Low emissions of modern diesel vehicles

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Association for Emissions Control by Catalyst (AECC AISBL)

AECC members: European Emissions Control companies

Exhaust emissions control technologies for original equipment, retrofit and aftermarket for all new cars, commercial vehicles, motorcycles, and non-road mobile machinery

AECC is # 78711786419-61 in EU Transparency Register and has consultative status with the UN Economic and Social Council (ECOSOC)
Content

- Low NOx emission diesel cars: a reality
- AECC ultra-low emissions diesel demonstrator
  - Concept
  - NOx emissions
  - Real-time visualisation
RDE has significantly improved diesel NOx emissions

On-road emissions of Euro 6d-TEMP and 6d cars are well within standards

Source: ACEA/JAMA PEMS data consulted 19 November 2019

Source: Handbook of Emissions Factors 4.1, UBA press release 11 September 2019
RDE has significantly improved diesel NOx emissions

Trend is confirmed by 3rd party testing

Source: ADAC Ecotest

Source: Green NCAP

Source: Emissions Analytics

Source: Auto Motor und Sport
Light-duty diesel emissions control technology evolution

Introduction of individual deNOx technologies for Euro 6a/b

Combination of deNOx technologies for Euro 6d-TEMP

Further integration for Euro 6d

Sources:
- BMW
- VW
- Hyundai
- Daimler

Diesel Oxidation Catalyst (DOC)
Selective Catalytic Reduction (SCR)
Lean NOx Trap (LNT)
Diesel Particulate Filter (DPF)

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AECC ultra-low NOx emissions diesel demonstrator

Robust NOx control over wide range of driving conditions

- Low speed/load e.g. city driving
- High speed/load e.g. motorway driving
- Transients e.g. overtaking

Emissions controls to cover wide range of driving conditions

- LNT + dual-SCR system
- Supported by 48V mild-hybrid

EGR: Exhaust Gas Recirculation
HP/LP: High/Low pressure
cc: close-coupled
LNT: Lean NOx trap
SCR: Selective Catalytic Reduction
DPF: Diesel Particulate Filter
SDPF: SCR on DPF
uf: underfloor
ASC: Ammonia Slip Catalyst

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Robust NOx control achieved

Also on a renewable fuel which offers reduced CO₂ emissions on lifecycle basis
All aftertreatment components contribute to NOx control

- City driving: LNT and close coupled SCR+SDPF
- Motorway driving: underfloor SCR required to secure robust emissions control
More videos available on YouTube (AECC eu): https://www.youtube.com/channel/UCbPS9op5ztLqr6zLlMH_IcQ
Conclusions

- RDE requirements have ensured better control of NOx & PN emissions under most EU driving conditions – these Euro 6d(-TEMP) cars are on the road today.

- AECC’s diesel demo car shows that diesel NOx emissions can be kept at a very low level, over a wide range of driving conditions.

- This is achieved by combining existing catalyst technologies with improved engine and aftertreatment control functions supported by hybrid technology.
Diesel Information Hub

https://dieselinformation.aecc.eu
THANK YOU!

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