April 2017

NEWSLETTER

International Regulatory Developments

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AECC INDUSTRY OPINION

Diesel Vehicles: the Newer, the Cleaner

Today's press is full of news on diesel vehicles. Some information is technical; some based on emotions. As a technical association, AECC would like to review technologies increasingly used to make diesel vehicles clean.

The key message is: the newer the diesel vehicle, the cleaner; a new clean diesel is very different to older diesels. Diesel technology has evolved dramatically, especially with regards to its environmental impact. Modern, clean diesel cars combine a fuel economy and CO_2 advantage with near-zero emissions of ultrafine particles and nitrogen oxides, including NO_2, providing the foundation to meet European air quality objectives. Air quality modelling indicates that new clean diesels allow EU air quality targets to be achieved; upcoming regulation ensures all new diesels will have significantly reduced real-world emissions. Any incentive encouraging replacement of older diesel with newer diesel vehicles will positively impact both climate and air quality.

Diesel cars today emit 15% less carbon dioxide (CO_2) per kilometre than equivalent gasoline-powered vehicles. For that reason, they contribute to the CO_2 target car manufacturers have to meet in 2020 and beyond to mitigate greenhouse gas emissions from road transport.

Beside greenhouse gas emissions such as CO_2, which impact climate change, all internal combustion engines emit pollutant emissions, in particular particulate matter (PM) and nitrogen oxides (NOx). If untreated, these harmful emissions have direct impact on human health and our ecosystem.

Since the early nineties, the EU has introduced increasingly stricter emissions limits for vehicles through a series of 'Euro' standards. The Euro 1 to 4 standards were increasingly stringent but did not require particle or NOx aftertreatment devices to be fitted to diesel cars. These older diesel cars are now contributing significantly to the air quality challenges European cities are facing.

Diesel technology has been and continues to be improved. European vehicle manufacturers and their suppliers lead in the development of diesel engine technology. The new generation of diesel engines is made up of a three-part system: highly efficient engine, ultra-low sulfur diesel fuel and advanced emissions control system[1].

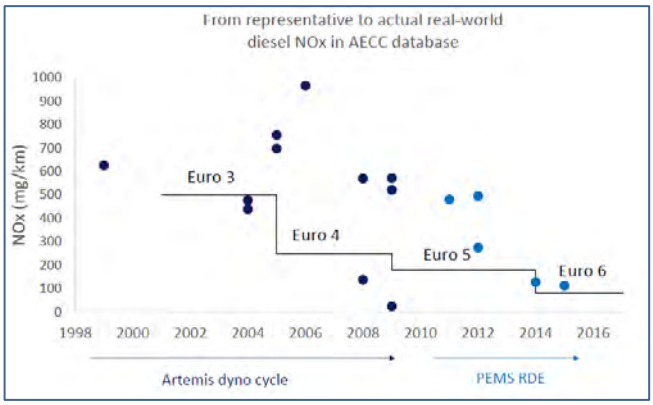
Technologies for removal of pollutants to meet the latest emissions limits in the real-driving environment are already available. The Health Effects Institute (HEI) concluded in 2015 from a comprehensive examination of emissions and health effects studies that, thanks to dramatic improvements in emissions, no significant health effects, especially cancers, have been demonstrated with modern diesel engines fitted with appropriate emissions control technologies[2]. Therefore, the concern raised in 2012 by the World Health Organization (WHO), who classified untreated diesel exhaust emissions as carcinogenic[3], has been addressed by minimizing as much as possible diesel exhaust emissions to help improve the quality of the air we all breathe.

Mr Dirk Bosteels, Executive Director of AECC, said "*Diesel Particulate Filters (DPFs) were first introduced on some diesel cars 17 years ago. Since the implementation of the Euro 5 standard in 2011, 100% of new diesel cars in the EU have been fitted with a DPF. These filters remove 99.9% of the particles coming from the engine, including the smaller ultrafine particles. State-of-the-art DPFs use a wall-flow technology which operates from the engine start-up, virtually eliminating ultrafine particles from modern diesel car tailpipes*[4]."

"*Since September 2015 the latest and most stringent standard, Euro 6, requires the addition of deNOx exhaust aftertreatment systems such as Selective Catalytic Reduction (SCR) and NOx traps to further reduce and control tailpipe NOx emissions of diesel cars*", Mr Bosteels continued.

Shortcomings in ensuring that emissions, particularly diesel NOx emissions, were controlled not only in the vehicle test laboratory on a specific drive cycle but also under real-world operating conditions became widely acknowledged.

AECC has been measuring off-cycle emissions of vehicles for more than a decade (see chart). First it was on the Artemis test cycle, which is more representative of real-world driving than the regulatory test cycle. Since 2012 it has then been with on-road tests where the vehicle is fitted with a Portable Emissions Measurement System (PEMS).



Diesel vehicles tested confirm that real-world performance did not always improve at the same pace as the Euro 3 to 5 NOx limits but overall a downwards trend is observed.

The Euro 6 standard has now been upgraded to account for Real-Driving Emissions (RDE) which will make sure deNOx aftertreatment technologies are used to their full potential, decreasing vehicle NOx emissions still further. This comes into effect from September 2017 onwards.

The EU automotive industry and its supply chain have continued to further improve emissions control of diesel

vehicles and a number of Euro 6 diesel cars are now available on the EU market with very low real-world tailpipe emissions. In 2015 AECC contracted the consulting engineering company Ricardo to measure real-world emissions of a Euro 6 diesel rental car[5]; particles and NOx emissions were measured with a PEMS when the car was driven on a mix of urban, rural and motorway roads. Both particles and NOx emissions were below the Euro 6d limits showing clean diesel is already available to buy. Emissions Analytics, via their Equa index[6], or ADAC, via their EcoTest[7], provide lists of diesel models that are already clean and meet the Euro 6 NOx limit in the real-world. The list of Emissions Analytics shows 19 diesel car models with low real-world NOx emissions (A or B ranking).

This is only a start; with mandatory RDE requirements implemented as of September this year, all diesel cars will have to comply with more stringent regulation during real-driving. Technology for emissions control is available and clean diesel car models are available on the market. A lot has and will still change on the emissions of diesel cars.

Decisions on which vehicles are allowed or not to drive in cities should not just rely on the name of a technology – in this case "diesel" – but need to be based on the pollutant emissions that these vehicles produce. Only then will they contribute to accelerate the clean-up of the vehicle fleet and help improve urban air quality and lower CO_2 emissions.

References:
[1] www.cleandieseltech.eu
[2] www.healtheffects.org/publication/executive-summary-advanced-collaborative-emissions-study-aces
[3] http://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Evaluation-Of-Carcinogenic-Risks-To-Humans/Diesel-Exhaust-2012
[4] www.aecc.eu/wp-content/uploads/2016/08/110629-AECC-presentation-ETH.pdf
[5] www.aecc.eu/wp-content/uploads/2016/08/150618-Integer-conf-AECC-RDE-Program-presentation-final.pdf
[6] http://equaindex.com/equa-air-quality-index/
[7] www.adac.de/infotestrat/adac-im-einsatz/motorwelt/ecotest_feinstaub.aspx?ComponentId=290529&SourcePageId=6729

EUROPE

Adoption of Parliament Report on Type-Approval and Resolution on Emissions

On 4 April 2017 the European Parliament adopted at their plenary session the Parliament Report on the Type-Approval Framework reform and the Parliament's recommendations following the work of the Committee of Inquiry into Emission Measurements in the Automotive Sector (EMIS).

Following the EMIS investigations, MEPs concluded that although the European Commission (EC) and Member States were already aware, more than a decade ago, that diesel cars' nitrogen oxide (NOx) emissions in laboratory tests differ markedly from those measured on the roads, they failed to act appropriately to protect air quality and public health.

In both documents, the Parliament is calling for the EC to come up with proposals at the latest by 2025 on a technology-neutral Euro 7 standard for new cars and vans with a view to improving air quality in the EU and to achieving the EU ambient air quality limits, as well as the World Health Organization (WHO) recommended levels. In the Type-Approval Framework dossier, this was adopted as a review clause in a new Article 14a in the Euro 6 Regulation (EC) 715/2007.

The Type-Approval Framework report also requests that fuel consumption and CO_2 values determined under real-driving conditions are made available to the public. Its Annex XIII (list of parts or equipment that are capable of posing a significant risk to the correct functioning of systems that are essential for the safety of the vehicle or its environmental performance, the performance requirements, the appropriate test procedures, and marking provisions) remains as voted by the Internal Market and Consumer Protection (IMCO) Committee and introduces catalysts and Diesel Particulate Filters in the Commission's empty table.

The report on vehicle type-approval aims at improving control of the work done by testing centres and national type-approval authorities. A large portion of the political debate was around the setting up of an EU vehicle type-approval agency. This was, in the end, not adopted (309 votes in favour, 351 against, 7 abstentions).

Each year EU Member States would have to test at least 20% of the car models placed on the market in their country in the previous year, and fines imposed by the Commission on car manufacturers who falsify test results could be of €30 000 per vehicle, says the text. Penalty revenue should be used to support market surveillance, benefit affected consumers or for environmental protection, it adds.

The amended type-approval proposal was approved by 585 votes to 77, with 19 abstentions, and referred back to the IMCO Committee in view of the upcoming interinstitutional trilogue negotiations.

The Parliament report adopted on the new vehicle Type-Approval Framework Regulation is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2017-0097+0+DOC+PDF+V0//EN.

In parallel, the Parliament's resolution on emissions in the automotive sector calls on the EC to review the second stage of NOx RDE Conformity Factor down to 1 at the latest by 2021 (this was adopted by just 341 votes in favour and 340 against); for the EC to draft air quality and emissions legislation within the portfolio of a single Commissioner and Directorate-General; and to examine the benefit of introducing a label or standard for Ultra-Low-Emission Vehicles (ULEVs) that meet the emission limit values in real-driving conditions.

The EMIS recommendations are not binding, but form an official EP Resolution that is calling on actions from Member States and Commission.

The Parliament resolution is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2017-0100+0+DOC+PDF+V0//EN.

Publication of Non-Road Stage V Delegated and Implementing Acts

On 13 April 2017 the implementing and two delegated acts to the EU Stage V Regulation (EU) 2016/1628 for Non-Road Mobile Machinery (NRMM) engines were published in the Official Journal.

Commission Delegated Regulation (EU) 2017/654 provides with the technical requirements relating to emission limits and type-approval of NRMM engines. It sets out the technical and general requirements and test methods relating to emission limits; EU type-approval procedures for internal combustion engines for NRMM; arrangements with regard to conformity of production; and the requirements and procedures relating to technical services for those engines.

Commission Delegated Regulation (EU) 2017/654 is at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0654&from=EN.

Commission Delegated Regulation (EU) 2017/655 specifies the monitoring of gaseous pollutant emissions from in-service engines installed in NRMM. It sets out arrangements with regards to the selection of engines; and test procedures and reporting of results relating to monitoring of gaseous pollutant emissions from in-service NRMM engines using Portable Emissions Measurement Systems (PEMS). These procedures and requirements are set out in the Annex to the measure.

Commission Delegated Regulation (EU) 2017/655 is at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0655&from=EN.

Finally, Commission Implementing Regulation (EU) 2017/656 lays down the administrative requirements regarding the EU type-approval of NRMM engines. It includes templates for the information document and information folder; templates for the statements of conformity; templates for the marking of engines; templates for the EU type-approval certificate; the numbering system of the EU type-approval certificate; the single format of the test report; the format for the list of engines produced in accordance with the EU type-approvals granted; templates and data structures for the exchange of data by means of the Internal Market Information System (IMI); technical requirements and procedures for the interconnection of IMI with national databases; parameters for the definition of engine types and engine families, and their operation modus; and technical details for the prevention of tampering.

Commission Implementing Regulation (EU) 2017/656 is at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2017:102:FULL&from=EN.

All three acts enter force on 3 May 2017 and make type-approvals to Stage V possible.

On that occasion, seven NRMM industry associations including the European Association of Internal Combustion Engine Manufacturers (Euromot), the Committee for European Construction Equipment (CECE), and the European association representing the agricultural machinery industry (CEMA) published on 13 April 2017 a joint Frequently Asked Questions (FAQ) document that is intended to provide answers to key questions that are likely to be asked by users of the regulations, focusing on relevant provisions and obligations for the machine manufacturers, importers and distributors.

The FAQ document is composed of 101 questions, 16 chapters and 58 pages covering subjects such as the timetable of the regulation, marking and statement of conformity, replacement engines, exemptions, and market fuels.

The industry FAQ is at http://cema-agri.org/sites/default/files/publications/2017.04.13%20NRMM%20Guide.pdf.

Publication of Stage IIIB Extension for Narrow-Track Tractors

On 12 April 2017 Commission Delegated Regulation (EU) 2017/686 was published in the Official Journal, amending Delegated Regulation (EU) 2015/96 on environmental performance requirements of agricultural and forestry vehicles.

The amendment specifies a decision that was already laid down in Article 63 of the Stage V Regulation (EU) 2016/1628 on Non-Road Mobile Machinery (NRMM) engines. In fact, due to the short duration of Stage IV and to avoid unnecessary burden from investments for Stage IV engines of 56 to 130 kW in T2, T4.1 and C2 tractors, the so-called 'narrow-track' tractors, co-legislators had decided to delay by one further year the Type-Approval compulsory date of Stage IV and to increase the Stage IV flexibility scheme quantity from 20% to 150% of annual sales.

The latest date for Type-Approval of Stage IIIB engines in narrow-track tractors is now 30 September 2017.

Regulation (EU) 2017/686 is at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0686&from=EN.

EU Court rules Bulgaria in Breach of Air Quality Legislation

On 5 April 2017 the EU Court of Justice said Bulgaria had breached limits for hazardous air pollutants.

The Court ruled that higher concentrations of PM_{10} recorded at several sites in Bulgaria from 2007 to 2014 showed severe breaches of EU clean air quality rules. There was nevertheless no fine attached to the ruling. Bulgaria will now have to work with the European Commission to improve the situation.

Domestic heating systems that rely on low-quality coal and wet wood are among the main sources of PM_{10} pollution in Bulgaria.

Apart from Bulgaria, the European Commission has begun legal action against 15 countries over breaches of air quality standards, including PM_{10}. The Commission referred three Member States (Bulgaria, Poland, and Belgium) to court in 2015 as test cases. Belgium's case was however suspended after new data showed improvement in PM_{10} levels, pending verification from the Commission.

Parliament Debate on EU Strategy for Low Emission Mobility

On 25 April 2017 the Environment (ENVI) Committee of the European Parliament discussed the draft Opinion responding to the Commission's strategy for low emission mobility.

Rapporteur Zoffoli (S&D, Italy) underlined that low emission mobility was one of the key components necessary for the transition to a circular low emission economy, which he felt was needed in order to ensure the EU's competitiveness. MEP Zoffoli called for a transparent roadmap on 2025 emission targets for light- and heavy-duty vehicles. He proposed 2025 CO_2 emission targets for cars around 68-78 g/km and for vans around 105-120 g/km based on the WLTP test cycle. The Rapporteur favoured ambitious targets for electric vehicles, and felt that the production of second generation batteries needed to be ensured. A transparent labelling system with regards to fuel consumption is also needed, he added.

With regards to Heavy-Duty Vehicles (HDVs), the Rapporteur urged the Commission to present a proposal on the certification, monitoring and reporting of HDVs by the end of 2017, and CO_2 emission targets in early 2018.

During the discussions, several MEPs underlined the increase in emissions from transport and their share (25%) in the total EU greenhouse gas emissions. The debate mainly focused on emissions from road vehicles, notably diesel engines and electrification, biofuels, the international agreements on emissions from aviation and shipping, and the envisaged regulatory framework for future mobility.

With regards to motor vehicles, MEP Gieseke (EPP, Germany) felt that road tests rather than laboratory tests were needed. He also stated that diesel technology remained a viable technology to reduce CO_2 emissions. He suggested that the CO_2 emissions target for passenger cars should be set as a percentage for reduction instead of in grams/km. MEP Eickhout (Greens, Netherlands, and TRAN Committee Rapporteur on this file) was however critical of this suggestion, adding that it was the German car industry that, through the German state, was promoting relative targets for car manufacturers.

Concluding the debate, a Commission's DG-MOVE representative highlighted several measures under preparation, including for road transport the post-2021 CO_2 emissions targets for cars and vans, the monitoring and reporting of fuel consumption and CO_2 emissions from Heavy-Duty Vehicles (HDVs), CO_2 emissions standards for HDVs, and the revision of the Clean Vehicle Directive.

ENVI Committee MEPs had until 3 May 2017 to table amendments. The final ENVI Opinion will feed into the work of the TRAN Committee, the lead for this file.

The draft Opinion is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-601.214%2b01%2bDOC%2bPDF%2bV0%2f%2fEN.

Draft Parliament Report on EU Strategy for Low-Emission Mobility

On 7 April 2017 the Transport (TRAN) Committee of the European Parliament published a draft Report prepared by MEP Bas Eickhout (Greens, Netherlands) on a European Strategy for low-emission mobility.

The draft Report welcomes the Commission's Strategy and considers a shift to low-emission mobility as essential for a broader shift to a clean circular economy. Greenhouse gas (GHG) emissions from transport need to be near zero by 2050 in order to respect the Paris Agreement. The shift towards low-emission mobility offers major opportunities for the industry, the draft Report says.

The draft Report calls on the Commission to introduce and improve, as a matter of urgency, CO_2 standards for all road transport. It also considers that clearer price signals reflecting better the polluter-pays and user-pays principles are essential for ensuring fairness and a level-playing field for different transport modes.

The draft Report calls for new CO_2 emission standards for cars and vans to be set for 2025 and 2030 on the basis of a linear trajectory and at a level corresponding to an annual improvement of at least 6-8%, while insisting that future standards should be measured in a real-driving emissions test. Also the Car Labelling Directive should be revised and a minimum target for the share of electric vehicles should be set for all manufacturers, at least 25% by 2025.

The Rapporteur welcomes the Commission's intention to phase out food-based biofuels and agrees that those biofuels should not receive public support after 2020. He furthermore considers that an obligation for fuel suppliers to reduce the GHG emissions of energy supplied through renewable electricity, sustainable advanced biofuels or synthetic fuels would be the most effective approach to reduce the road transport sector's climate impact.

The draft Report indicates that efficient freight transport needs to be promoted and modal shifts to rail and waterways should be encouraged, with targets of 30% by 2030 and 50% by 2050.

The draft TRAN Report is at
www.europarl.europa.eu/sides/getDoc.do?type=COMPARL&reference=PE-602.934&format=PDF&language=EN&secondRef=01.

JRC Inventory of Anthropogenic $PM_{2.5}$

The Joint Research Centre (JRC) of the European Commission has published a new report on the attribution of anthropogenic $PM_{2.5}$ to emission sources: a global analysis of source-receptor model results and measured source-apportionment data.

This report performs for the first time a comparison between $PM_{2.5}$ source apportionment results from in-situ point measurements, obtained from a screened literature review, and from global air quality modelling using the in-house developed global source-receptor air quality model TM5-FASST.

Both experimental and numerical modelling techniques have been proven to provide valuable information about the emitting sectors contributing to ambient $PM_{2.5}$.

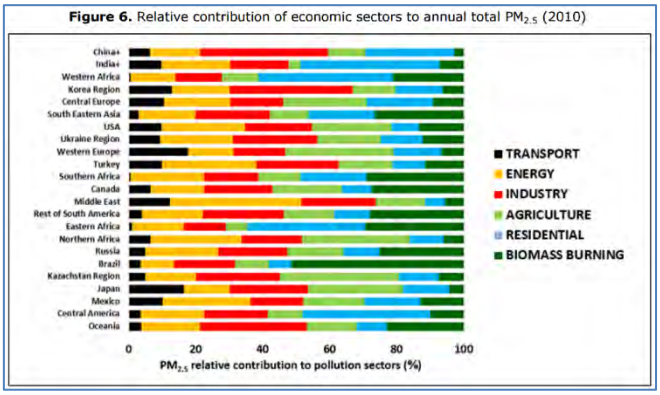
Results showed that emerging economies such as China and India have the highest concentration of $PM_{2.5}$ from the Industry and Residential sector. China and India are the countries with the highest $PM_{2.5}$ concentrations with 55 µg/m³ both.

Industry is the largest economic sector in China contributing 38% of total $PM_{2.5}$ emissions whereas India has a larger contribution from Residential emissions (42%) followed by Western Africa (40%).

The Transport sector showed largest absolute values in India, China and Korea. However, the biggest relative contribution of Transport to $PM_{2.5}$ has been observed in Western Europe (18%) and Japan (17%). The Energy sector showed highest values for India and China but has its largest relative contribution to $PM_{2.5}$ in the Middle East (38%).

Agriculture is an important source of $PM_{2.5}$ in the Kazakhstan region (36%) as well as in Northern Africa and Western Europe (32%). Residential activities are important sources of $PM_{2.5}$ in India (42%), Western Africa (40%) and Central America (38%). Finally, large scale Biomass Burning is the major source of $PM_{2.5}$ in Brazil (51%), Southern Africa (29%) the Rest of South America (28%) and Canada (27%).

Figure 6. Relative contribution of economic sectors to annual total $PM_{2.5}$ (2010)



The JRC report is at
http://publications.jrc.ec.europa.eu/repository/bitstream/JRC104676/jrc_technical_report_-_final_identif.pdf.

EU invests in Sustainable and Efficient Transport and Energy Infrastructure

On 24 April 2017 the European Commission announced that EU Member States approved its proposal to invest €22.1 million to support seven actions that will help develop sustainable and efficient transport and energy infrastructure.

The seven actions, funded from the Connecting Europe Facility (CEF)'s Synergy call, include an assessment of options for building a pipeline that would carry Liquefied Natural Gas (LNG) from Italy to Malta for use as a marine fuel, the development of a cross-border electricity smart grid increasing the energy efficiency of the Croatian railway system, and the creation of electricity storage systems strategically located on key transport corridors between Austria and Germany.

More details on the seven actions are at https://ec.europa.eu/transport/sites/transport/files/2016-cef-synergy-call-actions-selected-for-funding.pdf.

EEA Report on CO_2 Emissions of New Cars in the EU

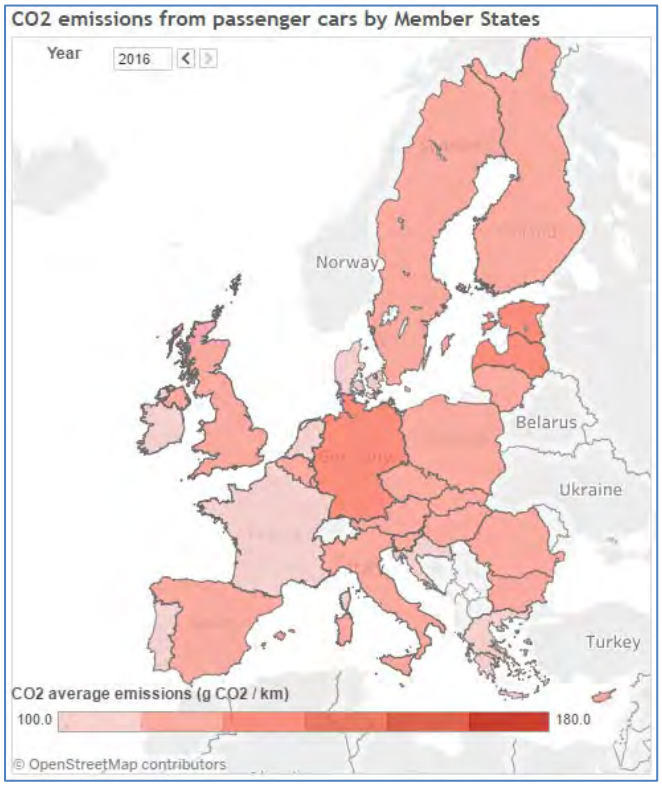
On 20 April 2017 the European Environment Agency (EEA) published the provisional CO_2 emissions from new cars registered in 2016 in EU Member States.

Average CO_2 emissions of a new car sold in 2016 were 118.1 g/km. This represents a CO_2 decrease of 1.4 g/km (-1.2%), compared to 2015. This reduction is the smallest annual improvement recorded since 2006 for new cars sold in the EU.

In comparison with 2015, the average mass of new cars sold in 2016 in the EU increased slightly to reach 1 388 kg. The increase affected the average mass of petrol vehicles (by 1.5%) in particular, which in turn resulted in smaller decrease of average CO_2 emissions of these vehicles and, consequently, of new passenger car fleet in 2016.

Overall, average CO_2 emissions decreased in all countries in 2016, except in the Netherlands, where they increased by almost 5% to 106 g/km. However, the Netherlands, together with Portugal (105 g/km), Denmark and Greece (both 106 g/km) remains among the countries having the most fuel-efficient new cars sold. The least fuel-efficient cars continue to be bought in Estonia (134 g/km).

The largest improvements in vehicle fuel efficiency, compared to 2015, occurred in Latvia (-8.2 g CO_2/km) and in the Czech Republic (-5.2 g CO_2/km) where a trend towards lighter, smaller vehicles was observed.



Official CO_2 emissions have decreased by more than 22 g/km or (-16%) since 2010. The EU remains well below its CO_2 target of 130 g/km set for 2015, but annual improvements in vehicle efficiency need to significantly increase in each of the coming five years to achieve the 2021 CO_2 average target of 95 g/km.

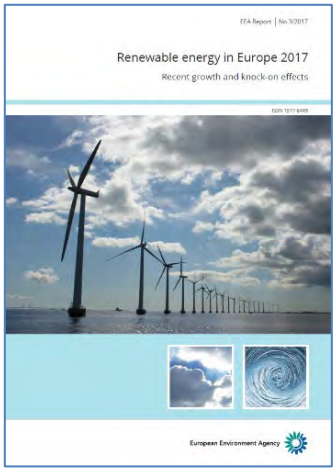
For the second successive year in 2016, the share of diesel vehicle sales declined and it fell below 50% of new sales – the lowest share of new sales since 2009. However, diesel cars still remain the most sold vehicle type in the EU representing 49.4% of new sales, followed by petrol vehicles (47%), and alternatively fuelled vehicles (3.3%, including electric vehicles).

Sales of battery electric vehicles continued to increase, but at a significantly slower rate than in earlier years. Around 64 000 pure battery-electric vehicles were registered in 2016, a 13% increase compared to 2015. The largest number of registrations were recorded in France (22 689 vehicles), Germany (11 472 vehicles) and the UK (10 268 vehicles).

Electric and plug-in hybrid vehicles together still remain a small fraction of total sales, accounting for 1.1% of all new cars sold in the EU. Combined sales of these vehicle types fell by around 3 200 vehicles compared to 2015 when they comprised 1.2% of registrations. The two countries that had the highest share of plug-in hybrid and battery-electric vehicle sales in 2015, the Netherlands and Denmark, both saw significant sales decreases in 2016 of these vehicle types following changes to subsidies and tax incentives in 2016.

EEA Report on Renewable Energy in Europe

On 3 April 2017 the European Environment Agency (EEA) published a report on Renewable energy in Europe 2017: recent growth and knock-on effects.



This report provides information about progress in renewable energy sources (RES) in 2014 at the EU, country, energy market sector and RES technology levels. It also seeks to answer two key questions:

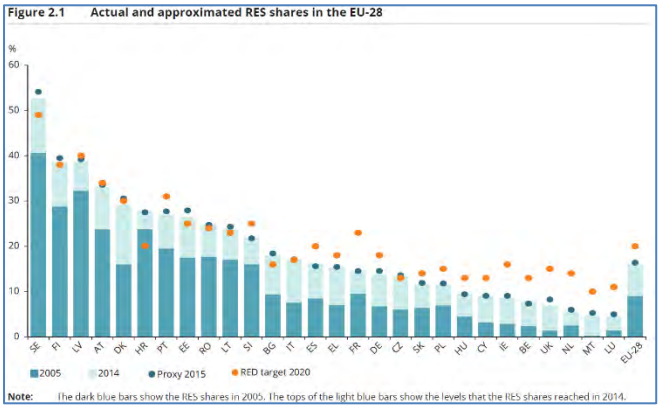
Has the consumption of RES since 2005 contributed to lowering greenhouse gas (GHG) emissions and fossil fuel use across Europe?

How does progress in European RES compare with developments in renewable energy in other parts of the world?

Today, RES have become a major contributor to the energy transition occurring in Europe. In 2015, renewable energy accounted for the majority (77%) of new EU generating capacity for the eighth consecutive year. According to the EEA, while fossil fuel capacity needs to be decommissioned at a faster rate to ensure that the EU avoids stranded assets or a lock-in of carbon-intensive power plants by 2030, the rate of replacement of carbon-intensive energy sources by RES to date has already resulted in GHG emissions reductions in the EU electricity sector, in the consumption of energy for heating and cooling, and in transport.

The EU-wide share of renewable energy in final EU energy use increased from 15% in 2013 to 16% in 2014. This varies widely amongst Member States though, ranging from over 30% of gross final energy consumption in Sweden, Finland, and Latvia, to 5% or less in Luxembourg and Malta.

In absolute terms, renewable electricity is the second largest RES market sector in the EU, after renewable heating and cooling. It continues to grow, driven by growth in onshore and offshore wind power and solar photovoltaic (PV) electricity generation. About 28% of all electricity consumed in the EU in 2014 originated from renewable sources. In only four countries, however, did the share of renewable electricity represent over half of all gross final consumption of renewables in 2014 (Ireland, Portugal, Spain and the UK).



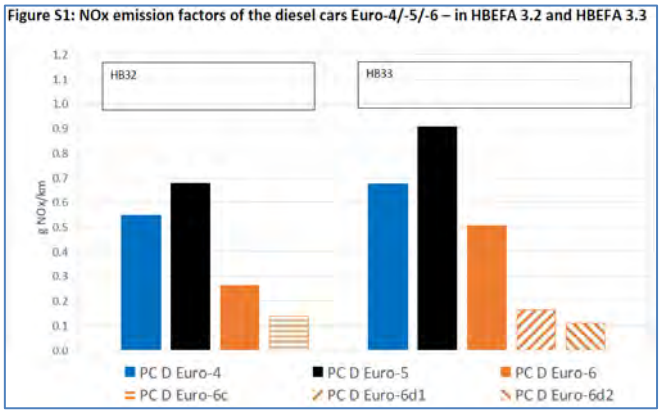
In the EU transport sector, renewable energy made up around 6% of all energy use in 2014. Renewable energy in this sector comes overwhelmingly from biofuels (close to 90%), with electricity still playing only a limited role. The share of renewable energy in transport varied across countries, from a maximum of 40% of all RES consumption (Luxembourg) to close to 0% (Estonia and Spain).

The EEA report No 3/2017 is at www.eea.europa.eu/publications/renewable-energy-in-europe-2017.

Updated German Handbook of Emissions Factors (HBEFA 3.3)

On 25 April 2017 the German Federal Environment Agency (UBA) released an updated Handbook of Emissions Factors (HBEFA 3.3) for passenger cars.

HBEFA 3.3 is a "quick update" of HBEFA 3.2, published in 2014, and is focusing on the NOx emission of newer diesel passenger cars. All other parts of HBEFA 3.2 remain unchanged. A fully reviewed version of HBEFA is planned for 2018.



In the version 3.3 the following elements were adapted:

- The "hot" NOx emission factors (EF) of diesel passenger cars of Euro 4, Euro 5, and Euro 6 vehicles were updated taking into account new measurements from different sources (laboratory and real world measurements as well as remote sensing data).
- The influence of ambient temperature on the hot NOx EF of diesel cars (Euro 4, Euro 5, and Euro 6) is introduced as a new element.
- With version HBEFA 3.2 a new stage 'Euro 6c' was introduced (in addition to Euro 6). In HBEFA 3.3 this concept is replaced by two stages 'Euro 6d1' (=Euro 6d-TEMP) and 'Euro 6d2' (=Euro 6d)
- The "base EF" of Euro 4 diesel cars were updated in 2010. New emission measurements advised an adaptation (particularly for motorway driving). The "base EF" of Euro 5 were updated in 2014 (HBEFA 3.2) and remain unchanged. The "base EF" of Euro 6 are updated again; however, they still rely on a limited amount of measurements and hence are of indicative character. Since the available measurements were taken from a sample of comparatively new vehicles a slight deterioration (with age and mileage respectively) is assumed. The concepts Euro 6d1 and Euro 6d2 are not yet on the roads hence their EF rely on expectations about the effect of the corresponding regulations (particularly RDE).
- Cold start excess emissions: the new cold start NOx emissions measurements of diesel cars confirmed the values and trends assumed in the previous HBEFA

version 3.2. Hence the values remain unchanged in version 3.3.

Overall, the 'hot' EF particularly of Euro 5 and Euro 6 are notably higher than expected in the previous version, mainly as influence of the newly introduced correction for ambient temperature. The newer RDE-compliant vehicles Euro 6d1 and Euro 6d2 though are assumed to remain at a similar level as in HBEFA 3.2.

The HBEFA 3.3 background documentation is at www.umweltbundesamt.de/sites/default/files/medien/2546/dokumente/hbefa33_documentation_20170425.pdf.

On 25 April 2017 the German Association of the Automotive Industry (VDA) commented that "The steps defined and introduced in the legislation are the right ones for reducing the difference between real and laboratory values… The German Federal Environment Agency (UBA) should stop casting general suspicion on all modern diesels. They are actually needed for reaching the climate protection targets, because they consume up to 25% less fuel than gasoline vehicles and their CO_2 output is 15% lower. That makes diesel vehicles indispensable in achieving the European climate protection targets."

The VDA statement is at www.vda.de/en/press/press-releases/20170425-nitrogen-oxide-emissions-from-euro-6-vehicles.html.

German Transport Ministry found Emissions Defeat Device in Fiat Car

On 31 March 2017 *Reuters* News Agency reported that Germany's Transport Ministry said it has found a defeat device in a Fiat car during emissions tests.

According to *Reuters*, the Ministry declined to give details but said it would send the results to the European Commission, which has reviewed a previous emissions case involving Fiat.

German weekly magazine *Der Spiegel* said recent tests on Fiat's 500X showed an exhaust aftertreatment system switched off after 90 minutes, citing results from a test conducted by Germany's KBA vehicle authority. In a prior test, a Fiat vehicle was found to switch off its exhaust treatment system after 22 minutes, *Der Spiegel* said.

Fiat denied its cars were equipped with any emissions test cheating device.

Commission urges Italy to act on PM_{10} Pollution

On 27 April 2017 the European Commission issued a final warning to Italy for persistent high levels of small particulate matter (PM_{10}) in many parts of the country.

This final warning covers 30 air quality zones across Italy where the daily limit values for airborne PM_{10} have been exceeded since they came into force on 1 January 2005. Italy was already found in breach of the European air quality legislation in a 2012 ruling of the EU Court of Justice, concerning years 2006 and 2007.

For the daily limit value, the 30 affected zones are in the regions of Lombardia, Veneto, Piemonte, Toscana, Emilia-Romagna, Friuli-Venezia Giulia, Umbria, Campania, Marche, Molise, Puglia, Lazio, and Sicilia. In addition, this warning also refers to exceedances of the annual limit value in 9 zones: Venezia-Treviso, Vicenza, Milano, Brescia, two zones of Pianura lombarda, Torino and Valle del Sacco (Lazio).

The PM_{10} pollution in Italy is predominantly caused by emissions from energy and heating, transport, industry and agriculture, the European Commission said. The legislative and administrative measures taken by Italy so far have proven to be insufficient to address the problem.

Today's decision follows an additional letter of formal notice which was sent to Italy in June 2016. If Italy fails to act within two months, the case may be referred to the EU Court of Justice.

France to allow B10 Diesel Fuel

On 11 April 2017 the French Ministry of the Environment, Energy, and Marine Affairs notified the European Commission of a draft Order defining the technical characteristics of B10 diesel fuel for its authorisation in France.

ANNEX I
Technical characteristics of gas oil B10

PROPERTIES	UNIT	LIMITS	
		Min.	Max.
Measured cetane number		51.0	
Calculated cetane number		46.0	
Density (at 15 °C)	kg/m³	820.0	845.0
Polycyclic aromatic hydrocarbons	% (m/m)	-	8.0
Sulphur content	mg/kg	-	10.0
Manganese content	mg/l		2.0
Flash point	°C	> 55.0	-
Carbon residue (on the 10 % distillation residue)	% (m/m)	-	0.30
Ash content	% (m/m)	-	0.01
Water content	mg/kg	-	200
Total contamination	mg/kg	-	24
Copper corrosion (3 hours at 50 °C)	Rating	Class 1	
Oxidation stability 1	g/m³	-	25
	h	20[1]	-
Lubricity, corrected wear scar diameter (wsd 1.4) at 60 °C	µm	-	460
Viscosity at 40 °C	mm²/s	2.000	4.500
Distillation: - % (v/v) evaporated at 250 °C;	% (v/v)	-	<65
- % (v/v) evaporated at 350 °C;	% (v/v)	85	-
- point 95% (V/V) condensed at:	°C	-	360
Fatty acid methyl ester content compliant with the Order of 30 June 2010 on the characteristics of fatty acid methyl esters (FAMEs), as amended	% (v/v)	-	10.0

France has set itself ambitious targets for the use of renewable energies in transport. One way these targets can be reached is by using fuels with a higher biofuel content. This is why the French authorities are planning to

authorise B10 diesel fuel with up to 10% Fatty Acid Methyl Ester (FAME).

Specifications are provided for summer, winter, and low-temperature diesel.

The vehicles that are compatible with B10 diesel fuel shall be published in the French Official Journal.

Public Consultation on French Air Quality Plans

On 6 April 2017 the French Ministry for Ecology and Sustainable Development launched a public consultation on the draft national plan to reduce emissions of air pollutants which was set by the 'energy transition' law.

The draft plan consists of a Decree setting the emissions reduction targets for 2020, 2025, and 2030 and a Decree that sets orientations and actions for the period 2017-2021, with reduction measures in all sectors (industry, transport, residential, and agriculture). It contributes to the objectives of the new National Emission Ceilings Directive published in December 2016, two years ahead of EU requirements.

Implementation of the plan is expected to greatly reduce exceedances of air quality limit values by 2020 and virtually eliminate exceedances by 2030. The average fine particle concentration will fall by about 20% by 2030. It will also achieve the emissions reduction targets of 2020 and 2030. The plan measures are particularly necessary to achieve ammonia emissions reduction targets. The plan will reduce the number of premature deaths associated with chronic exposure to fine particulate matter by approximately 11 200 cases per year by 2030.

The consultation (in French) was open until 27 April 2017 and was at www.consultations-publiques.developpement-durable.gouv.fr/projet-de-plan-national-de-reduction-des-emissions-a1714.html.

High Court rejects UK Air Consultation Delay

On 27 April 2017 the UK High Court ordered the Department for Environment, Food, and Rural Affairs (DEFRA) to start consulting on its revised air quality plan within the next 12 days.

DEFRA had been ordered by the High Court in November 2016 to publish by 24 April 2017 a draft version of the plan, which should include more ambitious proposals to cut nitrogen dioxide (NO_2) pollution. It failed to do so, having applied for an urgent legal stay a couple of days before.

The High Court rejected the application by DEFRA to defer publication of both the draft and final documents by six weeks on the grounds that it was a "significant threat" to public health. The judge gave DEFRA until after 9 May 2017 to publish the draft document on the proviso that the final document would still be produced by the original 31 July 2017 deadline.

Public Consultation on London's Ultra Low Emission Zone

On 4 April 2017 London Mayor Sadiq Khan announced plans for an Ultra Low Emission Zone to tackle persistent air pollution in the capital city and launched a public consultation.

The Mayor has already confirmed the £10 (€11.70) T-Charge, which will start in October 2017. He is now proposing to replace it by an Ultra Low Emission Zone (ULEZ) in central London from Monday 8 April 2019. The ULEZ in 2019 will cover the same area as the existing congestion charging zone.

The ULEZ will apply to all vehicle types, except black taxis. Petrol vehicles that do not meet Euro 4 standards and diesel vehicles that do not meet Euro 6 standards will have to pay a ULEZ daily fee (£12.50 for cars, vans and motorbikes; £100 for buses, coaches and HGVs) to drive in the ULEZ. The total cost, with the congestion charge added (during the times of day it is applicable), for motorists with non-compliant cars will be £24 (€28) a day.

Khan also proposed to expand the ULEZ across Greater London for heavy diesel vehicles, including buses, coaches and lorries, in 2020, and up to the North and South Circular roads for cars and vans in 2021.

It is estimated that introducing ULEZ in central London will result in nearly a 50% reduction in road transport NOx emissions in 2020.

The consultation is open until 25 June 2017 and is at https://consultations.tfl.gov.uk/environment/air-quality-consultation-phase-2/?cid=airquality-consultation.

NORTH-AMERICA

ICCT Report on US Vehicle Compliance Program and Recall Cases

On 12 April 2017 the International Council on Clean Transportation (ICCT) published an historical review of the US vehicle emission compliance program and emission recall cases.

The report provides a comprehensive historical review of how the US federal vehicle emission compliance programme has evolved over the past 4 decades, reviews US emission recall trends, highlights a few representative vehicle and engine emission recall cases and settlements, and provides insight into the data sources needed to inform a successful recall programme.

The paper aims to provide useful information for governments that are in the early stages of pursuing an effective emissions compliance programme in their respective regions. It only focuses on air pollutant emissions, rather than greenhouse gas emissions.

The ICCT report is at http://theicct.org/sites/default/files/publications/EPA-Compliance-and-Recall_ICCT_White-Paper_12042017_vF.pdf.

SOUTH AMERICA

ICCT Report on Emissions Standards for Light-Duty Vehicles in Brazil

On 14 April 2017 the International Council on Clean Transportation (ICCT) published a report on the international comparison of Brazilian regulatory standards for light-duty vehicle emissions.

The Brazilian regulatory programme for vehicle emissions control, Programa de Controle de Poluição do Ar por Veículos Automotores (PROCONVE), has been instrumental in improving the emission performance of new vehicles sold in the country and, since its introduction in 1986, has offset some of the impacts of the rapidly growing Brazilian fleet. With the full implementation of the current phase of PROCONVE L6 for light-duty (LD) vehicles completed in 2015, Brazilian regulators should consider the evolution of the programme to mitigate the risks to human health and the environment associated with motor vehicle pollution from a growing LD fleet.

This paper aims to inform the next phase of PROCONVE for LD vehicles by assessing important components of PROCONVE L6 and their relative strengths and weaknesses compared with similar programmes in the US and the EU.

Table ES1. Shortcomings of PROCONVE L6 and recommended improvements for PROCONVE L7.

Program component	Areas where PROCONVE L6 lags behind international best practices	Recommended changes for PROCONVE L7
Vehicle classification	Large SUVs and passenger vans may be excluded from LD vehicle regulatory program	Adopt medium-duty passenger vehicle classification so all passenger vehicles are subject to same regulatory program
Regulated pollutants	Diesel and Otto cycle vehicles subject to different emission standards	Adopt fuel-neutral emission standards
	NMHC standard does not include important classes of organic gases; unburned ethanol emissions are unregulated	Regulate organic gas emissions with a NMOG standard; maintain aldehyde standard
Tailpipe emission limits	LD commercial NO_x emission limits and LD diesel PM limits lag far behind current limits in the United States and European Union	Tighten PM and NO_x emission limits
	Generally, tailpipe emission limits remain less stringent than international best practices	Develop road map for achieving U.S. Tier 3 emission level performance
Test driving cycles and certification procedures	NBR 6601 driving cycle does not cover potential high-emission driving modes	Adopt SFTP standards
Durability requirements	Useful life period is not representative of modern vehicle lifetimes	Increase useful life specification to 160,000 km at minimum
Evaporative emission requirements	Evaporative emission certification test procedures are not representative of real-world conditions	Adopt U.S. 48-hour and 72-hour evaporative emissions tests along with more stringent emission limits Introduce running loss test and emission limit
	No requirements for control of refueling emissions in place	Require ORVR systems for new vehicles. Consider Stage I and II controls to accelerate emission reductions in areas with severe ozone problems
OBD system requirements	Scope of system components subject to monitoring lags behind international best practices	At minimum, adopt Euro 6-2 EOBD system requirements; consider California OBD II as better alternative
	OBD threshold limits set well above certification emission limits	Lower threshold limits to levels more in line with international best practices

The ICCT report on Brazilian standards is at http://theicct.org/sites/default/files/publications/Brazil-LDF-Regs_White-Paper_ICCT_14042017_vF.pdf.

ASIA PACIFIC

Hong Kong tightens Vehicle Emissions Standards

On 13 April 2017 the Environmental Protection Department (EPD) of the Hong Kong special administrative region announced that the Air Pollution Control (Vehicle Design Standards) (Emission) (Amendment) Regulation 2017 and its amendment have been passed.

Emission standards for newly registered motor vehicles will be tightened from Euro 5/V to Euro 6/VI in phases starting from 1 July 2017 except for diesel private cars for which the emissions standards will be tightened from California LEV II to LEV III starting from 1 October 2017.

Details on the new standards are at http://gia.info.gov.hk/general/201704/13/P2017041300334_257019_1_1492055964802.pdf.

Indian Emissions Regulations Booklet

The Automotive Research Association of India (ARAI) has published a booklet summarizing Indian emissions regulations for transportation sources.

The booklet provides details on the Bharat Stage VI (BS VI) emission standards that will be implemented for light-duty, heavy-duty, and motorcycles/mopeds starting in April 2020. It also contains emission standards for off-road and genset engines.

With respect to off-road diesel engines, the booklet indicates that emission standards for these sources may be further tightened in two stages: BS IV standards in 2021 and BS V standards in 2025. These proposed Indian off-road standards are based on the EU Stage IV standard currently in force, and the EU Stage V standard which includes a limit on Particle Number and will be implemented in Europe beginning in 2018.

The ARAI booklet is at www.araiindia.com/pdf/Indian_Emission_Regulation_Booklet.pdf.

AFRICA

ICCT Roadmap for Clean Fuels in Africa

On 28 April 2017 the International Council on Clean Transportation (ICCT) published a roadmap to support the implementation of comprehensive clean fuels and vehicle policies in Southern and Western Africa.

The report focuses on efforts in Southern and Western Africa by the Climate and Clean Air Coalition's Heavy-Duty Diesel Vehicles and Engines Initiative to reduce vehicles' contribution to outdoor air pollution, and the health and climate impacts of vehicles' emissions.

The governments' goal of 2020 for achieving 50 ppm fuels is achievable for most countries in both regions, with all countries reaching this milestone by 2025. Most countries in the region should be able to reach 10 ppm sulfur fuels by 2030. In addition to limiting diesel sulfur levels, all countries in Southern and Western Africa should harmonize with the AFRI-4 specifications in full, including limits on gasoline sulfur content, benzene, and aromatics. The African Refinery Association has an opportunity to provide a timeline for AFRI-6 standards that aim to achieve 10 ppm diesel sulfur content, to align with the goal of the Global Sulfur Strategy and enable countries to meet Euro 5/V and 6/VI vehicle emissions standards.

Two factors will likely impact the implementation of regional commitments: common fuel quality specifications and harmonized implementation timelines for importing and refining countries. The regional bodies are the best-suited venues for a harmonized transition, but also for discussions about countries facing financial, institutional, or economic obstacles to ensure that no country is left behind.

In countries where multiple fuel grades will be sold, there should be establishment of labelling of low- and ultra-low sulfur grades to inform consumers.

All countries should limit vehicle imports to Euro 4/IV when AFRI-4 fuels become available, and to Euro 6/VI when AFRI-6 10 ppm fuels become available. For all vehicles in the fleet (older and newer), strong inspection and maintenance programmes are needed.

The implementation of clean fuel and vehicle policies goes hand in hand with stronger compliance and enforcement; regulators should conduct regular fuel quality testing of imported fuels at the point of entry and fuels sold at retail stations, enforce minimum financial penalties for noncompliance with fuel specifications at retail services, and make fuel-quality testing and enforcement data publicly available.

The ICCT roadmap is at http://theicct.org/sites/default/files/publications/Africa-Roadmap-Report_ICCT_28042017_vF.pdf.

GENERAL

AECC Presentation on Gasoline Particulate Filter at SAE World Congress

On 5 April 2017 AECC's Joachim Demuynck presented SAE paper 2017-01-0985 on 'Real-world emissions measurements of a Gasoline Direct Injection (GDI) vehicle without and with a Gasoline Particulate Filter (GPF)' at the SAE World Congress in Detroit, USA.

The AECC-Concawe-Ricardo joint paper reports results from the 2016 test programme on a Euro 6b GDI car which demonstrated that with the GPF, Particle Number (PN) emissions were controlled well below $6x10^{11}$ particles/km on NEDC, WLTC and on the road. With the GPF, PN emissions stayed well below $9x10^{11}$ particles/km towards the RDE boundaries of dynamicity and ambient temperature, demonstrating that the GPF enables well controlled real-world PN emissions.

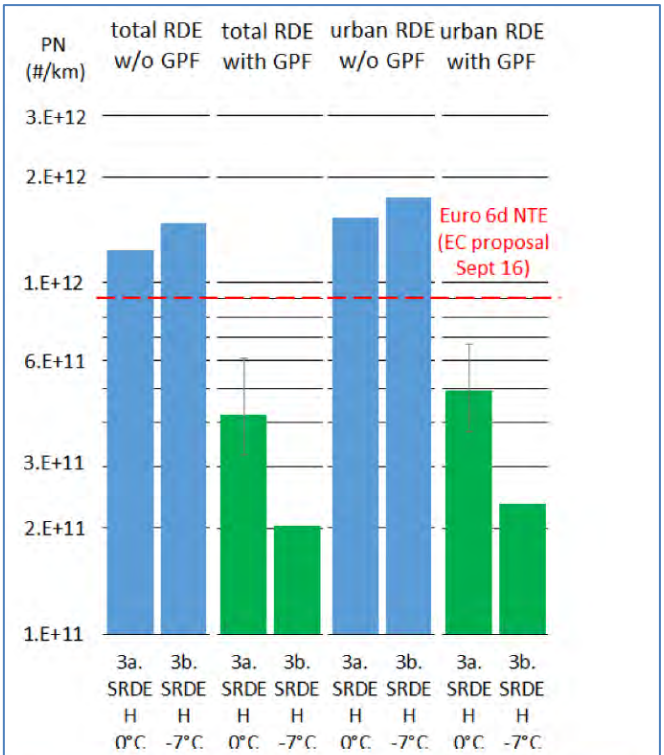


Figure 18. Total and urban RDE PN emissions measured on the dyno at low ambient temperatures.

The SAE paper is at http://papers.sae.org/2017-01-0985.

SMMT Campaign on Diesel

On 10 April 2017 the Society of Motor Manufacturers and Traders (SMMT), representing the UK motor industry, published '10 facts you need to know about diesel'.

SMMT Chief Executive Mike Hawes said 'Euro 6 diesel cars on sale today are the cleanest in history. Not only have they drastically reduced or banished particulates, sulfur and carbon monoxide but they also emit vastly lower NOx than their older counterparts – a fact recognised by London in their exemption from the Ultra Low Emission Zone that will come into force in 2019. Some recent reports have failed to differentiate between these much cleaner cars and vehicles of the past. This is unfair and dismissive of progress made. In addition to their important contribution to improving air quality, diesel cars are also a key part of action to tackle climate change while allowing millions of people, particularly those who regularly travel long distances, to do so as affordably as possible.'

More info is at www.smmt.co.uk/2017/04/10-facts-you-need-to-know-about-diesel.

ACEA launches Website on WLTP

On 25 April 2017 the European Automobile Manufacturers' Association (ACEA) launched a new website – WLTPfacts.eu – to explain the new Worldwide harmonized Light vehicle Test Procedure (WLTP) that will come into force in September 2017 for measuring pollutant and CO_2 emissions from cars.

The website aims to explain the benefits of the new test, examine the impact of WLTP on the consumer and present policy recommendations for its proper implementation.

From September 2017, WLTP will officially apply to new types of cars (i.e. vehicle models that are introduced on the market for the first time). One year later, from September 2018, WLTP will apply to all new car registrations in the EU. WLTP will introduce more realistic testing conditions, including higher speeds, more representative driving behaviour and stricter measurement conditions, than the current lab test (NEDC).

Through a series of infographics, WLTPfacts.eu answers the most common questions about the WLTP test in a clear and simple way. Besides setting out the benefits of WLTP, providing a transition timeline and explaining the differences between the new test and the old NEDC procedure, the website also addresses pressing consumer concerns related to vehicle taxation and fuel consumption.

ACEA Report on Heavy-Duty CO_2 Reduction

On 11 April 2017 the European Automobile Manufacturers' Association (ACEA) published a new report "Reducing CO_2 from trucks: progress in practice. Third-party assessment".

To demonstrate that the fuel efficiency of heavy-duty vehicles, and with that their CO_2 emissions, did not only improve in databases but also in practice, each ACEA member company contracted an independent third party to compare the on-road performance of different trucks from the past two decades.

The tests were performed by conducting comparative test drives with an older vehicle (in most cases 20 years or older) and a truck of the latest generation. For each test, a pair of comparable trucks from the same manufacturer was selected, with both vehicles respecting the following criteria:

- Same mission profile (e.g. long-haul transport)
- Comparable vehicle configuration (e.g. truck-trailer combination)
- Tested at the same speed and carrying the same payload
- Truck representative of the market at the time of its introduction

CO_2 reductions measured varied between 15 and 31.5%, corresponding to a yearly CO_2 reduction of about 1% for the six truck manufacturers.

Truck manufacturer:	Daimler	Scania	DAF	Volvo	MAN	Iveco
Timeframe:	1996 2016	1992 2016	2002 2015	1991 2016	1994 2016	1994 2016
	20 years	24 years	14 years	25 years	22 years	22 years
CO_2 reduction:	-22%	-25%	-15%	-19%	-31.5%	-21%
Yearly CO_2 reduction:	-1.1%	-1.04%	-1.07%	-0.76%	-1.45%	-0.95%
Test details:	page 4	page 5	page 6	page 7	page 8	page 9
Testing agency:	DEKRA	AVL	DEKRA	AVL	TÜV Süd	AVL

Note: results are OEM specific and not directly comparable, tests were performed with different boundary conditions

The truck industry is committed to doing more in years to come. Manufacturers of heavy-duty vehicles will continue contributing to the further decarbonisation of road transport by further optimising combustion engines and investing in alternative powertrains, exploring the potential of connected and automated driving, and by looking together with other stakeholders at all those factors besides the vehicle that influence CO_2 emissions.

The ACEA report is at www.acea.be/uploads/publications/CO2_from_trucks-progress_in_practice.pdf.

AECC is hiring a Junior Communications Specialist

AECC will open a new full-time position for a Junior Communications Specialist in Brussels from 1 July 2017.

The purpose of the position is to support AECC's capability and scope in representing and defending AECC Members' aims and interests and to provide organisational support to the Association, its Members and its Executive Director. Responsibilities and task will ensure support for the AECC communications and the administration.

The deadline for application is 15 May 2017.

The job advertisement is at www.aecc.eu/wp-content/uploads/2017/04/170419-Job-advertisement-Junior-Communications-Specialist.pdf.

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FORTHCOMING CONFERENCES

Euro VI Engines for Stage V Inland Waterway Vessels?

9 May 2017, Gorinchem, Netherlands
www.eicb.nl/euro-vi-motoren-oplossing-stage-v/

9th AVL International Commercial Powertrain Conference 2017

10-11 May 2017, Graz, Austria
www.avl.com/-/9th-international-commercial-powertrain-conference-2017
The 2017 ICPC conference is entirely dedicated to CO_2 reduction and innovations improving operating efficiency.

International Calibration Conference

11-12 May 2017, Berlin, Germany
www.iav.com/us/events/iav-conferences/international-calibration-conference-i-automotive-data-analytics-methods-doe
Real driving emissions (RDE), worldwide harmonized light-duty test procedures (WLTP) and the next round of CO_2 guidelines all demand ongoing technical refinement of the drive train. The conference will expand on the topics discussed at the IAV conference entitled "DoE in Powertrain Development" with the related areas of "machine learning" and "big data".

NOx and Particulate Real Drive Emissions (RDE)

15-19 May 2017, Leeds, UK
https://engineering.leeds.ac.uk/short-course/20
This course concentrates on engine technology for low emissions, fuel requirements and aftertreatment techniques.

10th Integer Emissions Summit & AdBlue® Forum China 2017

16-18 May 2017, Beijing, China
www.integer-research.com/conferences/ies-china-2017
The conference will address China's emissions control challenges and examine cost-effective, regulation compliant emissions reduction strategies.

CLEPA Materials Regulations Event

17 May 2017, Reutlingen, Germany
http://clepa.eu/events/201705-clepa-materials-regulations-event
Legislations on the agenda include among others IMDS, GADSL, ELV, REACH, and BPR.

Investigation of Air Pollution Standing Conference

25 May 2017, Telford, UK
www.ilmexhibitions.com/ageshow/iapsc-conference/
Speakers will give timely and topical guidance on overcoming the challenges facing the air quality community. Topics will be based around air quality measurement and monitoring.

International Transport Forum – 2017 Summit – Governance of Transport

31 May-2 June 2017, Leipzig, Germany
http://2017.itf-oecd.org
The ITF's 2017 Summit on Governance of Transport will explore the trends shaping transport governance and identify the most pressing challenges in the transport sector. Through the governance lens, it will focus on infrastructure, global connectivity, the right regulation for innovation, and urban access and mobility.

29th International AVL Conference "Engine & Environment"

1-2 June 2017, Graz, Austria
www.avl.com/engine-environment-2017
Competition of powertrain systems to reduce CO_2 and emissions 2020/2025.

CITA International Conference

6-8 June 2017, Zagreb, Croatia
http://cita2017.citainsp.org
This edition's theme is "Partnering to Improve Road Safety and the Environment" and the programme aims to highlight the role of whole-life vehicles' roadworthiness in comprehensive road safety and transport environmental protection strategies.

International Conference SIA Powertrain

7-8 June 2017, Versailles, France
www.sia.fr/evenements/66-sia-powertrain-versailles-2017
The conference will focus on the low CO_2 spark ignition engine of the future and its hybridization.

21st ETH-Conference on Combustion Generated Nanoparticles

19-22 June 2017, Zürich, Switzerland
www.nanoparticles.ch
The conference will discuss all aspects of nanoparticles, freshly emitted from various sources, aged in ambient air, technical mitigation aspects, impact of particles on health, environment and climate and particle legislation.
Ricardo will present "PN Measurements above & below 23 nm" from the AECC GDI test programme.

Engine Emissions Measurement

19-23 June 2017, Leeds, UK
https://engineering.leeds.ac.uk/short-course/22
This course is directed at both emissions legislation compliance, and at engine and catalyst development for low emissions.

Cambridge Particle Meeting 2017

23 June 2017, Cambridge, UK
www.cambridgeparticlemeeting.org/2017
Topics of interest include combustion aerosols and their effects, aerosol-based nanotechnology, and new instrumentation.

13th Integer Emissions Summit & AdBlue® Forum Europe 2017

27-29 June 2017, Dresden, Germany
www.integer-research.com/conferences/ies-europe-2017
The conference will discuss the most challenging issues facing the industry, including how commercial vehicle and engine manufacturers will further reduce CO_2 emissions and improve fuel efficiency beyond Euro VI, Euro 6c for light-duty vehicles and passenger cars – what will be the likely scenario for the European car industry when RDE regulation and WLTP procedures are adopted in September 2017?, which technologies will prove to be best-suited to meeting Stage V regulations for the NRMM sector?, and what are the strategies for meeting upcoming legislation in the marine sector
AECC will give a presentation on "Real-driving emissions experience with a plug-in hybrid electric vehicle (PHEV)".

VII International Congress on Combustion Engines

27-29 June 2017, Poznan, Poland
www.congress.ptnss.pl/
The congress is organized by the Polish Scientific Society of Combustion Engines (PTNSS). The main topics of the congress include fuel injection systems and mixture formation; combustion processes control in SI and CI engines; emissions

measurements and aftertreatment; engine testing, durability, reliability and diagnostics; and global trends in engine technology.

4th International Conference: Sensors for Exhaust gas Aftertreatment and CO_2 Reduction

27-29 June 2017, Augsburg, Germany
www.sv-veranstaltungen.de/fachbereiche/conference-sensors-for-exhaust-gas/?lang=en
Top issues to be discussed include state-of-the-art sensor technology for pressure & temperature, radio-frequency-sensors, nitrogen oxide & ammonia, multi-gas sensing, soot & soot loading, and implementation of sensors in ECUs & OBD.

CLEPA Innovation Awards 2017

29 June 2017, Rome, Italy
http://clepa.eu/events/201706-clepa-innovation-awards
Automotive suppliers, irrespective of size, are eligible for innovations in the fields of connectivity and automation, cooperation, environment and safety.

13th International CTI Conference: SCR Systems/Off-Highway Applications

5-7 July 2017, Stuttgart, Germany
http://cti.euroforum.de/en/events/scr_systems_2017
The conference will discuss international emissions legislation; real-driving emissions legislation and experience; global SCR trends and product line evolution to support changing market needs; development of innovative SCR components; new sensor developments; retrofitting; and off-highway technology trends.

Diesel Powertrains 3.0

11-12 July 2017, Ludwigsburg, Germany
www.fev.com/events/fev-conferences/fev-conference-diesel-powertrains-30.html
The international conference will highlight current developments in the Light-Duty Diesel Powertrain segment with a widespread list of topics, offering multiple interesting paths for best compliance with upcoming demands.

13th International Conference on Engines & Vehicles (ICE2017)

10-14 September 2017, Capri, Italy
www.sae-na.it/index.php/en/2016-03-19-14-13-16/2016-03-19-14-14-16/welcome
Topics to be addressed include engine modelling and diagnostics; engine combustion; new engines, components, actuators & sensors; hybrid and electric powertrains; fuels and lubricants; and exhaust aftertreatment and emissions.

Emissions 2017

12-13 September 2017, Frankfurt, Germany
https://gamcinc.com/conferences/emissions/?id=1
The forum will address advances in emission technology and management systems related to OEMs, suppliers (all tiers), component manufacturers, governmental and non-governmental agencies.

10th Integer DEF Forum USA 2017

26-28 September 2017, San Antonio, USA
www.integer-research.com/conferences/def-forum-usa-2017

2017 Aachen Colloquium Automobile and Engine Technology

9-11 October 2017, Aachen, Germany
www.aachener-kolloquium.de
The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.

7th Integer Emissions Summit & AdBlue® Forum India 2017

11-12 October 2017, New Delhi, India
www.integer-research.com/conferences/ies-india-2017
The conference will examine the progress made towards Bharat VI a year on from the government's announcement regarding plans to implement the stringent emissions standards by 2020.

GreenPort Congress 2017

11-13 October 2017, Amsterdam, Netherlands
www.greenport.com/congress
The Congress aims to highlight innovations in equipment and technology to allow port users to adhere to policy, whilst illustrating practical solutions through case studies from the global logistics chain.

SAE 2017 International Powertrains, Fuels and Lubricants Meeting

16-19 October 2017, Beijing, China
www.sae.org/events/pfl

G.STIC 2017 – Global Science, Technology & Innovation Conference

23-25 October 2017, Brussels, Belgium
www.gstic.org
The objective of this conference is to underpin the technological discussions in the UN and other international forums as they relate to the Sustainable Development Goals, the climate goals and Means of Implementation.

10th Integer Emissions Summit USA 2017

7-8 November 2017, Pittsburgh, USA
www.integer-research.com/conferences/ies-usa-2017

15th FAD-Conference

8-9 November 2017, Dresden, Germany
www.fad-diesel.de/conference-2017
The FAD conference will focus on drive technologies and environmental impact; Real-Driving Emissions – milestones of implementation; exhaust aftertreatment for on-road applications; contributions of science and research; emission concepts for non-road diesel engines; exhaust aftertreatment for gas engines; special requirement of exhaust aftertreatment for hybrid drives; emission strategies and solutions for large engines; new exhaust aftertretment concepts; service time and aging of exhaust aftertreatment systems; and future fuels and exhaust aftertreatment.

22nd International Transport and Air Pollution Conference (TAP 2017)

15-16 November 2017, Zürich, Switzerland
http://tapconference.org
The conference topics include exhaust and non-exhaust emissions from transport modes (measurements and modelling); urban and suburban air quality; energy demand and greenhouse gas emissions from transport modes; and transport policies and mobility challenges of the future.
Deadline for abstract: 15 May 2017

Heavy-Duty, On- and Off-Highway Engines 2017

28-29 November 2017, Augsburg, Germany
www.atzlive.de/en/events/heavy-duty-on-and-off-highway-engines
Main subject areas of the conference include new diesel, gas, and dual-fuel engines, electrification, and reducing pollution.

10th International AVL Exhaust Gas and Particulate Emissions Forum

20-21 February 2018, Ludwigsburg, Germany
www.avl.com/web/guest/-/10th-avl-international-exhaust-gas-and-particulate-emissions-forum

8th AVL Large Engines TechDays

11-12 April 2018, Graz, Austria
www.avl.com/-/8th-avl-large-engines-techdays