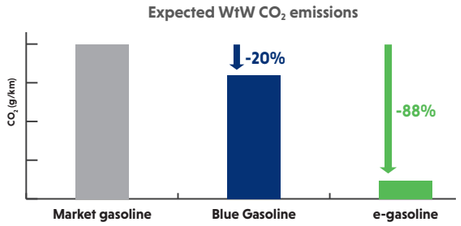
Euro 7: a unique opportunity to ensure truly clean vehicles on European roads

AECC supports an ambitious proposal for future Euro 7 emission legislation for light-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 7 standards.

Sustainable renewable fuels: enabling combustion engines to contribute to net-zero CO_2 emissions

The AECC gasoline demonstrator will be tested with Blue Gasoline and e-gasoline, which can substantially reduce CO_2 emissions.

A Well-to-Wheel (WtW) analysis for the specific AECC results will be conducted.



CO_2 standards for passenger cars

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 7 position paper

AECC comments on the CO_2 proposal for cars and vans

AECC comments on the RED proposal

If you need further details or have questions, please contact us at:
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Zero-impact gasoline

Ultra-low pollutant and CO_2 emissions

The project

The aim of the project was to develop a gasoline demonstrator vehicle with consistently low emissions.

Technologies

Advanced emission control technologies were tested in a vehicle with an electrified powertrain system running on a sustainable renewable fuel.

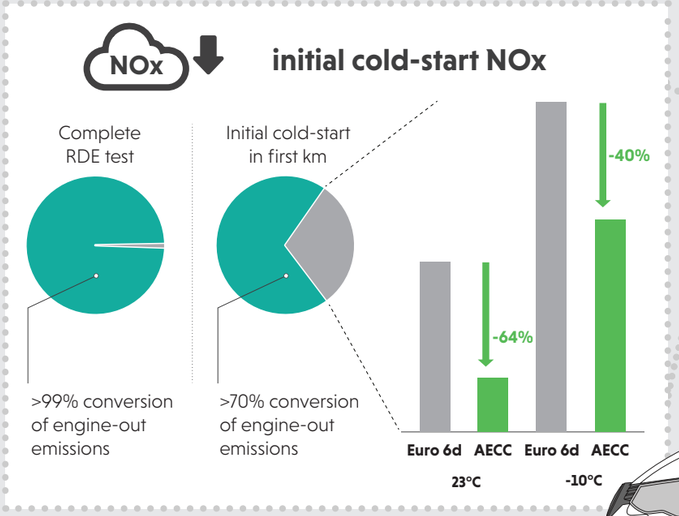
ASSOCIATION FOR EMISSIONS CONTROL BY CATALYST

IPA INTERNATIONAL PLATINUM GROUP METALS ASSOCIATION

Improving conversion of initial cold-start NOx emissions

In the project we confirm gasoline vehicles have near-zero NOx emissions with a warm emission control system. Conversion efficiency above 99% is achieved. Values of 3-10 mg/km are measured at the tailpipe, significantly below the Euro 6 limit of 60 mg/km.

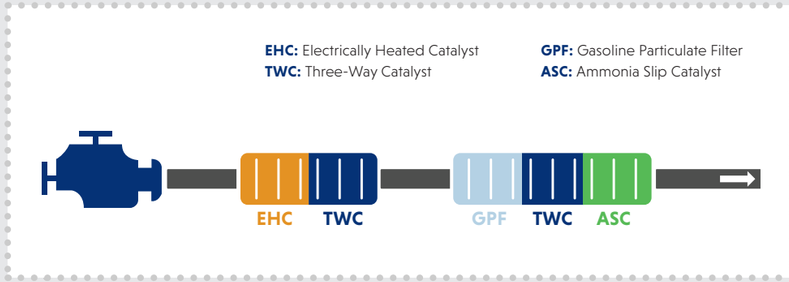
The focus of the work was on improving the initial cold-start emissions during the first kilometre of driving.

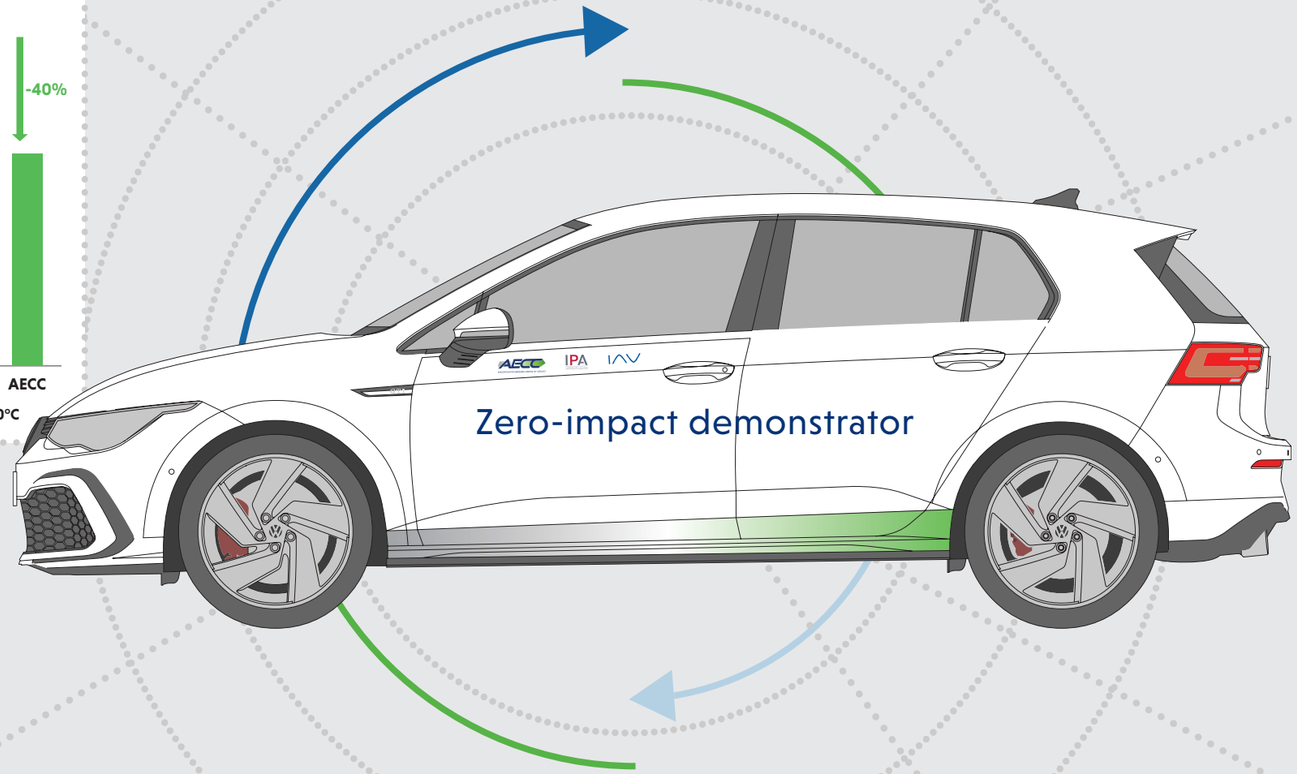


Vehicle

Tests were performed using a C-segment car equipped with a 1.5L Euro 6d electrified engine.

Advanced emission control system[1]

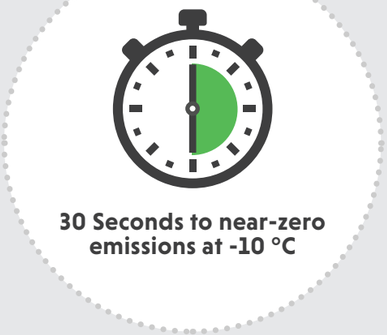




Reduction in catalyst heat-up time

The test vehicle used classic engine technology to heat up the catalyst as quickly as possible after the initial cold-start, using an advanced TWC substrate.

The impact of an active thermal management measure, i.e. an electrically heated catalyst, will be investigated as a follow-up.



Particle Number (PN)

Ultra-low particulate emissions

The PN10 level was between 10^9 and 10^{10} particles/km. These levels are similar to particle concentration in ambient air. There is an initial cold-start effect, impacted by ambient temperature, driving style and initial filter status.

More challenging conditions of a fresh GPF will be investigated as follow-up.

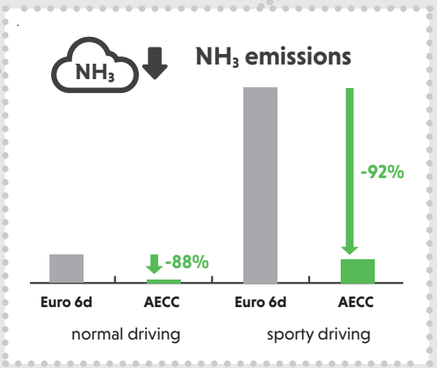
[1] Results obtained with an aged exhaust system to represent typical performance expected during vehicle lifetime

Reference:

- J. Demuynck, et al.; "Ultra-low Emissions of a 48V Mild-Hybrid Gasoline Vehicle with Advanced Emission Control Technologies and System Control", 15th International Conference on Engines and Vehicles, paper 2021-24-0070, 2021.
- J. Demuynck, et al.; "Zero-Impact Emissions from a Gasoline Car with Advanced Emission Controls and E-Fuels", 43rd International Vienna Motor Symposium, 2022.

Currently non-regulated emissions

Achieving high NOx conversion rates, while preventing NH_3 slip under sporty driving was achieved with an Ammonia Slip Catalyst (ASC) in addition to improved lambda control.



Emissions tests conducted

A combination of road and lab tests was used to cover a wide range of driving conditions. We focused on varying ambient temperatures (down to -10 °C) in combination with driving dynamics (smooth, normal and sporty).

Watch the video

Project and measurements conducted by IAV