

# NEWSLETTER

International Regulatory Developments

## TABLE OF CONTENTS

<b>EUROPE</b> .....	2
Third Package of Real-Driving Emissions adopted .....	2
Infringement Procedures on Type-Approvals against 7 Member States .....	2
New National Emission Ceilings Directive published .....	3
Further Developments in Parliament's EMIS Committee .....	3
Draft Report and Recommendation of Parliament's EMIS Committee .....	4
Transport Committee adopts Opinion on Vehicle Type-Approval Framework .....	5
Commission's Consultation on Clean Vehicles Directive .....	5
JRC Tutorial on RDE Experimental Procedure .....	6
EU Legislative Priorities for 2017 .....	6
EEA TERM 2016 Report on Sustainable Mobility .....	6
EEA Fuel Quality Report .....	6
EEA Report on 2015 CO <sub>2</sub> Emissions from New Passenger Cars and Vans .....	7
EEA Environmental Indicator Report 2016 .....	7
EEA Report on Renewables .....	8
French Government Communication on Air Pollution Mitigation .....	8
UK Plug-In Van Grant extended to Heavier Vehicles .....	8
DPF Removal Advertising banned in the UK .....	8
<b>NORTH-AMERICA</b> .....	8
US Settlement with VW on 3.0L Diesel Vehicles .....	8
US EPA Memorandum on HD Ultra-Low NOx Standards .....	9
US NHTSA Notices on CAFE .....	9
US EPA Diesel Emission Reduction Act Funds Awarded .....	9
<b>AFRICA</b> .....	9
Five West African Countries introduce Cleaner Fuels and Emissions Standards .....	9
<b>GENERAL</b> .....	9
AECC Input to Consultations on Non-Road Stage V Delegated Acts .....	9
Association for Catalytic Control of Emissions from Stationary Sources .....	10
ADAC EcoTest 4.0 includes Real-Driving Emissions .....	10
ICCT European Vehicle Market Statistics Pocketbook 2016-17 .....	10
Concawe Report on FAME Content Impact on DPF Regenerations .....	11
Concawe Report on Fuel Octane Impact on Performance of Euro 4 Gasoline Cars .....	11
T&E Report on CO <sub>2</sub> Emissions from EU Passenger Cars .....	11
C40 Mayors Declaration on Air Quality includes Diesels Ban by 2025 .....	12
<b>RESEARCH SUMMARY</b> .....	12
<b>FORTHCOMING CONFERENCES</b> .....	13

The AECC team wishes you and your family a happy and fruitful New Year. We look forward to working with you in 2017.



## EUROPE

### Third Package of Real-Driving Emissions adopted

On 20 December 2016 EU Member States adopted in the Technical Committee - Motor Vehicles (TCMV) the third legislative package of Real-Driving Emissions (RDE) requirements for Euro 6 passenger cars and vans.

Key elements of the adopted text include:

- A Particle Number (PN) Conformity Factor (CF) of 1 + 'margin PN' is set, with 'margin PN' = 0.5. 'Margin PN' takes into account the measurement uncertainties of the PEMS PN equipment and is subject to an annual review.
- The PN CF applies to both the urban part and the complete RDE trip from 1 September 2017 for new types and from 1 September 2018 for all new vehicles.
- Cold-start emissions (both gaseous and PN) are included in EMROAD and CLEAR post-processing analysis.
- RDE information has to be made available to the public via a free website which must allow for a wildcard access. That includes the Declared Maximum RDE values (for NOx and for PN) as they have to be reported on the Certificate of Conformity.
- Ki factors that account for periodic regenerations have to be included in RDE results. If the emissions do not fulfil the CF, then the occurrence of regeneration is to be verified. There is the possibility to void the RDE test once in case of regeneration.
- RDE trips must start with the urban driving first.
- Hybrid vehicles must comply with EMROAD or CLEAR but RDE emissions from Plug-In Hybrid Electric Vehicles (PHEV) are calculated via a new Appendix 7c. For PHEV, the final RDE result is the ratio between the cumulative gaseous and particles emissions and the cumulative CO<sub>2</sub> emissions, both for the urban part and the total trip. A revised methodology to include a robust

and complete evaluation method for hybrid and plug-in hybrid vehicles is scheduled to be part of the 4<sup>th</sup> legislative package on RDE.

- Depending on the number of vehicle emission types within a PEMS test family, a minimum number of cold-start and hot-start PEMS test is required.
- For small volume manufacturers (i.e. < 10 000 registrations per year), the RDE monitoring phase (without any CF) is extended until 2020. RDE requirements do not apply at all to ultra-small volume manufacturers (i.e. < 1000 registrations per year).
- A new Appendix 3a is introduced that requires an extended documentation package to be provided by the OEM to the type-approval authority on all Auxiliary Emissions Strategies (AES).

The draft Comitology Regulation adopted will now be translated into all EU official languages and sent to the European Parliament and the Council; they have 3 months to scrutinize the measure.

### Infringement Procedures on Type-Approvals against 7 Member States

On 8 December 2016 the European Commission opened infringement procedures against 7 Member States on the grounds that they have failed to fulfil their obligations under EU vehicle type approval legislation.

In accordance with the vehicle Type-Approval Framework Directive 2007/46 and the Euro 6 Regulation (EC) 715/2007, Member States must have effective, proportionate and dissuasive penalties systems in place to deter car manufacturers from breaking the law. Where such a breach of law takes place, for example by using defeat devices to reduce the effectiveness of emission control systems, these penalties must be applied.

The Commission therefore sent letters of formal notice to the Czech Republic, Greece and Lithuania because they have failed to introduce such penalty systems into their national law and it also opened infringements against Germany, Luxembourg, Spain and the UK – the Member States that issued type-approvals for the Volkswagen Group in the EU – for not applying their national provisions on penalties despite the company's use of illegal defeat device software.

Additionally, the Commission takes the view that Germany and the UK broke the law by refusing to disclose, when requested by the Commission, all the technical information gathered in their national investigations regarding potential NOx emissions irregularities in cars.

A letter of formal notice is a first step in an infringement procedure and constitutes an official request for information. The Member States now have two months to respond to the arguments put forward by the Commission; otherwise, the Commission may decide to send a reasoned opinion.

On the same day, the Commission also published a fact sheet on EU legislation on passenger car type-approval and emissions standards.

The document provides answers to a number of frequently asked questions, including: what are defeat devices? How does the current type-approval system work? Who checks car manufacturers' compliance? Can the Commission impose penalties if the rules regarding type-approval are violated? Can consumers get compensation if car manufacturers have violated the rules? What is the Commission doing to strengthen the type-approval system? What has been done to tighten NOx emissions limits of diesel vehicles and improve the testing? Will the RDE testing be mandatory? How will RDE tests be further strengthened? What about CO<sub>2</sub> emissions testing? And what else is the Commission doing to improve air quality?

The Commission's fact sheet is at [http://europa.eu/rapid/press-release\\_MEMO-16-4269\\_en.htm](http://europa.eu/rapid/press-release_MEMO-16-4269_en.htm).

## New National Emission Ceilings Directive published

On 17 December 2016 the revised National Emission Ceilings (NEC) Directive was published in the Official Journal as Directive (EU) 2016/2284. This followed the adoption of the text by the Council on 8 December 2016.

The NEC Directive establishes emissions reduction commitments for the Member States' anthropogenic emissions of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), non-methane volatile organic compounds (NMVOC), ammonia (NH<sub>3</sub>) and fine particulate matter (PM<sub>2.5</sub>). It requires Member States to draw, adopt and implement national air pollution control programmes.

EU Member States are each attributed new reduction commitments in 2030 for the five air pollutants. Overall, at the EU-28 level, reduction targets are -63% NO<sub>x</sub>, -49% PM<sub>2.5</sub>, -79% SO<sub>2</sub>, -19% NH<sub>3</sub>, and -40% NMVOC in 2030 compared with 2005 levels.

For road transport, reductions apply to emissions calculated on the basis of fuels sold, consistent with national energy balances reported to Eurostat. Member States may also report road transport emissions based on fuels used or kilometres driven in the country.

Flexibilities are introduced, they include the possibility to average national emissions of a specific year with those of the preceding and subsequent year in case of an exceptionally cold winter, or an exceptionally dry summer. Another flexibility allows Member States to be deemed compliant with their emission reduction commitments for five years if in a given year they cannot comply with the emissions reduction commitment after having implemented all cost-effective measures. However, they need to compensate the non-compliance with an equivalent emissions reduction of another pollutant.

The Directive also requires the Commission to set up a European Clean Air Forum which will be composed of

national experts, Commission and stakeholders. The Forum will aim to exchange best practices, including on emission reductions from domestic heating and road transport.

The Directive must be transposed in Member States' national legislation by 1 July 2018.

In the new Directive the Commission considers that there is a strong air quality case for keeping the development of methane emissions under review in order to reduce ozone concentrations in the EU and to promote methane reductions internationally. On the basis of the reported national emissions, the Commission therefore intends to further assess the impact of methane emissions and will consider measures for reducing those emissions, and where appropriate, submit a legislative proposal.

The revised NEC Directive (EU) 2016/2284 is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L2284&from=EN>.

## Further Developments in Parliament's EMIS Committee

On 1 December 2016 the European Parliament's Committee of Inquiry into Emission Measurements in the Automotive Sector (EMIS) held another hearing of the Joint Research Centre (JRC) with Mr Vladimir Šucha, Director-General, and Mr Giovanni De Santi, former Director of the JRC's Institute responsible for transport.

Mr Šucha indicated that differences in emissions measured in the laboratory and on the road that the JRC noticed were presented to DG-Enterprise in 2010; the Commission had decided that action was required. The history of the Real-Driving Emissions legislation was discussed once again.



With regards to defeat devices, Šucha said that it had been impossible to find evidence, as this required full cooperation from type-approval authorities and manufacturers. He furthermore reminded MEPs that the US EPA had not discovered the defeat device, but that VW had admitted its use. Šucha added that the JRC would have followed up on investigations, had the Commission had an appropriate mandate for that.

Šucha did not see the JRC as a 'super Agency' but he felt that the JRC should have a surveillance role with a clear mandate such as the US EPA. In addition, he argued for transparency and legal access to emission documentation from manufacturers. Šucha said that if there was a mandate, the JRC would be ready within two years to test 200 vehicles per year with only a moderate burden on public money.

In the second part of the hearing Mr De Santi noted that Europe lacked a powerful market surveillance programme, especially in comparison to the US EPA's mandate.

Mr De Santi felt that the JRC would be suitable for this role, given its lab, competencies and reputation.



When asked why the development of the RDE procedure took several years, De Santi explained that four options were considered in 2012: PEMS (RDE), modelling, random cycles, and copying the procedure used in the US. No consensus had been reached before November 2012, he indicated.

When asked if industry slowed down the process, De Santi admitted that issues which had been agreed upon, were discussed several times afterwards, but stated that the methodology had been adopted independently from manufacturers.

He regarded the adoption of the RDE test procedure as the best possible step forward but warned that the implementation was crucial, and that there should be an authority with the mandate to discuss results with type-approval authorities and manufacturers.

The hearing of the JRC's Directors can be watched at [www.europarl.europa.eu/EMIS\\_161201](http://www.europarl.europa.eu/EMIS_161201).

On 5 December 2016 the EMIS Committee held an exchange of views with representatives from the National Parliaments of France, Belgium, Germany and the UK on parliamentary investigations into emissions measurement in the automotive sector.

MEPs held an exchange of view with Ms Batho, Member of the French National Assembly and Rapporteur for the parliamentary mission on the French vehicles supply with a fiscal, industrial and sustainable energy approach; Ms Jadin, Member of the Belgian House of Representatives and Chair of the special committee on 'dieselgate'; Mr Stewart, Member of the Transport Committee of the UK's House of Commons; and Mr Behrens, Member of the German Bundestag and Chair of the 5<sup>th</sup> Committee of Inquiry.

The French, Belgian and UK investigative committees have finished their reports and have sent out their recommendations on what should change at the EU level. The German committee will conclude its report in March 2017.

Representatives from national Parliaments all said that the EU should have clearer laws on emissions standards, and called for an EU-wide agency to oversee the work of national authorities who have to follow EU laws.

Ms Batho listed proposals included in the French report, including that emissions limits should be in line with World Health Organization (WHO) standards, defeat devices should be clearly banned, strengthened consumer rights, and new Euro 7 emission standards which are equal for diesel and petrol vehicles and take into account five years lead time.



With regards to the vote of the TCMV on the second RDE measure, Batho indicated that a note approved during an inter-ministerial meeting endorsed the eventual NOx conformity factor. She also confirmed that France had played an active role in the eventual compromise on the conformity factor, and had only later realised the political problems originating from it.

Ms Jadin set out the key recommendations included in the Belgian report. These recommendations focus on consumer protection, public health and the environment (such as reducing harmful emissions), and European level measures (including publication of NOx emissions, binding standards on real emissions, compensation for excessive emissions, more stringent RDE testing, random checks of vehicles, and framework for ex-post control), and the future of mobility, up to the public and private sectors to shape.

According to Mr Stewart, the UK report indicates that the UK Government had been positive towards the recommendation on compensation for consumers and improving independency of an EU agency, but had not engaged with recommendations on strengthening the legislation on defeat devices. Stewart also said that he did not believe that the UK would remove itself from international automotive agreements, as he felt that those were important. In this regard, he also mentioned harmonisation at a global level.

The exchange of views with national Parliaments can be watched at [www.europarl.europa.eu/EMIS\\_161205](http://www.europarl.europa.eu/EMIS_161205).

## Draft Report and Recommendation of Parliament's EMIS Committee

On 19 December 2016 the draft Report and draft Recommendation of the European Parliament's Committee of Inquiry into Emissions Measurement in the Automotive Sector (EMIS), prepared by co-Rapporteurs MEP Gieseke (EPP, DE) and Gerbrandy (ALDE, NL), were published.

The draft Report presents the EMIS Committee's findings on the discrepancies between laboratory and on-road NOx emissions, defeat devices, the EU type-approval system and the enforcement of EU emissions legislation. It consists of two parts:

- a "factual part" collecting and analysing the factual evidence taken into account by the committee to arrive

at its findings; the factual part has been integrated with the Shadow Rapporteurs' contributions and will not be open to amendments;

- and the draft conclusions, identifying contraventions of EU law and instances of maladministration; the draft conclusions will be open to amendments in the EMIS Committee.

The draft European Parliament Recommendation contains the Rapporteurs' recommendations on how to improve the EU framework on emission measurements in the automotive sector. It will be open to amendments both in the EMIS Committee and in the plenary.

The 50 recommendations from the EMIS Committee on emissions measurements include a call on the Commission to change its internal structure in such a way that, the portfolio of one single Commissioner (and Directorate-General) includes at the same time the responsibility for air quality legislation and for policies addressing the sources of pollutant emissions; a call for an increase in the human and technical resources dedicated to vehicles, vehicle systems and emissions control technologies in the Commission, and for the Joint Research Centre (JRC) to further improve in-house technical expertise; a call for the swift adoption of the 3<sup>rd</sup> and 4<sup>th</sup> Real-Driving Emissions (RDE) packages; and a call on the Commission to continue its work on improving Portable Emissions Measurement System (PEMS) measurements for particulate matter with a view to improving their accuracy and the technological ability to account for sub-23 nm particles.

The EMIS Committee also urges the Commission to review in 2017 the NO<sub>x</sub> Conformity Factor for RDE tests.

Regarding defeat devices, the EMIS Committee considers that although the RDE procedure will minimise the risk of their use, it will not completely prevent recourse to illegal practices. Therefore the Committee recommends that, in line with the approach of the US authorities, a degree of unpredictability is built into the type-approval testing in order to prevent any outstanding loopholes from being exploited.

The EMIS Committee also calls for a drastic strengthening of market surveillance in the new EU type-approval framework, on the basis of clearly defined rules and a clearer distribution of responsibilities; and believes that the new type-approval framework should empower the Commission to verify type-approvals by retesting vehicles and to initiate corrective measures where necessary.

Recommendations will be voted on by the EMIS Committee at the end of February 2017 and will then be sent to the Plenary for adoption in April 2017.

The factual part of the report is at <https://polcms.secure.europarl.europa.eu/cmsdata/upload/ae32ace7-4c0c-421c-902d-243941336150/2016.12.19%20-%20Informal%20Consolidated%20Factual%20Part%20of%20EMIS%20Report.pdf>.

The draft Report of the EMIS Committee is at

[www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONGMML%2bCOMPARL%2bPE-595.427%2b01%2bDOC%2bPDF%2bV0%2f%2fEN](http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONGMML%2bCOMPARL%2bPE-595.427%2b01%2bDOC%2bPDF%2bV0%2f%2fEN).

The draft Recommendation is at

<https://polcms.secure.europarl.europa.eu/cmsdata/upload/772a1a70-dfdc-4c0e-927d-105241aace8a/2016.12.07%20-%20Draft%20Motion%20for%20Parliament%20Recommendation.pdf>.

## Transport Committee adopts Opinion on Vehicle Type-Approval Framework

On 5 December 2016 the Transport (TRAN) Committee of the European Parliament adopted its Opinion on the proposal to revise the vehicles' Type-Approval Framework.

TRAN does not support setting up a European Agency for type-approval and market surveillance of motor vehicles. Instead, the Commission should review the existing institutional framework and come up with a legislative proposal by the end of 2018, if appropriate. This review clause is reinforced with a sunset clause on Commission empowerments.

The Opinion was adopted by 34 in favour, 6 against, and 1 abstention. It will feed the work of the lead Committee (IMCO) that is expected to vote its Report at the end of January 2017.

The TRAN Opinion is at

[www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONGMML%2bCOMPARL%2bPE-587.469%2b03%2bDOC%2bPDF%2bV0%2f%2fEN](http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONGMML%2bCOMPARL%2bPE-587.469%2b03%2bDOC%2bPDF%2bV0%2f%2fEN).

## Commission's Consultation on Clean Vehicles Directive

On 19 December 2016 the European Commission launched a public consultation on the revision of the Clean Vehicles Directive 2009/33/EC.

The Directive on the promotion of clean and energy-efficient road vehicles is a public procurement-related instrument, which is more commonly known as "the Clean Vehicles Directive". It requires public bodies to consider certain energy and environmental impacts when purchasing road vehicles.

The Commission is currently carrying out an Impact Assessment of options for a revision of the Directive to better support achieving EU policy objectives on climate change and air pollution and to stimulate the market for clean vehicles and increase competitiveness. The public consultation is part of the Impact Assessment process.

Policy measures that are suggested include expanding the scope of the Directive and changing the provisions for purchasing clean vehicles (e.g. revised methodology for calculating operational lifetime costs when using energy and environmental impacts as award criteria, introduce a definition of clean vehicles and minimum procurement targets for public bodies).

The public consultation is open until 24 March 2017 and is at <https://ec.europa.eu/eusurvey/runner/2016-clean-vehicles>.

## JRC Tutorial on RDE Experimental Procedure

On 4 December 2016 the European Commission's Joint Research Centre (JRC) published a tutorial on experimental procedures required by the newly adopted RDE test.

In a paper and a video titled 'Implementation of Portable Emissions Measurement Systems (PEMS) for the Real-Driving Emissions (RDE) Regulation in Europe', the JRC explains the six steps of the RDE test procedure: 1) vehicle selection, 2) vehicle preparation, 3) trip design, 4) trip execution, 5) trip verification, and 6) calculation of emissions. If any of the requirements in any of these six steps is not met, the test is considered failed.

The JRC paper and video are at [www.jove.com/video/54753/implementation-portable-emissions-measurement-systems-pems-for-real](http://www.jove.com/video/54753/implementation-portable-emissions-measurement-systems-pems-for-real).

## EU Legislative Priorities for 2017

On 13 December 2016 the Council of the EU approved the EU's legislative priorities for 2017 as agreed beforehand with the European Parliament and the Commission.

In 2017, the EU will give priority treatment to legislative initiatives in the following policy areas:

- giving a new boost to jobs, growth and investment;
- addressing the social dimension of the EU;
- better protecting EU citizens' security;
- reforming the EU's migration policy in a spirit of responsibility and solidarity;
- delivering on a digital single market;
- and building an energy union and a forward looking climate change policy, notably through the implementation of the 2030 climate and energy framework, the follow-up to the Paris agreement and the clean energy for all Europeans package.

## EEA TERM 2016 Report on Sustainable Mobility

On 14 December 2016 the European Environment Agency (EEA) published its report 'TERM 2016: Transitions towards a more sustainable mobility system'.

The report assesses the progress that EU Member States are making to improve the environmental performance of transport in line with related EU policy targets. The report also looks at the big changes underway in the sector, from emerging technologies such as electric and driverless cars, to recent innovations that are becoming increasingly popular, such as shared or on-demand mobility services for commuters.

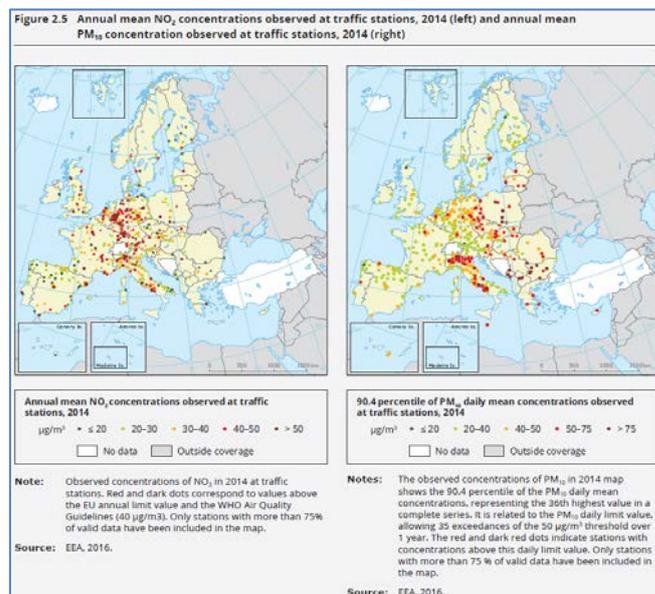
Transport activity across Europe is expected to continue growing under current trends and policies. From 2010 to 2050, it is estimated that passenger transport will grow by about 40%, with aviation as the fastest growing sector. Freight transport is expected to grow by 58%. Consistent with these outlooks, greenhouse gas emissions under current policies are forecast to increase slightly between

2030 and 2050 to 15% above 1990 levels, significantly higher than the 60% reduction target proposed for 2050. Reaching Europe's long term environmental targets will therefore still require substantial efforts, the EEA said.

Overall transport emissions of all air pollutants, except non-methane volatile organic compound (NMVOC), have decreased between 2013 and 2014 (by 1% in the case of nitrogen oxides (NO<sub>x</sub>), 10% for sulfur oxides (SO<sub>x</sub>) and 2% and 3% in the case of airborne particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) respectively), which is a continuation of the general decreasing trend over the past years. However, passenger cars emissions of NO<sub>x</sub> have increased by 2.9% in 2014, being the first annual increase since 1990.

In 2014, non-exhaust emissions are 50% of the road transport emissions of primary PM<sub>10</sub> and 34% of the road transport emissions of primary PM<sub>2.5</sub>.

Air quality levels in cities remain a fundamental challenge for public health, particularly for NO<sub>2</sub>. Road transport is largely responsible for the most significant air quality problems in cities. In addition to direct NO<sub>2</sub> emissions, NO<sub>x</sub> is also contributing to tropospheric O<sub>3</sub> formation. Road transport in cities is also a substantial source of airborne particulate matter.



The EEA TERM 2016 report is at [www.eea.europa.eu/publications/term-report-2016](http://www.eea.europa.eu/publications/term-report-2016).

## EEA Fuel Quality Report

On 19 December 2016 the European Environment Agency (EEA) published its 2015 report on the quality of petrol and diesel used for road transport in the EU.

The report is part of the requirements of the Fuel Quality Directive and is based on information reported by Member States.

The report indicates that fuel sales in 2015 continue to be dominated by diesel (71%). Almost all diesel fuel contained

biodiesel (82.5% B7, 17.1% B+) and the majority of the petrol contained bioethanol (75.4% E5, 9.3% E10).

For petrol, exceedances were reported of the summer vapour pressure (in 15 Member States), RON (in 10 Member States) and aromatics, oxygen content or distillation parameters (in 14 Member States).



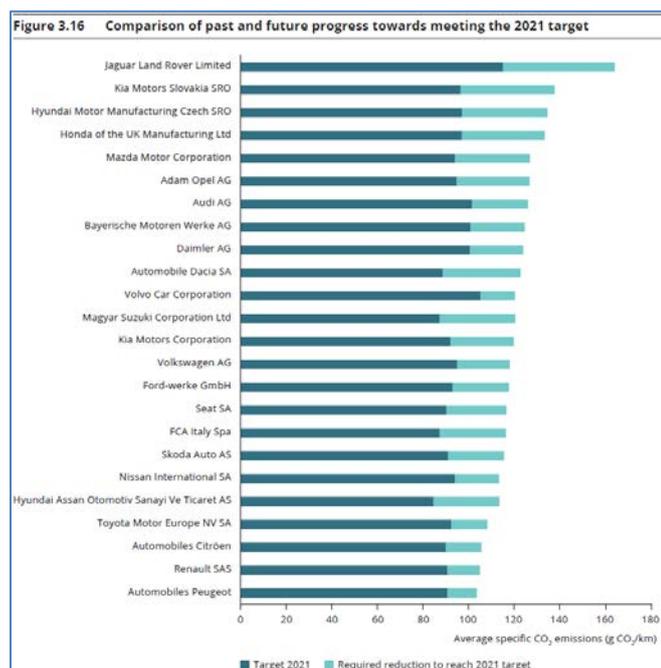
For diesel, the most common parameters falling outside the specifications were sulfur content (in 8 Member States) and fatty acid methyl ester content (FAME, in 3 Member States).

The EEA report on 2015 EU fuel quality monitoring is at [www.eea.europa.eu/publications/eu-fuel-quality-monitoring-2015](http://www.eea.europa.eu/publications/eu-fuel-quality-monitoring-2015).

## EEA Report on 2015 CO<sub>2</sub> Emissions from New Passenger Cars and Vans

On 16 December 2016 the European Environment Agency (EEA) published its 2015 report on CO<sub>2</sub> emissions from new passenger cars and vans.

The report provides a summary of CO<sub>2</sub> emission levels of new passenger cars and vans in the EU in 2015, based on the NEDC test protocol used for vehicle type-approval.



Results show that in 2015 new cars had in average CO<sub>2</sub> emissions of 119.5 g/km, 8% below the 2015 target of 130 g/km and 27% lower than in 2004. Similarly, the average

CO<sub>2</sub> emissions from vans were 168.3 g/km, already below the 2017 target of 175 g/km.

The majority of car and van makers met their CO<sub>2</sub> specific emissions target in 2015. Two manufacturers, Aston Martin Lagonda and Ferrari, exceeded their specific emissions target by a small amount and therefore excess emission premiums will be imposed.

In order to meet their respective future targets, i.e. 147 g/km for vans by 2020 and 95 g/km for cars by 2021, the average CO<sub>2</sub> emissions need to continue decreasing at a similar pace.

Conventional diesel and petrol cars accounted for the large majority of new sales in 2015 (97.2%). Diesel vehicles remained the most sold vehicles in Europe, constituting 52% of sales, slightly lower than in 2014 when 53% of all new cars were fuelled by diesel. The proportion of plug-in hybrid and battery electric vehicles increased from 0.8% in 2014 to more than 1 % in 2015. For vans, the vast majority of vehicles are fuelled with diesel (97%).

The EEA report on 2015 CO<sub>2</sub> emissions from cars and vans is at [www.eea.europa.eu/publications/monitoring-co-2-emissions-from](http://www.eea.europa.eu/publications/monitoring-co-2-emissions-from).

## EEA Environmental Indicator Report 2016

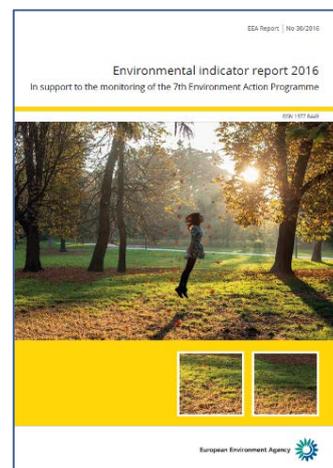
On 9 December 2016 the European Environment Agency (EEA) published its annual Environmental Indicator report.

The report examines if the EU and its immediate neighbours are on target to achieving by 2020 the three thematic priority objectives of the 7<sup>th</sup> Environment Action Programme: natural capital, resource efficiency and low carbon economy, and health and well-being.

The report shows that EU environmental policies have been more successful on reducing pressures on the environment, improving efficiency and meeting 2020 climate and energy targets than on reducing overall impacts on people's health and well-being or on ensuring the resilience of natural systems.

Looking beyond 2020, much greater change will be required to achieve the EU's 2050 vision of 'living well within the limits of our planet', the report says. This will require more ambitious environmental policies and a more fundamental transformation of the key systems that support our society, like food, energy, housing and mobility. The report stresses the need for more integrated policies and knowledge to achieve this long-term vision.

The EEA environmental indicator report 2016 is at [www.eea.europa.eu/airs](http://www.eea.europa.eu/airs).



## EEA Report on Renewables

On 1 December 2016 the European Environment Agency (EEA) published a new assessment of the progress made by EU Member States in meeting their existing 2020 targets on renewable energy and energy efficiency.

By 2020, 20% of the EU's gross final energy consumption should come from renewable sources. Preliminary estimates for 2015 show that the share of renewables in the EU's final energy consumption continued to increase, reaching a level of 16.4%. This is up from 16% in 2014. Twenty two Member States (all except France, Ireland, Malta, the Netherlands, Poland and Portugal) are on track to achieve or exceed the levels of renewable energy set in their national action plans.

To achieve the more ambitious longer-term energy and decarbonisation goals set by the EU for 2050, current efforts will have to be considerably stepped up, according to the EEA report. The EU can achieve its 2030 target on renewables if the current pace across Europe is maintained.

The EEA report on renewables is at [www.eea.europa.eu/highlights/renewables-continue-to-grow-in](http://www.eea.europa.eu/highlights/renewables-continue-to-grow-in).

## French Government Communication on Air Pollution Mitigation

On 10 December 2016 the French Minister for Environment Ms Ségolène Royal presented a communication on air pollution mitigation.

The air pollution episode that a number of French regions have experienced since 30 November 2016 because of specific weather conditions, highlights the air quality impact of road traffic and domestic heating.

The Government noted that the progressive alignment of gasoline and diesel fuel prices that started in 2015 will continue in 2017; an incentive scheme grants €10 000 to electric vehicle buyers when they scrap an old diesel and the scheme will be extended to light commercial vehicles in 2017. The Minister welcomed the fact that the diesel share in vehicle registrations in France has gone from 73% in 2012 to 52% today. 100 000 electric vehicles are now registered in France which represent a 40% annual growth, with a majority of vehicles "Made in France".

## UK Plug-In Van Grant extended to Heavier Vehicles

On 5 December 2016 the UK notified the European Commission of the extension of their grant for the purchase of plug-in vans to heavier vehicles.

The grant scheme provides capital funding to support the uptake of ultra-low emission vehicles (ULEVs) in the UK, specifically for vans and trucks. Having previously supported light vans (N1 category vehicles, which have a maximum mass of up to 3.5 tonnes), the existing scheme is now expanded to also cover heavier vehicles (N2 and N3

category vehicles, which have a maximum mass above 3.5 tonnes).

These heavier vehicles will also benefit from an initially higher level of grant up to £20 000 (€23 800), compared to a grant of up to £8000 (€9500) for other vehicles.

This grant scheme will provide up to £31 million (€37 million) in capital grant funding over five years (from April 2015 to March 2020).

## DPF Removal Advertising banned in the UK

On 14 December 2016 the UK Advertising Standards Authority (ASA) banned advertising from Avon Tuning Ltd offering on their website the removal of Diesel Particulate Filters (DPF).

ASA requested that ads do not suggest that vehicles that had their DPF removed could be used on public roads. They asked to make immediately clear with sufficient prominence in the advertising that it was illegal to drive such vehicles on a public road.

## NORTH-AMERICA

### US Settlement with VW on 3.0L Diesel Vehicles

On 20 December 2016 the US Environmental Protection Agency (EPA) announced a settlement with the US Department of Justice (DOJ), the State of California, and the Volkswagen Group on 3.0L Diesel vehicles.

The VW Group has agreed to recall 83 000 model year 2009 through 2016 3.0L diesel vehicles sold or leased in the US that are alleged to be equipped with "defeat devices" to cheat emissions tests, in violation of the Clean Air Act and California law.

The affected older vehicles (referred to as "Generation 1" vehicles) are the 2009 through 2012 VW Touareg and Audi Q7 diesel models. The affected newer vehicles (referred to as "Generation 2" vehicles) are the 2013-2016 VW Touareg diesels, 2013 through 2015 Audi Q7 diesels, 2013 through 2016 Porsche Cayenne diesels, and 2014 through 2016 Audi A6 quattro, A7 quattro, A8, A8L and Q5 diesel models.

For the Generation 1 vehicles, VW is required to offer to buy back the vehicles or terminate leases, and must also offer an emissions modification to substantially reduce emissions if one is proposed by VW and approved by regulators. For the Generation 2 vehicles, if VW demonstrates it can make the vehicles compliant with the exhaust emission standards, it will have to fix the vehicles and will not be required to buy the vehicles back. VW is also required to spend \$225 million (€215 million) to fund projects that will reduce emissions of NOx.

More information is at [www.epa.gov/enforcement/volkswagen-clean-air-act-partial-settlements](http://www.epa.gov/enforcement/volkswagen-clean-air-act-partial-settlements).

## US EPA Memorandum on HD Ultra-Low NOx Standards

On 20 December 2016 the US Environmental Protection Agency (EPA) issued a memorandum in response to a petition for rulemaking to adopt ultra-low NOx standards for on-highway Heavy-duty trucks and engines.

The EPA acknowledges a need for additional NOx reductions from Heavy-duty engines, particularly in areas of the country with elevated levels of air pollution. The EPA intends to initiate the rulemaking process, in cooperation with the California Air Resources Board (CARB) and other stakeholders, to develop new harmonized Federal and California NOx emission standards.

Based on a preliminary assessment of the scope of work and resources needed to gather data and stakeholder input to develop a proposal, the EPA estimates that it will take on the order of 24 months to complete this technical work and prepare a notice of proposed rulemaking for a new on-highway Heavy-duty NOx programme. The EPA adds that this would provide enough lead time to consider new mandatory standards starting in the 2024 model year.

The EPA memorandum is at <https://www.epa.gov/sites/production/files/2016-12/documents/nox-memorandum-nox-petition-response-2016-12-20.pdf>.

## US NHTSA Notices on CAFE

On 20 December 2016 the US National Highway Traffic Safety Administration (NHTSA) issued two Federal Register Notices pertaining to the Corporate Average Fuel Economy (CAFE) program. Both are in response to petitions from the Alliance of Automobile Manufacturers and the Association of Global Automakers.

The first notice postpones the effective date of an increase in civil penalties for CAFE violations. The penalties, which were previously planned to be effective starting with model year 2015, will now be effective for model year 2019 and beyond.

The second grants a petition for rulemaking regarding harmonization of the CAFE program and the US Environmental Protection Agency (EPA) Light-duty vehicle Greenhouse Gas Emissions program. The Agency will address the issues raised by the petitioners in its rulemaking process.

The two notices are available at [https://www.nhtsa.gov/pdf/Civil\\_Penalty\\_Adjust\\_Response\\_AllianceGlobal\\_12212016.pdf](https://www.nhtsa.gov/pdf/Civil_Penalty_Adjust_Response_AllianceGlobal_12212016.pdf) and [https://www.nhtsa.gov/pdf/Alliance\\_Global\\_Petition\\_on\\_Credits\\_GrantofPetition\\_12212016.pdf](https://www.nhtsa.gov/pdf/Alliance_Global_Petition_on_Credits_GrantofPetition_12212016.pdf).

## US EPA Diesel Emission Reduction Act Funds Awarded

On 12 December 2016 the US Environmental Protection Agency (EPA) announced that it has awarded a total of \$6.3 Million in Diesel Emission Reduction Act funds to public and private partners in California, Arizona, Nevada, Hawaii

and American Samoa. EPA states that the funds will be used to retrofit and replace old, polluting diesel vehicles and equipment, including school buses, trucks, agriculture and port equipment, and generators.

More information is at <https://www.epa.gov/newsreleases/us-epa-awards-63-million-reduce-diesel-emissions-pacific-southwest>.

## AFRICA

### Five West African Countries introduce Cleaner Fuels and Emissions Standards

On 5 December 2016 the United Nations Environment Programme (UNEP) announced that five West African countries – Nigeria, Benin, Togo, Ghana, and Cote d'Ivoire – agreed on 1 December 2016, to introduce strict standards to ensure cleaner, low sulfur diesel fuels and vehicles emissions standards.

UNEP noted that a report by Public Eye in September 2016 exposed how European trading companies were exploiting the weak regulatory standards in West African countries, allowing for the export of fuels with much higher sulfur levels than is permitted in Europe. The decision will effectively cut off West African market imports of European dirty fuels, UNEP added.

The five countries actually agreed to cap sulfur in fuels to 50 parts per million (ppm); a limit currently set to 3000 ppm.

Alongside the introduction of the new standards, the West African group has agreed to upgrade the operations of their national refineries, both public and privately owned, to produce fuels of the same standards by 2020.

## GENERAL

### AECC Input to Consultations on Non-Road Stage V Delegated Acts

On 6 December 2016 AECC provided input to two stakeholders' consultations on the draft Commission Regulations supplementing the Non-Road Mobile Machinery (NRMM) Stage V Regulation (EU) 2016/1628. One addresses test procedures and requirements while the second is about In-Service Monitoring of exhaust emissions.

AECC welcomes both acts that will provide sound technical requirements to ensure the new Stage V standards apply in a robust manner.

Also, AECC said that In-Service Monitoring of NRMM emissions should be the first step towards In-Service Conformity under which Not-To-Exceed emissions limits apply for in-field operation.

Since a major element of the Stage V standard is the introduction of a Particle Number (PN) limit of  $10^{12}/\text{kWh}$  to most engine categories, AECC considers it will be essential for the European Commission to evaluate the feasibility, and introduce in the future, In-Service

Conformity requirements for particulate (PM/PN) emissions as well.

The AECC input on test procedures is at [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2016-6327594/feedback/F873\\_en](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2016-6327594/feedback/F873_en) and the input on In-Service Monitoring is at [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2016-6285832/feedback/F874\\_en](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2016-6285832/feedback/F874_en).

## Association for Catalytic Control of Emissions from Stationary Sources

On 14 December 2016 the Association for the Catalytic Control of Emissions from Stationary Sources to air (ACCESSa) was announced to be founded by member companies Clariant, Haldor Topsoe and Johnson Matthey.

ACCESSa's objectives are to improve the understanding and awareness of the capability of catalytic aftertreatment technology and to promote the technological and economic viability of using catalytic emission control technologies to control emissions to air from stationary sources.

The aim of ACCESSa is to work globally with regulators, non-governmental organizations and other interested parties to advocate the deployment, demonstration and development of cost effective technology solutions.

More info is at [www.accessa.org](http://www.accessa.org).

## ADAC EcoTest 4.0 includes Real-Driving Emissions

On 6 December 2016 the German automobile club ADAC issued details about its updated EcoTest 4.0 that now includes on-road Real-Driving Emissions (RDE) measurement.

In addition, the Worldwide harmonized Light vehicles Test Cycle (WLTC) replaces the New European Driving Cycle (NEDC), stricter pollutant limits apply, and the class-dependent CO<sub>2</sub> assessment is discontinued.

As for the EcoTest overall rating, ADAC is still using the familiar star system to provide an instant reference for a vehicle's eco-friendliness.

So far, 45 vehicles have been tested to the new EcoTest protocol and more are planned, at a rate of 150 vehicles per year. Thanks to their zero-tailpipe emissions, the BMW i3 and Nissan Leaf both earned a 5-star score. Also the Toyota Prius Hybrid and the CNG-powered Skoda Octavia were found to be very eco-friendly.

The EcoTest results of diesel models are rather disappointing, though. Due to their NO<sub>x</sub> emissions, half of the 26 diesel vehicles tested so far did not score a single point in the pollutants category. For instance, the NO<sub>x</sub> emissions of the Renault Captur dCi 90 exceed 460 mg/km already in the WLTC – more than 5.5 times the Euro 6 type-approval limit. The new Mercedes E 220d and the BMW 118d however scored four stars for being clean not only in the test lab but also in real-world driving.

More information is at

<https://presse.adac.de/meldungen/tests/verschaefter-adac-ecotest-liefert-verbrauchern-klares-bild.html>.

## ICCT European Vehicle Market Statistics Pocketbook 2016-17

On 13 December 2016 the International Council on Clean Transportation (ICCT) released the 2016-17 issue of its pocketbook on European Vehicle Market Statistics.

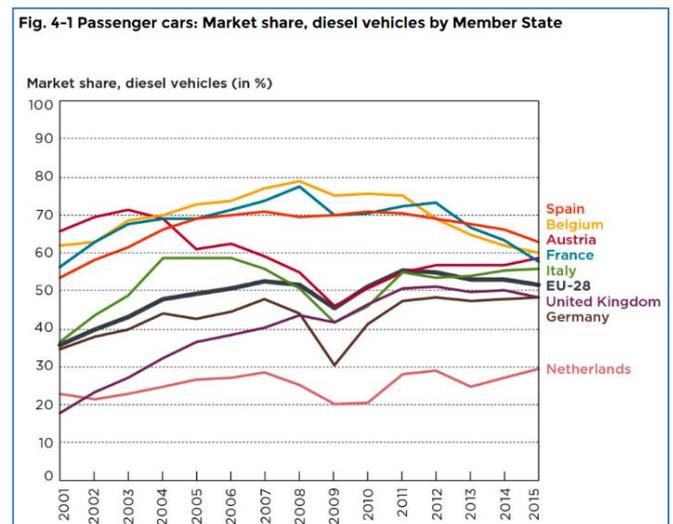
The ICCT pocketbook offers a statistical portrait of passenger car and light-commercial vehicle fleets in the EU since 2001 and of the heavy-duty fleet since 2014 as well. The emphasis is on vehicle technologies, fuel consumption, and emissions of greenhouse gases and other air pollutants.

After declining for several years, new passenger car registrations in the EU increased to about 13.7 million in 2015, though they remain about 12% below the level before the economic crisis.

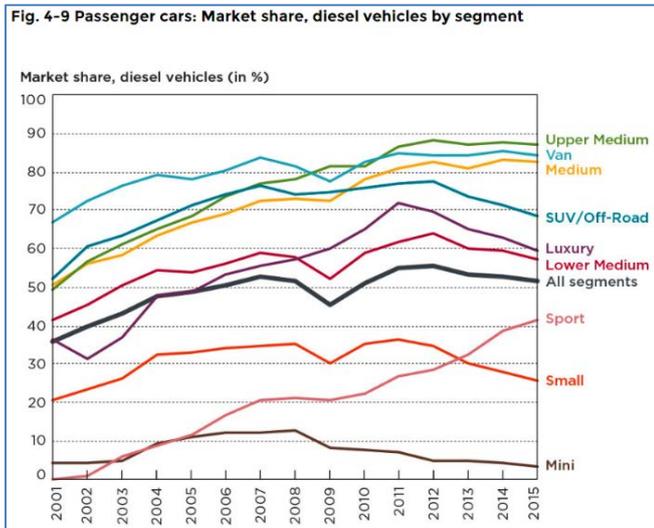
Since September 2015 the Euro 6 emission standard has applied to all new vehicles in the EU. In 2015, about 59% of all new car sales were Euro 6 vehicles.

Average CO<sub>2</sub> emissions from new passenger cars continued to decrease down to 120 g/km in 2015, below the 130 g/km 2015 EU target.

Diesel cars accounted for 52% of all new registrations in 2015 in the EU-28. The market share of Gasoline Direct Injection (GDI) vehicles is estimated at around 38% of the gasoline vehicles sales in 2015. Hybrid-electric vehicles were 1.5% of all new car sales in 2015, with higher market shares in some Member States (3.3% in the Netherlands and 2.2% in France).



Plug-in hybrids and battery-electric vehicles accounted for more than 22% of new car sales in Norway in 2015, and in the first half of 2016 their market share further increased to 26%. This makes Norway the world's leading market for electric vehicles in terms of market share.

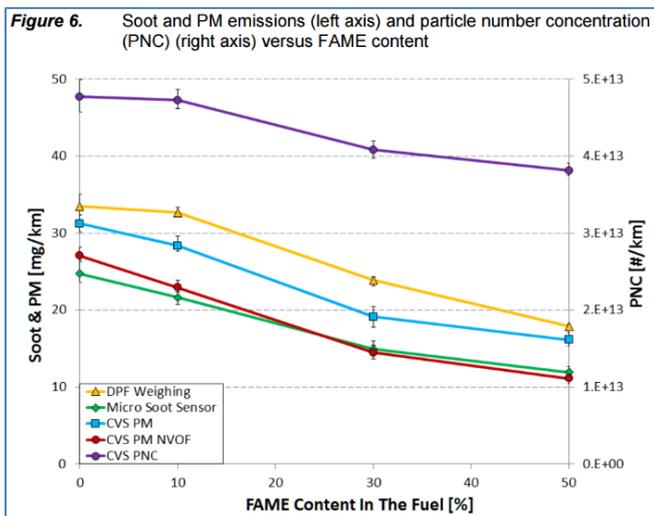


The ICCT pocketbook is at <http://eupocketbook.org>.

## Concawe Report on FAME Content Impact on DPF Regenerations

On 9 December 2016 Concawe, the European oil industry research association, published a report on the impact of FAME content on the regeneration frequency of Diesel Particulate Filters (DPF).

The study conducted by the Laboratory for Applied Thermodynamics (LAT) of the Aristotle University of Thessaloniki, Greece, investigated the effect of Fatty Acid Methyl Esters (FAME) content up to 50% v/v in diesel fuel (i.e. up to B50) on the DPF regeneration frequency by repeatedly running a Euro 5 multi-cylinder bench engine over the European regulatory cycle (NEDC) until a specified soot loading limit had been reached. The results verified the expected reduction of engine-out particulate mass (PM) emissions with increasing FAME content and the reduction in fuel economy penalty associated with reducing the frequency of DPF regenerations.



Fuel dilution measurements on lubricant samples taken from the engine sump showed that the FAME content in the engine lubricant increased with higher FAME contents in the fuel blends.

The Concawe report on FAME content impact on DPF regenerations is at [www.concawe.eu/uploads/Modules/Publications/rpt\\_16-14.pdf](http://www.concawe.eu/uploads/Modules/Publications/rpt_16-14.pdf).

## Concawe Report on Fuel Octane Impact on Performance of Euro 4 Gasoline Cars

On 6 December 2016 Concawe released a new report on the effect of fuel octane on the performance of two Euro 4 gasoline passenger cars.

The report details work that was carried out to study the response of modern gasoline passenger cars on octane. The objective of this phase 1 of the study was to investigate the effect of Research Octane Number (RON) and Motor Octane Number (MON) on the power and acceleration performance of two Euro 4 gasoline vehicles under full throttle acceleration conditions.

Fifteen fuels covering RON levels 95 to 103 and sensitivities (RON minus MON) up to 15 were blended and tested. Both pure hydrocarbon and blends containing ethanol or Ethyl-Tertiary-Butyl-Ether were included so that any specific effects of oxygenates could be identified. Three additional fuels, covering RON as low as 86, were blended using primary reference fuels.

The results confirm the findings of previous studies on older vehicles by others that MON is not a good predictor of vehicle acceleration performance in more modern vehicles and in fact high MON levels increase acceleration time under full throttle conditions. In addition, it was found that during wide open throttle conditions, efficiency deteriorated on the lowest octane (RON) fuels tested as expected as the engine adapts to knock. It was also observed that efficiency increased up to higher octane levels than would be expected for both vehicles.

The Concawe report on fuel octane impact is at [www.concawe.eu/uploads/Modules/Publications/rpt\\_16-13.pdf](http://www.concawe.eu/uploads/Modules/Publications/rpt_16-13.pdf).

## T&E Report on CO<sub>2</sub> Emissions from EU Passenger Cars

On 21 December 2016 Transport & Environment (T&E) released their report 'Mind the Gap 2016' that examines the difference between the official laboratory test results and real-world CO<sub>2</sub> emissions and fuel economy of cars.

The difference between official laboratory test CO<sub>2</sub> results and real-world car performance is growing uncontrollably jumping from 9% in 2001 to 28% in 2012 and 42% in 2015. It is expected to reach 50% before 2020, according to T&E.

In 2002, exploiting regulatory test flexibilities accounted for five percentage points difference between test results and real-world performance. This grew to 15 points in 2010; and 24 points in 2014. Technology that reduces emissions more in the test than on the road contributes an additional

three percentage points to the gap; the failure to switch on auxiliary equipment during tests adds around eight points. Exploiting test flexibilities is therefore the dominant cause of the growing gap, T&E concludes.

The report points at Mercedes cars in particular, stressing that they have the biggest average gap between test and real-world performance, with real-world fuel consumption exceeding test results by 54%, Audi and Smart are second with a gap of 49%.

For T&E, the implementation of the new WLTP test from 2017 is only a partial solution. By 2025 there is expected to be an average gap between WLTP results and real-world performance of nearly a third. To close the gap, T&E recommends:

- For the Commission to propose a 2025 car CO<sub>2</sub> target based on the WLTP test of 80 g/km, complemented by a real-world CO<sub>2</sub> test that should be no more than 10% higher than the WLTP value;
- The creation of a European Vehicle Surveillance Authority and strengthening of Conformity of Production and in-service conformity checks;
- Investigation into the possible use of defeat devices to manipulate CO<sub>2</sub> tests;
- Proposals to update the car labelling Directive to ensure consumers are provided with more robust information on fuel consumption and CO<sub>2</sub> emissions of cars.

T&E's report 'Mind the Gap 2016' is at [www.transportenvironment.org/sites/te/files/publications/T%20E\\_Mind\\_the\\_Gap\\_2016%20FINAL\\_0.pdf](http://www.transportenvironment.org/sites/te/files/publications/T%20E_Mind_the_Gap_2016%20FINAL_0.pdf).

## C40 Mayors Declaration on Air Quality includes Diesels Ban by 2025

On 2 December 2016, in the context of the C40 Mayors Summit, Mayors of Paris, Mexico City, Madrid and Athens, signed a declaration on air quality committing to ban diesel vehicles by 2025.

"Mayors have already stood up to say that the climate change is one of the greatest challenges we face," said Anne Hidalgo, Mayor of Paris and new Chair of the C40 Cities Climate Leadership Group. "Today, we also stand up to say we no longer tolerate air pollution and the health problems and deaths it causes – particularly for our most vulnerable citizens. Big problems like air pollution require bold action, and we call on car and bus manufacturers to join us."

The declaration is at [http://c40-production-images.s3.amazonaws.com/other\\_uploads/images/925\\_Mayors\\_Air\\_Quality\\_Commitment\\_final.original.pdf?1480460056](http://c40-production-images.s3.amazonaws.com/other_uploads/images/925_Mayors_Air_Quality_Commitment_final.original.pdf?1480460056).

## RESEARCH SUMMARY

### Effects of Emissions and Pollution

Current Approaches Used in Epidemiologic Studies to Examine Short-term Multipollutant Air Pollution Exposures, Angel Davalos, et al.; *Annals of Epidemiology* (in press), doi: [10.1016/j.annepidem.2016.11.016](https://doi.org/10.1016/j.annepidem.2016.11.016).

Exposure to ambient PM<sub>10</sub> and NO<sub>2</sub> and the incidence of attention-deficit hyperactivity disorder in childhood, Jin-young Min, et al.; *Environmental International* (in press), doi: [10.1016/j.envint.2016.11.022](https://doi.org/10.1016/j.envint.2016.11.022).

A critical review of the ESCAPE project for estimating long-term health effects of air pollution, Frederick W. Lipfert, et al.; *Environmental International* (in press), doi: [10.1016/j.envint.2016.11.028](https://doi.org/10.1016/j.envint.2016.11.028).

Air pollution and cardiovascular mortality with over 25 years follow-up: A combined analysis of two British cohorts, Hakim-Moulay Dehbi, et al.; *Environmental International* (in press), doi: [10.1016/j.envint.2016.12.004](https://doi.org/10.1016/j.envint.2016.12.004).

Ozone and hypertensive disorders of pregnancy in Florida: Identifying critical windows of exposure, Hui Hu, et al.; *Environmental Research* (February 2017), Vol. 153, pp. 120-125, doi: [10.1016/j.envres.2016.12.002](https://doi.org/10.1016/j.envres.2016.12.002).

Systematic review of the association between particulate matter exposure and autism spectrum disorders, Maria Varela, et al.; *Environmental Research* (February 2017), Vol. 153, pp. 150-160, doi: [10.1016/j.envres.2016.11.022](https://doi.org/10.1016/j.envres.2016.11.022).

Fine-particulate Air Pollution from Diesel Emission Control and Mortality Rates in Tokyo: A Quasi-experimental Study, Yorifuji T, et al.; *Epidemiology* (November 2016), Vol. 27 (6), pp. 769-778, doi: [10.1097/EDE.0000000000000546](https://doi.org/10.1097/EDE.0000000000000546).

Expert position paper on air pollution and cardiovascular disease, David Newby, et al.; *European Heart Journal* (in press), doi: [10.1093/eurheartj/ehu458](https://doi.org/10.1093/eurheartj/ehu458).

Individual exposure estimates may be erroneous when spatiotemporal variability of air pollution and human mobility are ignored, Yoo Min Park and Mei-Po Kwan; *Health & Place* (January 2017), Vol. 43, pp. 85-94, doi: [10.1016/j.healthplace.2016.10.002](https://doi.org/10.1016/j.healthplace.2016.10.002).

Combined exposure of diesel exhaust particles and respirable Soufrière Hills volcanic ash causes a (pro-)inflammatory response in an in vitro multicellular epithelial tissue barrier model, Ines Tomašek, et al.; *Particle and Fibre Toxicology* (December 2016), Vol. 13:67, doi: [10.1186/s12989-016-0178-9](https://doi.org/10.1186/s12989-016-0178-9).

Early kidney damage induced by subchronic exposure to PM<sub>2.5</sub> in rats, O.G. Aztatzi-Aguilar, et al.; *Particle and Fibre Toxicology* (December 2016), Vol. 13:68, doi: [10.1186/s12989-016-0179-8](https://doi.org/10.1186/s12989-016-0179-8).

Long-term exposure to urban air pollution and the relationship with life expectancy in cohort of 3.5 million people in Silesia, Grzegorz Dziubanek, et al.; *Science of the Total Environment* (15 February 2017), Vol. 580, pp. 1-8, doi: [10.1016/j.scitotenv.2016.11.217](https://doi.org/10.1016/j.scitotenv.2016.11.217).

Comparison of diverse estimation methods for personal exposure to air pollutants and associations with allergic symptoms: The Allergy & Gene-Environment Link (ANGEL) study, Young-Min Kim, et al.; *Science of the Total Environment* (February 2017), Vol. 579, pp. 1127-1136, doi: [10.1016/j.scitotenv.2016.11.090](https://doi.org/10.1016/j.scitotenv.2016.11.090).

The burden of lung cancer mortality attributable to fine particles in China, Yuming Guo, et al.; *Science of the Total Environment* (February 2017), Vol. 579, pp. 1460-1466, doi: [10.1016/j.scitotenv.2016.11.147](https://doi.org/10.1016/j.scitotenv.2016.11.147).

The association between ambient air pollution and selected adverse pregnancy outcomes in China: A systematic review, Milena Jacobs, et al.; *Science of the Total Environment* (February 2017), Vol. 579, pp. 1179-1192, doi: [10.1016/j.scitotenv.2016.11.100](https://doi.org/10.1016/j.scitotenv.2016.11.100).

## Air Quality, Sources and Exposure

Exposure assessment models for elemental components of particulate matter in an urban environment: A comparison of regression and random forest approaches, Cole Brokamp, et al.; *Atmospheric Environment* (February 2017), Vol. 151, pp. 1-11, doi: [10.1016/j.atmosenv.2016.11.066](https://doi.org/10.1016/j.atmosenv.2016.11.066).

Ambient air quality measurements from a continuously moving mobile platform: Estimation of area-wide, fuel-based, mobile source emission factors using absolute principal component scores, Timothy Larson, et al.; *Atmospheric Environment* (March 2017), Vol. 152, pp. 201-211, doi: [10.1016/j.atmosenv.2016.12.037](https://doi.org/10.1016/j.atmosenv.2016.12.037).

A user-friendly tool for comprehensive evaluation of the geographical origins of atmospheric pollution: Wind and trajectory analyses, J.-E.

Petit et al.; *Environmental Modelling & Software* (February 2017), Vol. 88, pp. 183-187, [doi: 10.1016/j.envsoft.2016.11.022](https://doi.org/10.1016/j.envsoft.2016.11.022).

Estimating population exposure to ambient polycyclic aromatic hydrocarbon in the United States – Part I: Model development and evaluation, Jie Zhang, et al.; *Environment International* (in press), [doi: 10.1016/j.envint.2016.12.002](https://doi.org/10.1016/j.envint.2016.12.002).

Assessing the future vehicle fleet electrification: the impacts on regional and urban air quality, Wenwei Ke, et al.; *Environ. Sci. Technol.* (in press), [doi: 10.1021/acs.est.6b04253](https://doi.org/10.1021/acs.est.6b04253).

Assessing the Suitability of Multiple Dispersion and Land Use Regression Models for Urban Traffic-Related Ultrafine Particles, Allison Patton, et al.; *Environ. Sci. Technol.* (2017), Vol. 51 (1), pp. 384-392, [doi: 10.1021/acs.est.6b04633](https://doi.org/10.1021/acs.est.6b04633).

Vehicle Emissions as an Important Urban Ammonia Source in the United States and China, Kang Sun, et al.; *Environ. Sci. Technol.* (in press), [doi: 10.1021/acs.est.6b02805](https://doi.org/10.1021/acs.est.6b02805).

Fine and ultrafine atmospheric particulate matter at a multi-influenced urban site: Physicochemical characterization, mutagenicity and cytotoxicity, Yann Landkocz, *Environmental Pollution* (February 2017), Vol. 221, pp. 130-140, [doi: 10.1016/j.envpol.2016.11.054](https://doi.org/10.1016/j.envpol.2016.11.054).

Land use regression modeling of ultrafine particles, ozone, nitrogen oxides and markers of particulate matter pollution in Augsburg, Germany, Kathrin Wolf et al.; *Science of the Total Environment* (February 2017), Vol. 579, pp. 1531-1540, [doi: 10.1016/j.scitotenv.2016.11.160](https://doi.org/10.1016/j.scitotenv.2016.11.160).

Atmospheric pollution in city centres and urban environments. The impact of scientific, regulatory and industrial progress, Alessandra Cincinelli and Athanasios Katsoyiannis; *Science of the Total Environment* (February 2017), Vol. 579, pp. 1057-1058, [doi: 10.1016/j.scitotenv.2016.11.057](https://doi.org/10.1016/j.scitotenv.2016.11.057).

On the summertime air quality and related photochemical processes in the megacity Shanghai, China, Ka Lok Chan, et al.; *Science of the Total Environment* (in press), [doi: 10.1016/j.scitotenv.2016.12.052](https://doi.org/10.1016/j.scitotenv.2016.12.052).

Regional assessment of exposure to traffic-related air pollution: Impacts of individual mobility and transit investment scenarios, Maryam Shekarzard, et al.; *Sustainable Cities and Society* (February 2017), Vol. 29, pp. 68-76, [doi: 10.1016/j.scs.2016.12.002](https://doi.org/10.1016/j.scs.2016.12.002).

The contribution of road traffic to particulate matter and metals in air pollution in the vicinity of an urban road, Dusan Jandacka, et al.; *Transportation Research Part D: Transport and Environment* (January 2017), Vol. 50, pp. 397-408, [doi: 10.1016/j.trd.2016.11.024](https://doi.org/10.1016/j.trd.2016.11.024).

## Emissions Measurements and Modelling

Comparative investigation of NO<sub>x</sub> emission characteristics from a Euro 6-compliant diesel passenger car over the NEDC and WLTC at various ambient temperatures, Jinyoung Ko, et al.; *Applied Energy* (1 February 2017), Vol. 187, pp. 652-662, [doi: 10.1016/j.apenergy.2016.11.105](https://doi.org/10.1016/j.apenergy.2016.11.105).

Vehicular road influence areas, María Huertas, et al.; *Atmospheric Environment* (February 2017), Vol. 151, pp. 108-116, [doi: 10.1016/j.atmosenv.2016.12.006](https://doi.org/10.1016/j.atmosenv.2016.12.006).

A tunnel study to validate motor vehicle emission prediction software in Australia, R. Smit, et al.; *Atmospheric Environment* (February 2017), Vol. 151, pp. 188-199, [doi: 10.1016/j.atmosenv.2016.12.014](https://doi.org/10.1016/j.atmosenv.2016.12.014).

Prediction of airborne nanoparticles at roadside location using a feed-forward artificial neural network, Abdullah Al-Dabbous, et al.; *Atmospheric Pollution Research* (in press), [doi: 10.1016/j.apr.2016.11.004](https://doi.org/10.1016/j.apr.2016.11.004).

Impact of waste cooking oil in biodiesel blends on particle size distributions from a city-car engine, Giancarlo Chiatti et al.; *Journal of the Energy Institute* (in press), [doi: 10.1016/j.joei.2016.11.009](https://doi.org/10.1016/j.joei.2016.11.009).

## FORTHCOMING CONFERENCES

### Emission Control Forum for Non-Road Mobile Machinery

19-20 January 2017, Frankfurt, Germany

[www.tbmevolution.com/index.php/conferences/coming-events/emission-control-forum-for-non-road-mobile-machinery-detail](http://www.tbmevolution.com/index.php/conferences/coming-events/emission-control-forum-for-non-road-mobile-machinery-detail)

Effects of aromatics, olefins and distillation temperatures (T50 & T90) on particle mass and number emissions from gasoline direct injection (GDI) vehicles, Rencheng Zhu, et al.; *Energy Policy* (February 2017), Vol. 101, pp. 185-193, [doi: 10.1016/j.enpol.2016.11.022](https://doi.org/10.1016/j.enpol.2016.11.022).

Impacts of additives on performance and emission characteristics of diesel engines during steady state operation, Esmail Khalife et al.; *Progress in Energy and Combustion Science* (March 2017), Vol. 59, pp.32-78, [doi: 10.1016/j.pecs.2016.10.001](https://doi.org/10.1016/j.pecs.2016.10.001).

Combustion and emission characteristics of diesel engine fueled with 2,5-dimethylfuran and diesel blends, Helin Xiao, et al.; *Fuel* (March 2017), Vol. 192, pp. 53-59, [doi: 10.1016/j.fuel.2016.12.007](https://doi.org/10.1016/j.fuel.2016.12.007).

Combustion, performance and emission analysis of a DI diesel engine using plastic pyrolysis oil, Ioannis Kalargaris, et al.; *Fuel Processing Technology* (March 2017), Vol. 157, pp. 108-115, [doi: 10.1016/j.fuproc.2016.11.016](https://doi.org/10.1016/j.fuproc.2016.11.016).

## Emissions Control, Catalysis, Filtration

Effect of NO<sub>2</sub> and water on the catalytic oxidation of soot, Jakob Christensen, et al.; *Applied Catalysis B: Environmental* (15 May 2017), Vol. 205, pp. 182-188, [doi: 10.1016/j.apcatb.2016.12.024](https://doi.org/10.1016/j.apcatb.2016.12.024).

Evaluation of Mn and Sn-Modified Pd-Ce-Based Catalysts for Low-Temperature Diesel Exhaust Oxidation, Chao Wang, et al.; *Environ. Control Sci. Technol.* (in press), [doi: 10.1007/s40825-016-0056-9](https://doi.org/10.1007/s40825-016-0056-9).

Coupled Heterogeneous and Homogeneous Hydrocarbon Oxidation Reactions in Model Diesel Oxidation Catalysts, Melanie Hazlett, et al.; *Environ. Control Sci. Technol.* (in press), [doi: 10.1007/s40825-016-0053-z](https://doi.org/10.1007/s40825-016-0053-z).

Urea-Water-Solution Properties: Density, Viscosity, and Surface Tension in an Under-Saturated Solution, Sauli Halonen, et al.; *Environ. Control Sci. Technol.* (in press), [doi: 10.1007/s40825-016-0051-1](https://doi.org/10.1007/s40825-016-0051-1).

Cold-Start Emission Reduction Potential and Limitations of Commercial Passive Hydrocarbon Adsorbers, Michelle Wiebenga, et al.; *Environ. Control Sci. Technol.* (in press), [doi: 10.1007/s40825-016-0052-0](https://doi.org/10.1007/s40825-016-0052-0).

Effect of barium sulfate modification on the SO<sub>2</sub> tolerance of V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub> catalyst for NH<sub>3</sub>-SCR reaction, Tengfei Xu, et al.; *Environmental Sciences* (in press), [doi: 10.1016/j.jes.2016.12.001](https://doi.org/10.1016/j.jes.2016.12.001).

Enhanced Performance of Ceria-Based NO<sub>x</sub> Reduction Catalysts by Optimal Support Effect, Junxiao Chen, et al.; *Environ. Sci. Technol.* (2017), Vol. 51 (1), pp. 473-478, [doi: 10.1021/acs.est.6b04050](https://doi.org/10.1021/acs.est.6b04050).

## Transport, Climate Change & Emissions

Big Data for Supporting Low-Carbon Road Transport Policies in Europe: Applications, Challenges and Opportunities, Michele De Gennaro, et al.; *Big Data Research* (December 2016), Vol. 6, pp. 11-25, [doi: 10.1016/j.bdr.2016.04.003](https://doi.org/10.1016/j.bdr.2016.04.003).

Analysis of alternative road construction staging approaches to reduce carbon dioxide emissions, Jan Krantz et al.; *Cleaner Production* (in press), [doi: 10.1016/j.jclepro.2016.12.023](https://doi.org/10.1016/j.jclepro.2016.12.023).

A review of developments in technologies and research that have had a direct measurable impact on sustainability considering the Paris agreement on climate change, Aoife Foley, et al.; *Renewable and Sustainable Energy Reviews* (February 2017), Vol. 68, Part 2, pp. 835-839, [doi: 10.1016/j.rser.2016.11.215](https://doi.org/10.1016/j.rser.2016.11.215).

Benefits on public health from transport-related greenhouse gas mitigation policies in Southeastern European cities, D.A. Sarigiannis, et al.; *Science of the Total Environment* (February 2017), Vol. 579, pp. 1427-1438, [doi: 10.1016/j.scitotenv.2016.11.142](https://doi.org/10.1016/j.scitotenv.2016.11.142).

*The forum will discuss best practices on how to meet Stage V regulation requirements at the lowest cost possible, address customer needs, learn about future state-of-the-art aftertreatment and SCR technologies, and fulfil engine development targets in terms of emissions, performance, fuel consumption.*

## SAE 2017 Light Duty Emissions Control Symposium

23-24 January 2017, Washington DC, USA

[www.sae.org/events/lde](http://www.sae.org/events/lde)

## 12<sup>th</sup> CONCAWE Symposium

20-21 March 2017, Antwerp, Belgium

[www.concawe.eu/calendar/24/17/Save-the-Date-12th-Concawe-Symposium](http://www.concawe.eu/calendar/24/17/Save-the-Date-12th-Concawe-Symposium)

*The symposium will explore scientific and technical challenges for the production and use of petroleum refined products in the EU in the 21<sup>st</sup> century.*

## NGV Global 2017 Conference

20-23 March 2017, Rotterdam, Netherlands

[www.ngv2017.com](http://www.ngv2017.com)

## 2<sup>nd</sup> Integer Emissions Summit & AdBlue<sup>®</sup> Forum Asia Pacific 2017

5-6 April 2017, Seoul, South Korea

[www.integer-research.com/conferences/ies-apac-2017](http://www.integer-research.com/conferences/ies-apac-2017)

*Topics of discussion will include the challenges that lie ahead for the heavy-duty commercial vehicle manufacturers in Asia Pacific, the key issues affecting the AdBlue<sup>®</sup> business in Korea, updates on the passenger car market in Asia Pacific, developments in Asia Pacific's leadership of the marine emissions technology market, the future of off-highway emissions regulations and how it will impact the Asia Pacific market, and emissions control regulations and technology innovations that shape the on- and non-road industries.*

## WCX17: SAE World Congress Experience

4-6 April 2017, Detroit, USA

[www.wcx17.org](http://www.wcx17.org)

## Real Driving Emissions

19-20 April 2017, Amsterdam, Netherlands

[www.bisgrp.com/portfolio/conferences/automotive/real-driving-emissions](http://www.bisgrp.com/portfolio/conferences/automotive/real-driving-emissions)

## 38<sup>th</sup> International Vienna Motor Symposium

27-28 April 2017, Vienna, Austria

<https://wiener-motorensymposium.at/en/home/>

*Topics for the symposium include latest findings in engine development, on new engines, fuel cells, hybrid technology, exhaust gas treatment and Real-Driving Emissions (RDE).*

## 9<sup>th</sup> AVL International Commercial Powertrain Conference 2017

10-11 May 2017, Graz, Austria

[www.avl.com/-/9th-international-commercial-powertrain-conference-2017](http://www.avl.com/-/9th-international-commercial-powertrain-conference-2017)

*The 2017 ICPC conference is entirely dedicated to CO<sub>2</sub> reduction and innovations improving operating efficiency.*

## NO<sub>x</sub> 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.*

## 10<sup>th</sup> Integer Emissions Summit & AdBlue<sup>®</sup> Forum China 2017

16-18 May 2017, Beijing, China

[www.integer-research.com/conferences/ies-china-2017](http://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.*

## 29<sup>th</sup> International AVL Conference "Engine & Environment"

1-2 June 2017, Graz, Austria

[www.avl.com/engine-environment-2017](http://www.avl.com/engine-environment-2017)

*Competition of powertrain systems to reduce CO<sub>2</sub> 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](http://www.sia.fr/evenements/66-sia-powertrain-versailles-2017)

*The conference will focus on the low CO<sub>2</sub> spark ignition engine of the future and its hybridization.*

## 21<sup>st</sup> ETH-Conference on Combustion Generated Nanoparticles

19-22 June 2017, Zürich, Switzerland

*The conference serves as an interdisciplinary platform for expert discussions on 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.*

[www.nanoparticles.ch](http://www.nanoparticles.ch)

**Deadline for abstract: early April 2017**

## 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.*

## 13<sup>th</sup> Integer Emissions Summit & AdBlue® Forum Europe 2017

27-29 June 2017, Dresden, Germany

[www.integer-research.com/conferences/ies-europe-2017](http://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<sub>2</sub> 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 non-road mobile machinery sector?, and what are the optimum strategies for meeting upcoming emissions legislation in the marine sector following European and IMO efforts to tighten emission standards.*

## VII International Congress on Combustion Engines

27-29 June 2017, Poznan, Poland

[www.congress.ptnss.pl/](http://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.*

## 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.*

## 10<sup>th</sup> Integer DEF Forum USA 2017

26-28 September 2017, San Antonio, USA

[www.integer-research.com/conferences/def-forum-usa-2017](http://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](http://www.aachener-kolloquium.de)

*The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.*

**Deadline for abstract: 15 February 2017**

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

23-25 October 2017, Brussels, Belgium

[www.gstic.org](http://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.*

## 10<sup>th</sup> Integer Emissions Summit USA 2017

7-8 November 2017, Pittsburgh, USA

[www.integer-research.com/conferences/ies-usa-2017](http://www.integer-research.com/conferences/ies-usa-2017)

## 10<sup>th</sup> 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](http://www.avl.com/web/guest/-/10th-avl-international-exhaust-gas-and-particulate-emissions-forum)

## 8<sup>th</sup> AVL Large Engines TechDays

11-12 April 2018, Graz, Austria

[www.avl.com/-/8th-avl-large-engines-techdays](http://www.avl.com/-/8th-avl-large-engines-techdays)