

The Emissions Control Industry - Innovating for Cleaner Air

Mr X. Susterac
AECC Executive Committee

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'Innovating for Cleaner Air' Event
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Association for Emissions Control by Catalyst AISBL



Emissions control in Europe today



- All new gasoline cars use 3-Way Catalysts (TWC).
- All new diesel cars use a Diesel Particulate Filter (DPF).
- Euro 6 diesel cars are now appearing on the market, fitted also with catalytic de-NOx systems.

- Most new buses and trucks use SCR de-NOx.
- All Euro VI buses and trucks will use SCR and DPFs.



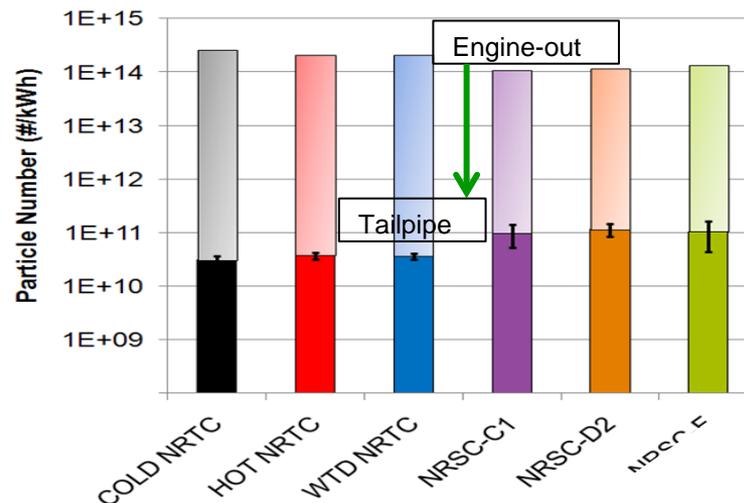
- Current emissions limits for Non-Road Mobile Machinery (NRMM) do not force the use of DPFs, but a number of models use SCR de-NOx.

- Most motorcycles use a catalyst.



What should be done next?

- **Reduce Non-Road Sector emissions**
 - Future emissions stage to be aligned with the on-road sector to ensure effective control of particles.
 - Extension of the NRMM Directive's scope to smaller and larger engines, petrol & gas engines....
 - New stages for sectors that lag behind the main Directive: Inland Waterways, constant speed engines...



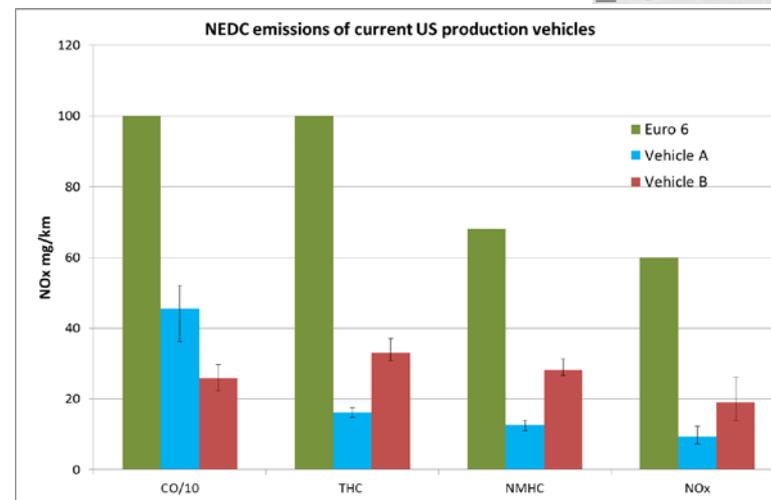
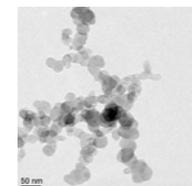
Source: AECC NRMM demonstration programme



- **Encourage Retrofit for Heavy-duty and Non-Road Applications**

What should be done next?

- **Real Driving Emissions Procedures**
 - ensure ‘real world’ emissions control.
- **Control of particles from gasoline engines**
 - Full PN limits for DI engines are only in 2017.
 - must include real driving.
- **SULEV-type vehicles**
 - DG Environment suggestion for urban use vehicles.
- **Beyond Euro 6/VI**
 - Fuel/technology neutral limits?
- **Future stage for motorcycles and mopeds**
 - Confirmation of Euro 5 stage for 2020.

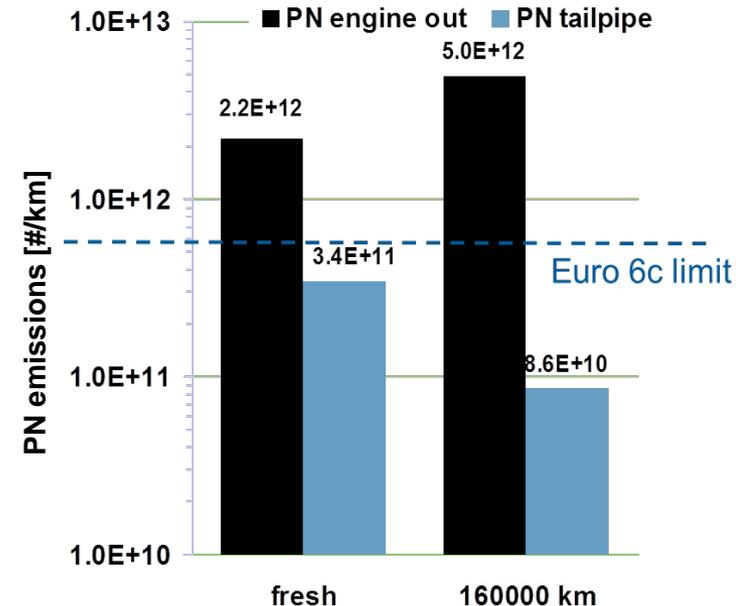
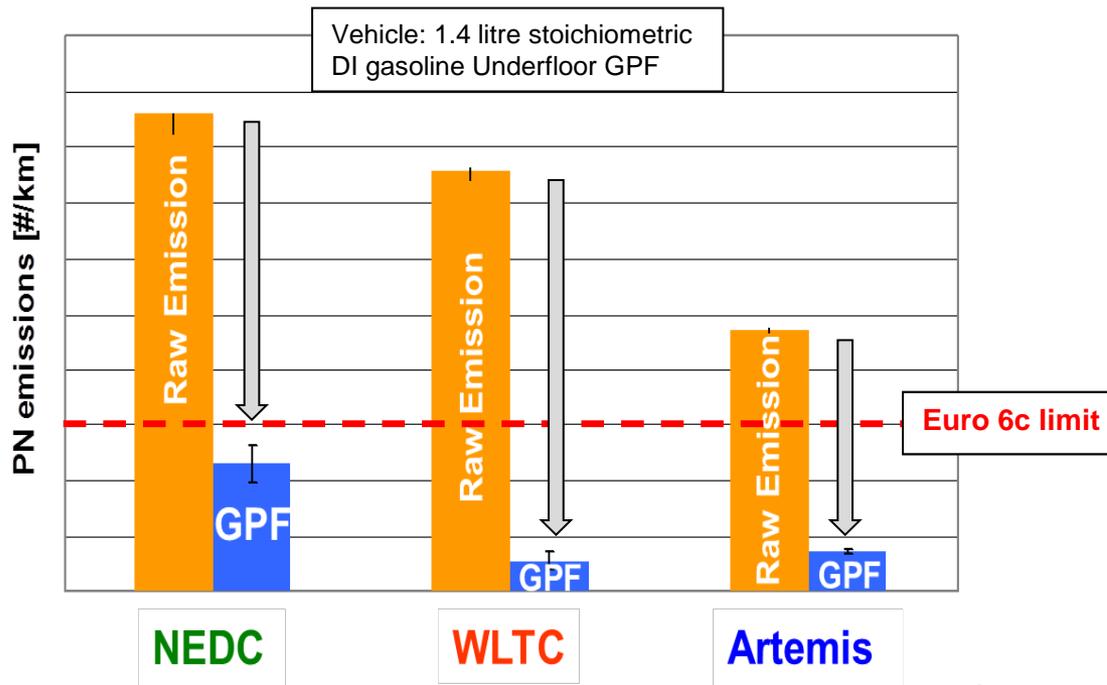


Source: AECC Member companies



Innovation reducing gasoline engine particulate emissions

- Gasoline Particulate Filters (GPF) are an effective route to reduce the number of ultrafine particles under a range of driving conditions.
- Durability of Gasoline Particulate Filters has been demonstrated.

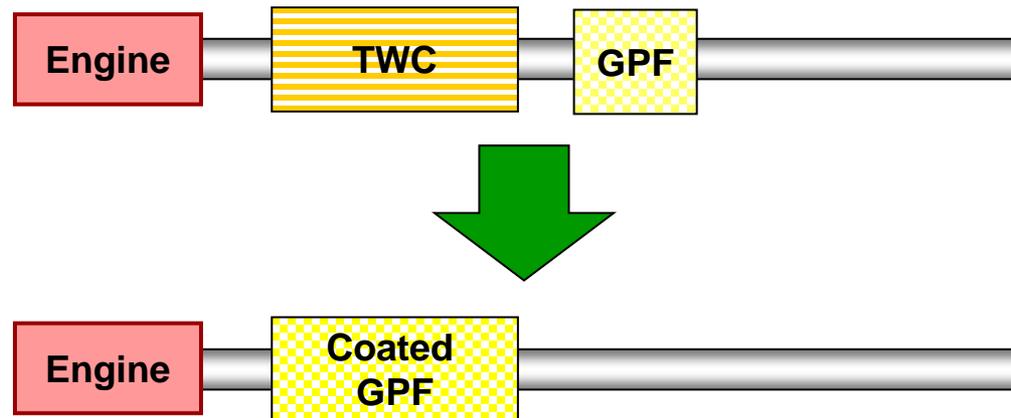


Source: AECC Member companies

Innovation integrating the control of gasoline particles with gaseous emissions control

Three way catalyst coatings on Gasoline Particle Filters (GPF)

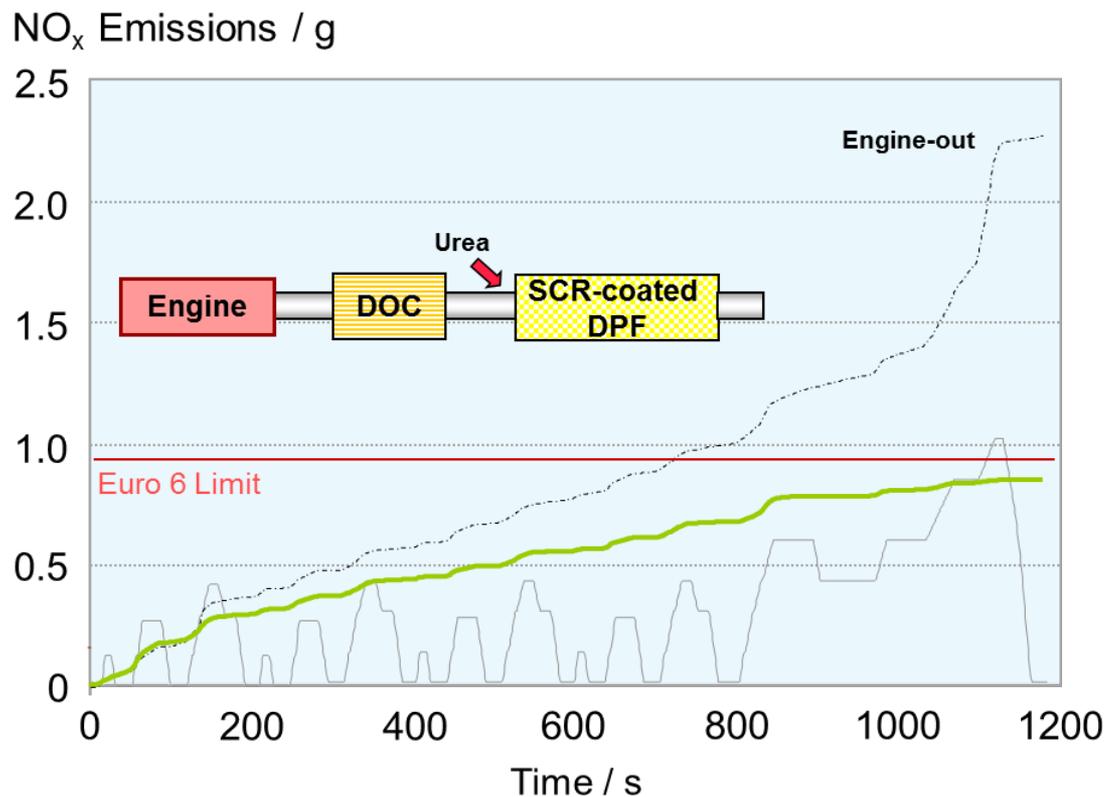
- System optimisation for cost efficiency and reduction of complexity.



Innovation integrating diesel particulate control and NOx control

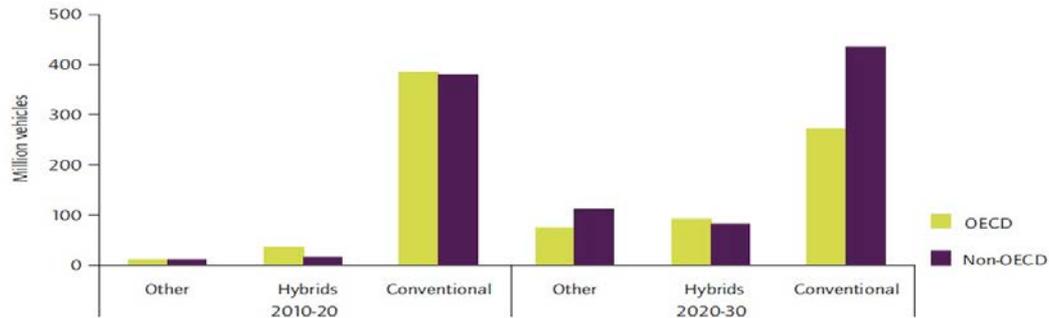
SCR Coatings on Diesel Particulate Filters (DPF)

- System optimisation for cost efficiency and reduction of complexity.
- Allows replacement of 3 components by 2.



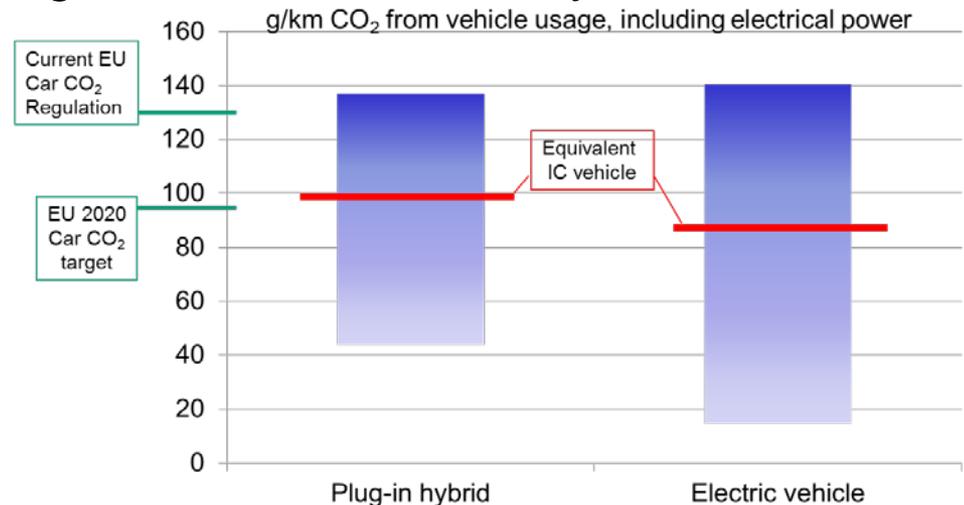
Legislation has to be technology neutral

- Conventional vehicles will be a major part of the fleet for many years.



Source: International Energy Agency technology roadmap (2012)

- Consumers should be informed of the real CO₂ emissions resulting from use of their vehicle, including the generation of electricity.
- The chart on the right shows the range of total CO₂ emissions for an electric vehicle and a plug-in hybrid used in Europe compared to their equivalent conventional vehicles.



Source: AECC analysis using KBA and EEA data (2010)

Innovating for cleaner air

- There are significant areas for further improvement in air quality.
- The emissions control industry continues to develop innovative solutions.
- Further reductions in mobile source emissions are possible through the application of:
 - Reduction of particle emissions from gasoline engines,
 - Reduction of particle emissions from Non-Road Mobile Machinery,
 - Effective control of motorcycle emissions.
- Effective regulation and control of emissions over the whole engine map are needed to ensure that real-world benefits are delivered to the consumer and the society.



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Who are AECC and what do we do ?

AECC is an international non-profit scientific association of European companies making technologies for engine exhaust emissions control.

What are the emission control technologies?

Exhaust gas contains [carbon monoxide](#) (CO), [hydrocarbons](#) (HC), [nitrogen oxides](#) (NOX) and [particulate matter](#) (PM). The main technologies used to treat

Thank you for your attention

⊙ Publications

Their products are the [ceramic and metallic substrates](#) for catalysts and filters; [autocatalysts](#) (substrates with catalytic materials incorporated or coated); [adsorbers](#); [filter](#)-based technologies to control particulate emissions from diesel and other lean burn engines; and speciality materials incorporated into the [catalytic converter](#) or filter.

Catalyst-equipped cars were first introduced in the USA in 1974 but only appeared on European roads in 1985 and in 1993 [legislation](#) forced their use on cars. Now more than 275 million of the world's 500 million cars and over 85% of all new cars produced worldwide are equipped with autocatalysts. Catalytic converters and filters are also fitted to heavy-duty vehicles, motorcycles and non-road engines and vehicles.

■ filters

There are more details on the [technology](#) pages.

