What is the cost of the Euro 7 emission control system?

AECC demonstration vehicles have been equipped with state-of-the-art technologies that are currently in production. The innovative emission control systems include novel layouts with combination of close-coupled and underfloor catalysts in an integrated powertrain design. As these state-of-the-art technologies are currently being produced, the cost of implementing such systems in view of the Euro 7 emission standards should be considered incremental compared to the latest vehicles on the market. AECC asked the engineering houses to estimate the incremental cost of substrate and coatings for the demonstrator vehicles compared to Euro 6d/VI-D. This assessment has been shared with the European Commission for consideration in the Euro 7 impact assessment. It is now made available on the AECC website to show the estimated range of the incremental cost for the [light-duty](#) and [heavy-duty](#) demonstrator vehicles.

➤ What is the impact expected of such emission control systems on CO₂ emissions performance?

In all AECC demo vehicles the system was implemented such that the impact on exhaust back pressure is kept to the minimum and therefore avoiding significant negative CO₂ emissions performance linked to the emission control system which results in significant reduction in pollutant emissions. For LD gasoline, there was no significant CO₂ impact to the baseline system from the hardware change. Calibration changes to increased heat-up during cold-start resulted in ~1% over WLTC distance for in total a 40-60% reduction of the initial cold-start NOx emissions. Active thermal management in phase 2 with 8s pre-heating also resulted in a ~1% impact. For HD diesel the implementation of the phase 1 hardware and calibration had a minimal impact on CO₂, keeping it below ~3%. Active thermal management in phase 2 resulted in an additional ~1% CO₂ impact over the ISC for a 60% further reduction in NOx. This impact reduces for longer trips. It is furthermore possible to nearly eliminate the CO₂ emissions by using a sustainable renewable fuel as shown with the Well-to-Wheel CO₂ analysis in the project.