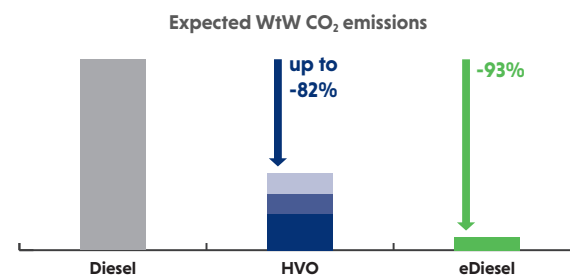


## Euro VII: a unique opportunity to ensure truly clean vehicles on European roads

AECC supports an ambitious proposal for future Euro VII emission legislation for heavy-duty vehicles to further decrease road traffic pollutant emissions with advanced emission control systems. All AECC demonstrator vehicles' emission results are shared with the European Commission and its consultants to support the development of the Euro VII standards.

## Sustainable renewable fuels: enabling combustion engines to contribute to net-zero CO<sub>2</sub> emissions

The AECC heavy-duty diesel demonstrator will be tested on HVO and e-diesel. A Well-to-Wheel (WtW) analysis for the specific AECC results will be conducted.



### CO<sub>2</sub> standards for trucks

Sustainable renewable fuels should be integrated as an additional path within the Zero Emission Vehicles (ZEV) definition.

### Renewable Energy Directive

The RED ambition level should align to the overall 'Fit for 55' ambitions and set a clear pathway to achieve 100% GHG intensity reduction of road transport, including fossil-free fuels. Ambitious GHG intensity reduction targets need to be set for 2030 and beyond.

### For further reference:



[AECC Euro VII position paper](#)



[AECC Euro VII technical note](#)



[AECC comments on the RED proposal](#)

If you need further details or have questions, please contact us at:  
**ASSOCIATION FOR EMISSIONS CONTROL BY CATALYST** (AECC AISBL)

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# Future-proof truck

## Ultra-low pollutant and CO<sub>2</sub> emissions

### The project

The aim of the project was to develop a heavy-duty diesel demonstrator vehicle with consistently low NO<sub>x</sub> and PN emissions and to control non-regulated emissions (PN<sub>10</sub>, NH<sub>3</sub> and N<sub>2</sub>O).

### Technologies

A combination of close coupled and underfloor NO<sub>x</sub> and particulate emission control technologies was implemented on a Euro VI step C vehicle.



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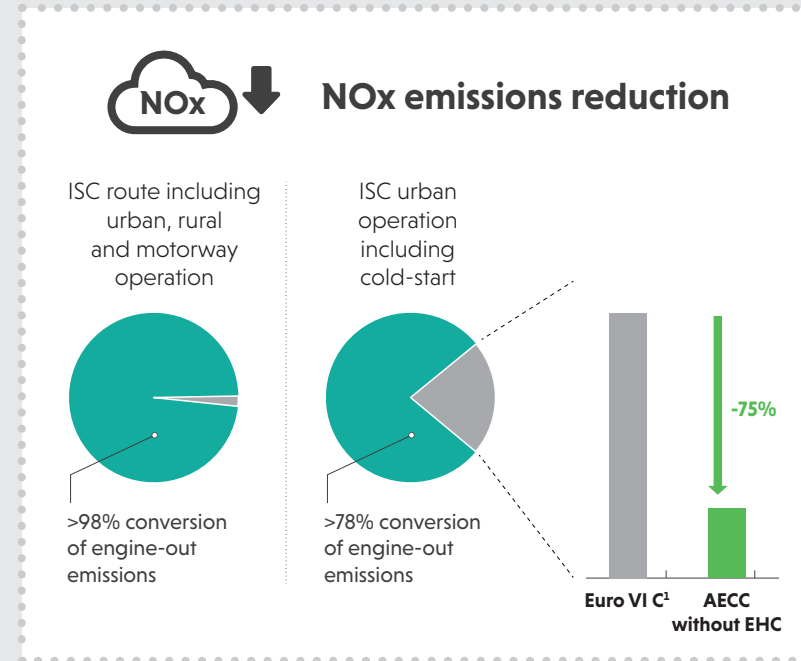
AECC





## Improving conversion of urban NOx emissions including cold-start

The project demonstrates that improvements can be achieved in a broad range of operating conditions. Once the system achieves activation temperature (~200°C), the system starts injecting urea and reducing NOx significantly. Conversion efficiency above 98% is achieved.



**≤10<sup>11</sup> /kWh**  
Particle Number (PN)

## Ultra-low particulate emissions

PN10 level is between 10<sup>10</sup> and 10<sup>11</sup> particles/kWh, with an initial cold-start effect. These levels are similar to particle concentration in ambient air.

Temperature, payload and trip profile can impact these emissions as well as the initial filter status.

The tests conducted did not cover all possible critical conditions for PN.

<sup>1</sup> Euro VI C results are simulated for the same type of vehicle and conditions (In-service conformity (ISC) route with a fully loaded vehicle)

<sup>2</sup> Results obtained with an aged exhaust system to represent typical performance expected during vehicle lifetime

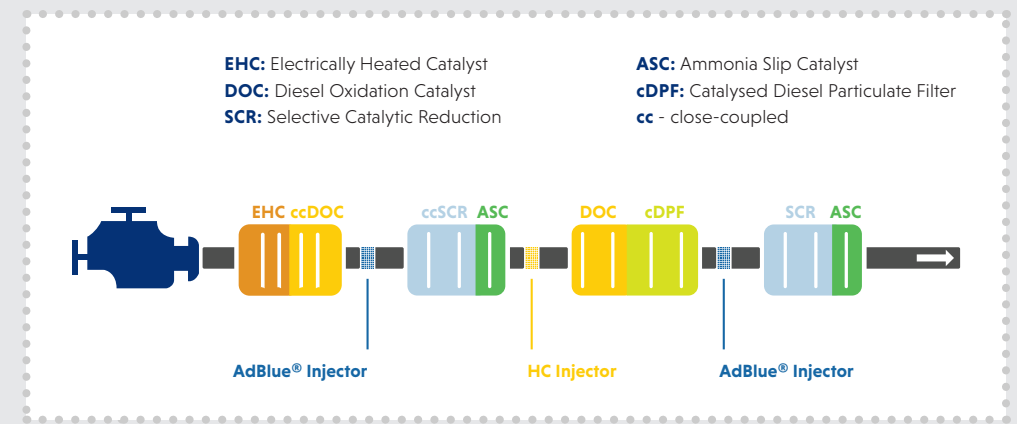
Reference:

- P. Mendoza Villafuerte, et al.; 'Demonstration of Extremely Low NOx Emissions with Partly Close-Coupled Emission Control on a Heavy-duty Truck Application', 42<sup>nd</sup> International Vienna Motor Symposium, 2021.
- T. Selleri, et al.; 'Measuring Emissions from a Demonstrator Heavy-Duty Diesel Vehicle under Real-World Conditions—Moving forward to Euro VII'. Catalysts 2022, 12, 184.

## Vehicle

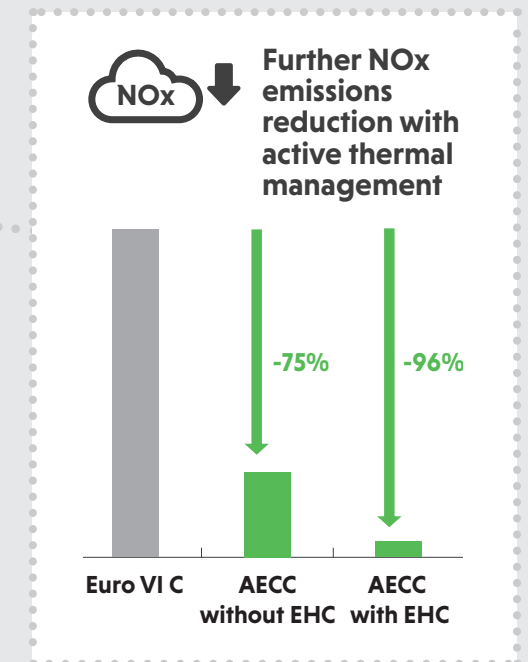
The demonstrator vehicle was a N3 Euro VI C vehicle, 4x2 tractor, with a 12.8 l engine and a maximum power of 450 HP.

## Advanced emission control system<sup>2</sup>



## Active Thermal Management

The emissions related to the cold start phase can be further reduced using active thermal management. Active thermal management is accomplished by implementation of an Electrically Heated Catalyst (EHC).



## Watch the video



## Good control of non-regulated emissions such as NH<sub>3</sub> and N<sub>2</sub>O

Results showed extremely low NH<sub>3</sub> tailpipe emissions thanks to the implementation of ammonia slip catalysts after each SCR. Whilst N<sub>2</sub>O emissions are produced, these are kept at consistently very low levels.