



Newsletter

July - August 2015

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Euro 6 Legislation and Industry Clean Diesel Campaign

As of 1 September 2015, all new cars sold in the European Union must meet the latest EU emissions legislation – Euro 6. To mark this occasion the automotive and motor trading industries are joining forces to launch www.cleandieseltech.eu.

The purpose of the online campaign is to raise awareness about clean diesel, which is made up of a three-part system that combines cleaner diesel fuel, advanced engines and effective emissions control technology. This campaign provides simple and accessible facts, figures and infographics to inform the general public and policy makers alike about the latest generation of diesel technology.



The campaign partners – the European Automobile Manufacturers' Association (ACEA), the Association for Emissions Control by Catalyst (AECC), the European Council for Motor Trades and Repairs (CECRA), and the European Association of Automotive Suppliers (CLEPA) – are calling for technology-neutral and results-oriented policy to ensure the uptake of the latest low-emission vehicles. With this support, they will continue to work together to ensure that modern diesel remains one of the key pillars in the portfolio of low CO₂ technologies for delivering clean and affordable transport for future generations.

This campaign follows a joint letter sent on 8 July 2015 by the Presidents of ACEA, AECC, CLEPA, and FuelsEurope (the latter representing the European Petroleum Refining Industry), to representatives of the European Commission, European Parliament and Council. The associations called on policy makers to help accelerate fleet renewal and the introduction of the cleanest vehicles, pointing out that political measures restricting the rollout of the new generation of diesel technology would undermine existing efforts to cut CO₂ emissions.

The joint open letter is at www.aecc.eu/content/pdf/150708%20Open%20Letter%20Diesel.pdf.

JRC Reports on On-road Emissions of Heavy-duty Vehicles

The Joint Research Centre (JRC) of the European Commission has recently released three new reports on Heavy-duty vehicles' on-road emissions measured with Portable Emissions Measurement Systems (PEMS).

The first report is the assessment of the PEMS procedures currently specified to evaluate In-Service Conformity in the Euro VI Regulation (EU) 582/2011.

The report concludes that there is no basis for changing the present testing prescriptions on payload (50% to 60%) as no clear relation between emissions and payloads has been identified. However, vehicle emissions are to be effectively limited under all possible payloads to be in compliance with the legislative requirements. In order to keep a close relation to the engine type-approval, the metrics (g/kWh) should be kept. The moving average window length (being one WHTC) used for PEMS data post-processing seems reasonable for the work-based window method. No change seems needed. The test duration shall be long enough to complete between 4 to 6 times the work performed during the Worldwide harmonized Heavy-duty Transient Cycle (WHTC) or produce between 4 to 6 times the CO₂ reference mass in kg/cycle from the WHTC, as applicable.

The report also concludes that the 90th cumulative percentile approach applied concurrently to other limitations (power threshold and cold start) seems to unnecessarily eliminate from the assessment a significant portion of vehicle's operation in urban areas. A robust assessment of urban emissions needs to be addressed and therefore the trip should always start with urban operation and the 20% (15%) power threshold needs to be at least lowered to 10% to ensure that all relevant types of urban driving are recognized and analysed during the PEMS testing.

In addition, the JRC says that cold start operation should be further assessed, as its exclusion seems to remove non-negligible NO_x emissions from the PEMS data analysis. The Heavy-duty In-Service Conformity assessment is at

http://publications.jrc.ec.europa.eu/repository/bitstream/JRC_95340/assessment-report-final_online.pdf.

The second report provides practical recommendations for heavy-duty engines and vehicles PEMS-based in-service testing. This guidance document is a JRC technical support document, contributing to the development of best practices with PEMS. It shall be used primarily for the preparation, the execution and the follow-up of the emissions tests with PEMS on Heavy-duty vehicles equipped with conventional combustion engines (gasoline, diesel, Compressed

Natural Gas, and Liquefied Petroleum Gas). The intention of the guide is to clarify some operational points of the PEMS procedure and to provide a guide for the application of PEMS inside and outside the regulatory context (In-Service Conformity testing of Heavy-duty engines as foreseen in Euro VI Regulations 582/2011 and 64/2012).

The Heavy-duty PEMS guidance document is at http://publications.jrc.ec.europa.eu/repository/bitstream/JRC95958/guidance_doc_hdv_final_online.pdf.

The third report is the final report of the EU-PEMS PM pilot programme; it presents the testing, data analysis and results of the programme which assessed the potential of portable instruments to measure Particulate Matter mass (PM) emissions on board of vehicles. The JRC concludes that PEMS PM measurement instruments are ready and available to measure PM mass using the mass collected on the filter and a real-time signal method. Therefore, they are suitable to be used as part of the PEMS procedure. The PEMS PM analysis procedure can follow the procedure performed to analyse the gaseous pollutants. As in the gaseous emissions, significant amount of PM mass may be excluded by applying current PEMS testing boundary conditions. Diesel Particulate Filter (DPF) regeneration can be detected by the PEMS PM instrumentation, however, solutions need to be discussed further on the analysis of trips with regeneration events.

The Heavy-duty PEMS PM report is at http://publications.jrc.ec.europa.eu/repository/bitstream/JRC95342/pems_pm_report_final_online.pdf.

Environment Committee adopts Report on National Emission Ceilings

On 15 July 2015 the Environment (ENVI) Committee of the European Parliament adopted its report on the Commission proposal to revise the National Emission Ceilings (NEC) Directive.

The ENVI Committee wants the future NEC Directive to include caps on mercury (Hg) from 2020, as well as the new caps that have been proposed by the Commission for emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOC), methane (CH₄), ammonia (NH₃), and particulate matter (PM_{2.5}) to be achieved by 2020 and 2030, in all Member States. The Committee stressed that more ambitious targets should be set in order to reach 2030 goals.

In order to ensure progress towards the goals set for 2030, the ENVI Committee suggests that midpoint emissions targets for 2025 be added to the legislation. The midpoint targets would be fully binding for all pollutants, with the exception of methane.

The Committee also voted to remove the Commission proposal for flexibility allowing Member States to

offset reductions in emissions from NO_x, SO₂ and PM_{2.5} from international shipping.

MEPs also called on the Commission to strengthen EU rules on emissions testing, including for diesel vehicles, to ensure tests reflect real-world emissions and vehicles remain compliant as they get older.

The report was backed by a coalition of socialist, liberal and green MEPs. However, UK Conservative MEP and Rapporteur, Ms Julie Girling, took the unusual step of voting against her own report. She said that “unreasonable targets” that tightened the Commission’s original 2013 proposals could derail future talks with the Council of Ministers over the bill.

The ENVI report was adopted by 38 in favour, 28 against, and 2 abstentions. A vote in Parliament’s plenary session is scheduled in October 2015.

The ENVI report is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONGML%2bREPORT%2bA8-2015-0249%2b0%2bDOC%2bPDF%2bV0%2f%2fEN.

EU Emission Inventory Report 1990-2013

On 2 July 2015 the European Environment Agency (EEA) published the annual EU emission inventory report 1990-2013 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP).

The Gothenburg Protocol to the UNECE LRTAP Convention contains emissions reduction commitments that have to be met by Member States but also for the EU-15 from 2010 onwards for nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), sulfur oxides (SO_x), ammonia (NH₃), carbon monoxide (CO), primary particulate matter (PM), heavy metals, persistent organic pollutants (POPs) and polycyclic aromatic hydrocarbons (PAHs).

Across the EU-28, SO_x emissions have fallen the most since 1990 (87% reduction), followed by CO (66%), NMVOCs (59%) and NO_x (54%). NH₃ emissions have declined less since 1990 than emissions of the other main pollutants (27%). The rate at which emissions are decreasing for these pollutants has, however, slowed down over the last decade.

The EU-15 met its limits for emissions of the four pollutants. However, eight EU Member States exceeded one of their international emissions ceilings in 2013, and three exceeded two ceilings. Five Member States (Austria, Belgium, France, Ireland and Luxembourg) reported NO_x emissions higher than their Gothenburg ceilings.

The European Economic Area (EEA) member countries Liechtenstein, Norway and Switzerland, also have emissions ceilings specified under the Gothenburg Protocol. In 2013, Liechtenstein exceeded

two ceilings (NO_x and NH₃) and Norway one ceiling (NH₃). Switzerland complied with all its ceilings.

NO_x emissions went down in road transport, primarily as a result of fitting catalysts to vehicles (a move driven by the legislative 'Euro' standards), the report says. Nevertheless, the sector still represents the largest source of NO_x emissions, accounting for 39% of total EU-28 NO_x emissions in 2013.

Emissions of primary PM₁₀ and PM_{2.5} particulate matter both declined by around 20% between 2000 and 2013. For the first time, this year's report also documents black carbon (BC) emissions, both an air pollutant and an important short-lived climate forcer. For the 19 Member States that reported BC emissions, two thirds reported decreased emissions since 1990.

EEA Technical Report No 8/2015 is at www.eea.europa.eu/publications/lrtap-emission-inventory-report.

Commission Report on Alternative Fuels Transport Systems

On 10 July 2015 the Directorate General for Transport (DG-MOVE) of the European Commission released a state-of-the-art report on alternative fuels transport systems.

The report, based on the contributions of the Expert Group on Future Transport Fuels, provides an update of the latest developments in the field of alternative fuels and the market uptake of alternative fuel transport systems and related infrastructure in the EU. This is expected to assist Member States in preparing their national policy frameworks. The report also contains some recommendations to Member States to facilitate the achievement of the objectives of the Directive 2014/94/EU on the deployment of alternative fuels infrastructures as well as to the Commission to pursue a further market uptake of alternative fuel transport systems in the EU.

The use of alternative fuels in transport will be a key factor for the EU economic growth and employment and for the industrial competitiveness in the next years. Alternative fuels have the potential to play an important role in achieving Europe's objectives to reduce greenhouse gas emissions from transport by 60% by 2050 relative to 1990, contributing to the EU 2030 climate and energy policy goals. Therefore there is a need for a long-term, technology-neutral, stable and ambitious policy framework to give confidence to the industry in order to make the necessary investments to promote alternative fuel transport systems and the related infrastructure.

The report is at <http://ec.europa.eu/transport/themes/sustainable/studies/doc/2015-07-alter-fuels-transport-syst-in-eu.pdf>.

New VCD Umweltliste issued

Presenting its latest annual Car Environment list in Berlin, the German transport club VCD said that new cars in Germany have again become a little cleaner but progress is still too small. The systematic improvement is to be welcomed, but revolutionary concepts were missing.

The VCD Umweltliste combines ratings for CO₂ emissions (60%), noise emissions (20%) and pollutant emissions of some 400 cars. In the first three places were vehicles with different types of drive: a hybrid, a Diesel and a natural gas vehicle. The winner was the same as last year - the Lexus CT 200h hybrid. It was followed by the only new entrant in the list, the revised Peugeot 208 Active BlueHDi 100 and then, with the same fuel economy, the VW eco Up, Seat Mii and Skoda Citigo CNG EcoFuel Green tec. Electric cars and plug-in hybrids are recorded in a separate list.

VCD Chairman Michael Ziesak said that the 2020 CO₂ target of 95 g/km is already achieved by 71 vehicles. He urged the European Commission to set a fleet average of 65-68 g CO₂/km for 2025. In addition, measurements should be implemented in real traffic, said Mr Ziesak.

VCD also expressed concerns over the concentration of the German auto industry on the premium segment, saying that this currently earns good money, but that will not be the case in 20 years. For VDA (the German association of the automotive industry), spokesman Eckehart Rotter said that the general aim was to optimize conventional internal combustion engines and at the same time develop alternative drives.

UBA criticises German Transport Sector

The German transport sector needs to step up efforts to combat climate change, the country's environment agency UBA said on 4 August 2015, blaming a trend towards more powerful, heavier cars and an increase in freight transport for a rise in emissions.

Transport, which accounts for almost a fifth of Germany's overall greenhouse emissions, is the only sector that has not managed to reduce its emissions compared to 1990, UBA said.

"Because more and more freight is being transported by road and the trend is going towards heavier cars with more horsepower, more economical engines have served little purpose for climate protection," said UBA president Maria Krautzberger.

The agency called for more freight transport to be transferred to rail and ships after the number of goods transported by road rose by almost a third between 2000 and 2013. It also suggested extending a road toll on lorries to vehicles that are heavier than 3.5 tonnes and called for tough CO₂ limits for lorries.

London Assembly Report “Driving away from diesel”

On 14 July 2015 the Environment Committee of the London Assembly, an elected watchdog body for the London Mayor’s decisions and actions, released a new report titled “Driving away from diesel – Reducing air pollution from diesel vehicles” which examines London’s efforts to reduce pollution from diesel cars, lorries, buses and taxis.

The report makes recommendations to ensure NO₂ compliance in London as soon as possible, in order to clean up the capital’s air quality.

Diesel road traffic is responsible for about 40% of London’s NO_x emissions (and a broadly similar proportion of PM₁₀). The proportion has risen in recent years, for two reasons, the report indicates: Government policies to reduce carbon emissions have indirectly promoted and incentivised the use of diesel over petrol, leading to an increase in the number of diesel cars on the road. However, European vehicle emissions standards, designed to reduce the emissions from diesel vehicles have (at least until very recently) had only limited success.

The London Assembly notes that the Euro standards have so far failed to reduce NO_x from diesel vehicles in urban driving, and in some cases have made emissions worse. The report says that even with the newest standard, the testing is inadequate and some certified Euro 6 diesel cars emit several times more pollution than the standard allows in real urban driving. As a consequence, the London Mayor should press for effective new tests to be brought in soon.

The report eventually recommends that the Ultra-Low Emission Zone (ULEZ) is introduced before 2020 with a wider zone; that the proposal for a scrappage scheme linked to replacing non-compliant vehicles with low-emission vehicles is taken forward; and that questions such as how zero-emission capable taxis will be available from 2018 and how the necessary infrastructure (rapid charging network and/or hydrogen stations) will be delivered are considered. The London Assembly also recommends for the Mayor to work closely with the boroughs and national government to show how the whole of London could achieve compliance with European air pollution limits by 2020.

The report is at www.london.gov.uk/sites/default/files/Driving%20Away%20from%20Diesel%20final%20report.pdf.

Health Impacts of Air Pollution in London

On 15 July 2015 the London Mayor, Boris Johnson, published an update on the implementation of his air quality strategy and a new health impacts study.

The second London Mayor’s Air Quality Strategy progress report includes the usual update on the implementation of measures to improve air quality in London, but also contains analysis of recent monitoring trends, exposure and inequalities associated with air pollution.

The accompanying health impact study was commissioned from King’s College London by the Greater London Authority and Transport for London and addresses health impacts associated with PM_{2.5} and, for the first time, NO₂ pollution.

This study shows that in 2010 there were up to 5900 deaths across London associated with NO₂ long-term exposure. At the same time 3500 deaths were associated with long-term exposure to PM_{2.5} in 2010, a decrease from the 4300 deaths in 2008. The PM_{2.5} and NO₂ figures can be combined to create a total figure of up to 9400 equivalent deaths in 2010.

The report also indicates that in 2010 nearly half the health effects of long-term exposure to air pollution were caused by pollution from outside London, as well as 75% of cardiovascular hospital admissions associated with PM_{2.5}.

Reductions in pollutant levels between 2010 and 2020 will result in nearly 4 million life years being saved, the report notes. This excludes the expected impact of the Ultra-Low Emission Zone, which will lead to significant reduction in the number of people living in areas where levels of NO₂ exceed legal limits.

Based on this, the London Mayor has renewed his call on the UK government and the EU to urgently take further action to improve air quality in London, across the UK and Europe. He believes that given the improved understanding of the health effects associated with NO₂, the UK government must now rule out expansion of Heathrow airport.

The reports are at www.london.gov.uk/priorities/environment/clearing-london-air/understanding-the-health-impacts-of-air-pollution-in-london.

New Study launched on How to tackle Air Pollution in London

On 27 July 2015 the Environmental Research Group at King’s College London and think tank Policy Exchange announced that they are joining forces to produce a major new study into policies to improve air quality in London.

As part of the study, King’s College London will conduct new analysis and projections of air pollution and air quality levels to 2025 under a range of policy scenarios, using the well-established London Air Quality Toolkit model. There will also be calculations of the health impacts associated with air pollution, as well as

investigations on the link between air pollution and wider deprivation in London.

The study, to be carried out over the next few months, will provide independent estimates of likely air pollution levels once current policies are implemented, and identify what additional steps are required in order for London to meet legal air quality limits. The work will build on a 2012 Policy Exchange report: 'Something in the air: the forgotten crisis of Britain's poor air quality.'

The new study is being supported by the charity foundation Trust for London, the Liebreich Foundation, and the City of London Corporation.

London Mayor unveils Ultra-Low Emission Vehicle Delivery Plan

On 22 July 2015 Boris Johnson, the Mayor of London, released an Ultra-Low Emission Vehicle (ULEV) delivery plan for London.

ULEV is the collective term for battery electric vehicles (BEVs), plug-in hybrid vehicles (PHEVs), range-extended electric vehicles (RE-EVs), and hydrogen fuel cell electric vehicles (FCEVs). The ULEV delivery plan provides a wide range of actions to support the uptake of electric and ultra-low emission vehicles over the next ten years.

The ULEV delivery plan includes a commitment to the ultra-low emission discount for the congestion charge and to improving it as emission standards improve, so only the cleanest vehicles are incentivised; exploring preferential access for ULEV vehicles when new infrastructure is opened; a £65 million (€87 million) programme of zero emission-capable London taxi top-up grants, as well as decommissioning grants for taxis older than 10 years to encourage an accelerated take-up of zero emission-capable taxis; launching a new Low Emission Commercial Vehicle (LECV) programme by the end of 2015 to accelerate the development, supply and wider uptake of low-emission commercial vehicles and refuelling infrastructure; a trial of inductive wireless charging in the bus fleet by 2016; undertaking trials of 'geofencing' to harness new technologies and target the potential air quality benefits; working with the car club industry to identify and put in place infrastructure to support the industry's ambitions for at least 50% of their fleets to be ULEV by 2025; and developing a new infrastructure procurement framework for charge points.

The plan is at <https://tfl.gov.uk/cdn/static/cms/documents/ulev-delivery-plan.pdf>.

Oxford, UK proposes banning Petrol and Diesel Cars from City Centre by 2020

Proposals from Oxfordshire County Council, UK, aimed at cutting air pollution would see only electric vehicles

allowed in the city centre of Oxford, with the policy to be enforced across the whole city by 2035.

But the plans for a zero emission zone have been criticised by Oxford City Council board member for environment John Tanner, who described them as unworkable. The county council will vote on Local Transport Plan Four, which contains the proposals, at a meeting on 8 September 2015.

Last year the average hourly level of the pollutant nitrogen dioxide in Oxford High Street was 47 µg/m³ which is above the EU target of 40 µg/m³.

French Senate's Proposals on Air Quality

On 15 July 2015 the French Senate's inquiry committee on the economic and financial cost of air pollution presented their report 'Air Pollution: the cost of inaction'.

The Senate inquiry committee, established in February 2015, estimated the annual cost of air pollution in France at €101.3 billion. This amount accounts for between €68 and €97 billion of health-related costs (medical treatments, premature death, absenteeism, etc.) and €4.3 billion of non-health-related costs (decline in agricultural yield, degradation of buildings, preventative expenditure, etc.).

The report, adopted unanimously, includes 61 proposals. Amongst them, the report suggests to propose to EU partners a Euro 7 standard for vehicles that would align gasoline and diesel emissions limits; to align taxation between gasoline and diesel fuels by 2020; to set up an independent experts committee on real-world emissions and the Euro 6 standard; to set up an independent technical committee on reliability of particulate filters; to base eco-labels of cars on their real emissions rather than their Euro standards; to introduce mandatory labels for new and second-hand cars including air pollutants and CO₂ with a ranking that would depend on the vehicle's type of use; to progressively align European pollution exposure limits with the World Health Organization (WHO) guidelines; to emphasize links between air pollution and climate change in international negotiations; to incentivize railway operators to move away from diesel locomotives and increase electrified railways.

The Senate also proposes to organize a broader dialogue on diesel between parliamentarians, NGOs, car manufacturers, and fuel refiners.

The report (in French) is at www.senat.fr/rap/r14-610-1/r14-610-11.pdf.

Sweden closes low CO₂ Environmental Incentives for 2015

The Swedish Transport Agency (Transportstyrelsen) has announced that the kr215 million (€22.51 million)

allocated to incentives for low-emission car buyers in 2015 has already been spent.

The incentive is granted to purchasers of cars with CO₂ emissions up to 50 g/km. So far in 2015, about 3600 applications have been granted. A further 2000 have applied. Those who have purchased a car at the end of July or later will receive no incentive payment in 2015. The government has stated that bonuses will be granted in 2016 instead.

Belgian Vehicle Inspection Soot Test does not work for Modern Diesel

The Flemish newspapers of 'Mediahuis' have reported that the free acceleration soot test that is part of the motor vehicle inspection in Belgium does not work for new diesel cars. The Flemish Mobility organization VAB therefore argues for a drastic revision of the environmental inspection of vehicles.

During the vehicle inspection test, soot particle emissions are measured at high engine speed. This is no longer possible for new diesels with maximum engines speeds limited to 2500 or 3000 rpm – to prevent engine damage, manufacturers claim.

"In practice, this means that the European periodic environmental inspection has become useless," said professor Pecqueur of the Thomas More School. "The test is not in accordance with the driving behaviour of diesel drivers," added VAB spokesperson Mr Matienko.

Flemish Minister of Mobility Ben Weyts is reported to wish to stick to the soot test for the time being but may be willing to review the vehicle inspection process with an 'open spirit'.

VITO AirQmap on Black Carbon Exposure

On 6 July 2015 VITO, the Flemish Institute for Technological Research, issued a press release on AirQmap, a platform allowing people with limited or no air pollution expertise to carry out air quality measurements and to get a detailed view on the air quality at street level.

AirQmap enables the construction of maps of the exposure of cyclists and pedestrians to Black Carbon and has been successfully used in cities such as Antwerp, Ghent, Brussels, Liege, Amsterdam and Oslo, and in Belgian municipalities such as Mol, Beringen and Zutendaal.

Some of the resulting online maps can be consulted on the website www.airqmap.com.

Russia considers delaying Euro V

The Russian Industry and Trade Ministry is looking to delay their introduction of the Euro V emissions standard for commercial vehicles, according to a Kommersant report.

The final decision will be made by the Eurasian Economic Commission which comprises representatives from Russia, Belarus, Kazakhstan, Kyrgyzstan and Tajikistan. The Euro V emissions standard was due to be adopted in Russia from 1 January 2016, but is likely to be delayed until the third quarter of 2017 if all members of the trade bloc agree.

There are reported to be a number of reasons for Russia wanting to impose the delay; not least the facts that the light-vehicle market has fallen by 35% in the first seven months of 2015 and the medium and heavy-duty truck market has effectively halved as a result of the accelerated slump in the Russian economy. In addition it is thought that the Trade Ministry is concerned about the effect on Russia's oil producing infrastructure and the effect that upgrading refineries will have on production.

NORTH AMERICA

Canada adopts Tier 3 Emission Standards

On 29 July 2015 Environment Canada announced that the final Tier 3 regulations were published in the Canada Gazette, Part II.

Canada's Tier 3 regulations will introduce more stringent air pollutant emission standards for new passenger cars, light-duty trucks and certain heavy-duty vehicles (such as delivery vans) starting with the 2017 model year. They will also lower limits on the allowable sulfur content of gasoline beginning in 2017, aligning Canadian standards with the US.

Once the Tier 3 vehicle standards reach full stringency with the 2025 vehicle model year, the new standards will represent a reduction of up to 80% in smog-forming air pollutant emissions for new vehicles compared to the current Tier 2 vehicle standards. By 2030, the Tier 3 vehicle and fuel standards are expected to result in reductions in on-road vehicle fleet emissions of sulfur dioxide (43%); carbon monoxide (22%); volatile organic compounds (15%); NO_x (13%); and PM_{2.5} (8%).

Environment Canada estimates that the Tier 3 vehicle and fuel standards will result in cumulative health and environmental benefits of \$7.5 billion (€5.3 billion) and cumulative fuel and vehicle related costs of \$2.7 billion (€1.9 billion) by 2030. Accordingly, the projected benefits would exceed the projected costs by a ratio of almost 3:1.

The projected health benefits from the Tier 3 standards are indeed significant. Between 2017 and 2030, it is estimated that reductions in air pollutants from vehicles will prevent about 1400 premature deaths, nearly 200 000 days of asthma symptoms and 2.8 million days of acute respiratory problems in Canada.

The Tier 3 regulation is at <http://canadagazette.gc.ca/rp-pr/p2/2015/2015-07-29/html/sor-dors186-eng.php>.

Navistar fined for violating California Air Emissions Regulations

On 21 July 2015 the California Air Resources Board (ARB) announced that Navistar Inc. paid \$250 000 (€220 000) in penalties for failing to follow proper testing procedures for one of its Diesel Particulate Filters (DPF).

California's verification procedure requires compliance testing for each category of DPF after a certain number of units are sold or leased in the State market. Results of these tests must be submitted to ARB after each phase of testing in the form of a compliance report. Navistar failed to follow the in-use compliance requirements of the verification procedure for the DPX™ Catalyzed Soot Filter System. The company had sold more than 200 in California, with many installed on school buses in San Diego, which should have triggered the required testing.

Navistar has agreed to follow all required procedures and paid \$187 500 to the Air Pollution Control Fund to support air quality research, and \$62 500 to the San Joaquin Valley Air Pollution Control District to clean up school bus fleets throughout the state.

Google Street View Vehicles to map Outdoor Air Quality in US Cities

On 28 July 2015 Aclima Inc., a San Francisco-based company that designs and deploys environmental sensor networks, announced a new partnership with Google Earth Outreach to map and better understand urban air quality.

The partnership enables a paradigm-shift in environmental awareness by equipping Google Street View cars with Aclima's mobile sensing platform. As a pilot, in August 2014, three Google Street View cars performed a month-long system test in Denver during the DISCOVER-AQ study conducted by NASA and the US Environmental Protection Agency (EPA). Concentrations of nitrogen dioxide (NO₂), nitric oxide (NO), ozone (O₃), carbon monoxide (CO), carbon dioxide (CO₂), methane (CH₄), black carbon, particulate matter, and Volatile Organic Compounds (VOCs) were measured. The cars clocked 750 hours of drive time and gathered 150 million data points, correlated with data from EPA stationary measurement sites. EPA provided scientific expertise in study design and instrument operations.

Later this year Aclima and Google will expand mapping efforts to San Francisco and work with communities and scientists to explore applications for this new environmental tool.

US Commerce Department Report on Market for Environmental Technologies

The US Department of Commerce's International Trade Administration (ITA) has released a report assessing the current global market for environmental technologies, including air pollution control technologies, for US exporters.

The report is part of ITA's "Top Markets Report" series, which identifies and ranks export markets where government resources will have the greatest impact in terms of increasing commercial opportunity for US companies.

The report said that the global market for environmental technologies goods and services reached \$917 billion (€805 billion) in 2013. The US is host to the single largest market, accounting for \$286.1 billion of the global market. US environmental companies exported \$48.4 billion worth of goods and services in 2013. Of this amount, US industry revenues for air pollution control totalled \$19.3 billion, including equipment, instruments, and attendance services.

The report also includes country case studies that summarize export opportunities in selected markets. The countries highlighted include Brazil, China, the Czech Republic, India, Indonesia, Mexico, Poland, Saudi Arabia and Turkey.

The report is at

http://export.gov/industry/environment/eg_main_086862.asp.

California Report on Future Transport Refrigeration Technologies

The California Air Resources Board (ARB) has announced the release of the draft document "Technology Assessment: Transport Refrigerators."

It examines technologies projected for development over the next five to ten years that can be applied to transport refrigeration systems and insulated cargo vans to reduce fuel consumption, greenhouse gases and criteria pollutant emissions (e.g. nitrogen oxides and particulate matter). The draft assessment discusses each technology by providing a basic description, the current state of development or commercial readiness, economics, potential emission reductions, advantages, and key performance parameter issues and deployment challenges.

The assessment can be downloaded from

www.arb.ca.gov/msprog/tech/techreport/tru_07292015.pdf.

CENTRAL & SOUTH AMERICA

Chile proposes Santiago Vehicle Restrictions and Euro 6 Standards

In a presentation to the Santiago regional Government on 21 July 2015, Chile's Environment Minister Pablo

Badenier proposed imposing tighter restrictions on vehicle use, a permanent ban on heating or cooking with firewood, and higher standards for emissions from industrial sources in a new decontamination plan for the country's capital, Santiago.

Additional measures are required following the declaration of the Santiago Metropolitan Region as a saturated zone for levels of breathable particulate material. The proposals include restricting the use of motor vehicles during winter months, from May to August; banning the use of firewood for domestic heating and cooking in the region; imposing Euro 6 emissions standards for light- and medium-duty vehicles and buses beginning in 2017; restricting the use of trucks that fail to meet emissions standards; cutting emissions of particulate material from industry by nearly 75%; speeding the renewal of sewage treatment plants to reduce emissions of ammonia; and halting operations of the largest polluters during critical episodes.

The Government plans to publish a draft version of the new decontamination plan in November 2015, which then will be available for public consultation through March 2016.

EURASIA

Azerbaijan makes Progress on Euro 5 Standards

On 30 July 2015 Azerbaijan's state oil refinery company SOCAR announced it will start producing Euro 5 gasoline in 2018. By 2020, all gasoline fuel produced will meet the Euro 5 standard.

Azerbaijan switched to the Euro 4 environmental standard in April 2014, which has led to a decrease in car imports as the standard significantly restricts the import of used cars. Last year saw a 59% drop in cars imported into the country.

Earlier, SOCAR said that after the modernization of the Heydar Aliyev Baku oil refinery, gasoline production in Azerbaijan would increase from 1.3 to 2.2 million metric tons, diesel fuel from 2.3 to 2.9 million metric tons, while jet fuel would jump from 0.7 to one million metric tons produced, thus, meeting the country's fuel needs at least until the end of the 2020s.

The company's goal is to process 7.5 million tons of oil at the refinery until 2030, which in turn will lead to the annual production of three million tons of diesel fuel and 2.4 million tons of gasoline. This will ensure domestic demand in the country for high-quality fuel and ensure exports in small quantities.

Further improvement in the quality of Euro 4 and Euro 5 gasoline will become possible after the commissioning of a new oil and gas processing petrochemical complex

by SOCAR, which is planned to be operational in late 2020.

ASIA PACIFIC

India proposes Dates for BS V and VI

Speaking at a Society of Indian Automobile Manufacturers (SIAM) conference, Vijay Chhibber, road transport and highways Secretary, said that Bharat Stage (BS) V emission norms will be rolled out by 2019 and BS VI norms by 2023.

Mr Chhibber was critical of the auto sector at a time when the industry has been lobbying against skipping BS V emission norms and proposing moving directly to BS VI norms for vehicles. "Adequate time has been given...Timelines for rollout of BS V and BS VI fuel norms have been set and the industry should accept that and get on with it," Mr Chhibber said.

One day after the Secretary's announcement, road transport Minister Nitin Gadkari asked automobile manufacturers to leapfrog from BS IV to BS VI to reduce vehicular pollution. Minister Gadkari's appeal comes at a time when green activists are pushing this demand following the recent National Green Tribunal order on high level of air pollution in Delhi.

Mr Gadkari also asked automobile manufacturers to shift focus from manufacturing diesel-fuelled vehicles to those running on cleaner fuels such as biodiesel, bio-Compressed Natural Gas (CNG), hybrid and electricity.

Finally, the Indian government plans to set up a separate department for transportation within the Ministry of road transport & highways, to address the environmental and safety regulations on vehicles.

India to step up Air Pollution Awareness Campaign

The Times of India has reported that India's Environment Ministry will launch a massive awareness campaign to address the persisting air pollution problems in the country.

Environment Minister Prakash Javadekar said that he has adopted a "consultative and cooperative" approach to improve air quality in the country, which has been ranked one of the poorest in the world. He has released the action points that were submitted by the National Capital Region of Delhi, Haryana, Uttar Pradesh and Rajasthan. So far, three review meetings with the States have taken place since April 2015.

On vehicular pollution, the Delhi government has launched a surveillance programme against fuel contamination of both diesel and petrol. In addition, 3734 overloaded vehicles have been seized in the past seven months. Delhi's transport department is also planning to implement a remote-sensing pollution control checking system inspired by Kolkata, and plans

to deploy 1380 semi low-floor buses, 500 mini-buses and 1000 cluster buses by the end of 2016 to increase public transport.

Meanwhile, the northern State of Haryana reported that only BS IV compliant vehicles can now be registered in the State.

ICCT Analysis of Heavy-duty Vehicle Market in India

On 11 August 2015 the International Council on Clean Transportation (ICCT) published a comparative analysis of Heavy-Duty Vehicle (HDV) sales in India.

As the Government of India has begun the formal process of considering regulation of the fuel efficiency of new trucks and buses, the primary objectives of this paper are to analyse HDV sales in India in terms of manufacturer market share and typical vehicle characteristics, and to compare those to other major markets, such as the EU, US, and China. In addition, engine attributes of Indian HDVs are explored in detail in order to develop a draft proposal for categorizing engines for the purpose of regulation.

This working paper is the second in a series of papers that touch on topics related to regulatory development for HDV efficiency in India. A previous paper on HDV test procedure options, recommended that India pursue an engine-based regulation as a first phase, with an eye towards transitioning to a more comprehensive (i.e. "full vehicle") programme in the future. Forthcoming papers in the series will include results from an industry survey, a regulatory test cycle analysis, and an engine technology potential report.

The report is at

www.theicct.org/sites/default/files/publications/ICCT_India-HDV-market_20150809.pdf.

China to become World's Largest Market for Green Cars

Reports in China say the country is set to pass the US and become the world's largest market for new energy vehicles in 2015, as volumes surge helped by Government incentives.

The China Daily reported that in the first seven months of 2015, sales of new energy vehicles (plug-in hybrids and electric vehicles) increased by 2.6 times year on year to nearly 90 000, despite a weak overall market. Production exceeded 95 500, also more than double the 2014 level.

Alarmed by deteriorated air quality in cities across China, Governments at central and local level are introducing incentives such as lower taxes to encourage market take-up. In Beijing, for example, 'special treatments' have been introduced for new

energy vehicles, including free parking and exemption from number plate traffic controls.

The report added that by 2020, China plans to have five million new energy vehicles on its roads as well as 4.5 million charging stations.

The number of pure electric cars and plug-in hybrids produced domestically should top 1 million by 2020, according to the "Made in China 2025" plan for Chinese manufacturing released in May 2015.

China to set up Shipping Emissions Control Areas

On 31 August 2015 the Chinese Ministry of Transport released a special action plan for ship and air pollution control in 2015-2020, *Xinhua* news agency reported.

The plan includes the setting up of ship air pollutants emission control areas and puts forward measures such as promoting ship structural adjustment, launching special port pollution treatment, and encouraging use of Liquefied Natural Gas (LNG) and shore power use by docked ships.

According to the plan, China targets to reduce the emission of marine sulfur oxide, nitrogen oxide and particulates in Pearl River Delta, Yangtze River Delta, and Bohai-Rim waters in 2020 by 65%, 20% and 30% from those in 2015, respectively.

AFRICA

Ghana launches Programme to test Vehicle Emissions

The Environmental Protection Agency (EPA) of Ghana has launched a programme to test emissions from vehicles as part of measures to reduce air pollution in the country.

The month-long nationwide pilot programme is expected to collect data to serve as a prelude to emission tests becoming part of the roadworthy test before vehicles can be registered. The EPA has developed guidelines for motor emissions and is in the process of transforming the guidelines into standards.

The Ghana police service will set up spots along designated roads in the regional capitals, where vehicles will be subjected to voluntary testing for levels of emissions. The programme seeks to ensure that all motor vehicles and motorized equipment in the country and those imported are less polluting or fall within acceptable emission standards. Data generated from the trial testing programme, apart from augmenting the vehicular emissions inventory in Ghana, will also serve as a useful guide in determining how realistic the motor emission standards are.

Apex Pollution Control Company Limited (Apex-PCCL), the Ghana Standards Authority (GSA),

National Petroleum Authority (NPA), Motor Traffic and Transport Department (MTTD), National Road Safety Commission (NRSC), Driver and Vehicle Licensing Authority (DVLA) and the Ghana Private Road Transport Union (GPRTU) are collaborating with EPA in the trial tests.

In the near future, the test is expected to become mandatory, and vehicles that do not meet emission standards will not be issued with roadworthy certificates.

Ghana's efforts to reduce vehicular emissions has included over the years the phasing out of leaded gasoline, procurement of crude oil with low sulfur content and restriction on age limit of vehicles imported into the country.

GENERAL

Emissions Analytics Data on Cold Start NOx Emissions

In their latest infographics on vehicle emissions, Emissions Analytics – a company conducting commercial on-road emissions measurements – says that during cold starts, gasoline vehicles produce 326% more NOx than they do under normal operating conditions, whereas diesels, although higher NOx emitters, produce only 53% more during cold starts.

Nevertheless, their data does show cold start emissions from diesels being some 4.8 times higher than from gasoline vehicles.

More information is at <http://emissionsanalytics.com/free-data>.

ICCT Assessment of Heavy-duty Natural Gas Vehicle Emissions

On 30 July 2015 the International Council on Clean Transportation (ICCT) published a white paper analysing the implications of a growing natural gas vehicle fleet on the emission benefits of the US Heavy-duty Vehicle "Phase 2" greenhouse gas (GHG) rulemaking.

The report includes a stock turnover model analysis of the US medium- and heavy-duty vehicle fleet. The analytical results are presented in terms of the total potential carbon dioxide equivalent (CO₂e) emissions across scenarios with varying vehicle efficiency, methane emissions, and natural gas penetration among the fleet.

The study points to several high-level conclusions. First, minimizing overall well-to-wheels leakage is the key determinant in whether trucks using natural gas will offer long-term benefits as part of an overall shift to a more efficient and lower-carbon heavy-duty vehicle fleet. Keeping well-to-wheel natural gas leaks at or below 1% throughout the supply chain is critical to ensuring a climate benefit.

Second, innovation will be needed for natural gas trucks to keep pace with diesel and gasoline engine efficiency improvements and thus to maintain their carbon reduction benefits, although the effect is less critical than reducing methane leakage.

Finally, the decision as to which global warming potential (i.e. 100- or 20-year) to use is approximately as important as an additional 1% of methane leakage, indicating the importance of considering both GHG time accounting metrics.

The report is at

http://theicct.org/sites/default/files/publications/ICCT_NG-HDV-emissions-assessmnt_20150730.pdf.

Report comparing Total Cost of Ownership of Diesel versus Gasoline

A new report by University of Michigan Transportation Research Institute, and sponsored by Robert Bosch LLC, compares Total Cost of Ownership (TCO) of clean diesel and gasoline vehicles.

Thousands of gasoline and diesel versions of the same or nearly identical vehicles sold in 2012-13 have been compared based on US market characteristics including fuel pricing, depreciation, repairs, etc., including Audi, BMW, Mercedes-Benz and Volkswagen passenger cars and SUVs, and Chevrolet, Ram, Ford and GMC medium-duty pickup trucks. The TCO – depreciation, fuel costs, repairs, maintenance, insurance, and fees and taxes – is often much less for diesel vehicles as compared to gasoline versions of the same vehicles, mostly ranging from \$2000 to \$7000 (€1750 – €6125) over 3-5 years.

While most new diesel vehicles cost more than their gasoline counterparts, resale values after three years are 30-50% higher for diesel passenger cars and SUVs, and 60-70% higher for diesel medium-duty pickup trucks. The percentages are even higher after five years of ownership.

In addition, diesels incur lower fuel costs: 12-27% less for passenger cars and SUVs and 4-8% less for medium-duty pickups over three- and five-year periods respectively.

The report nevertheless stresses that diesels are not without their challenges, including the potential increase in the cost of diesel fuel compared to gasoline, and the resulting need for diesels to continue to improve their fuel economy to maintain their TCO advantage.

The report is at

<http://deepblue.lib.umich.edu/bitstream/handle/2027.42/111893/103193.pdf>.

ICCT Report on CO₂ Emissions from New Cars in the EU in 2014

On 9 July 2015 the International Council on Clean Transportation (ICCT) released a new briefing summarizing CO₂ emissions levels of new passenger cars in the EU.

The report uses the provisional data released by the European Environment Agency (EEA) on 13 May 2015. The EEA data shows that all manufacturers have achieved their 2015 targets ahead of time, with average CO₂ emissions of 123.3 g/km in 2014, a decrease of 3% compared to 2013.

The paper details manufacturers' performance in terms of CO₂ emissions, fuel, and technology trends, and also discusses the impact of super-credits. The analysis is presented at Member State level, as well as for manufacturers and individual brands.

All manufacturers comply with their 2015 targets and are on pace to reach their 2020 targets, with particularly notable progress by PSA, Toyota-Daihatsu, and Renault-Nissan. These groups have reduced their emissions by 10%, 9%, and 7% respectively; the further reduction required from the 2015 to the 2020 target is 27%.

Diesel vehicles (53% of total sales) and petrol vehicles (43%) dominate the market. Hybrid-electric (HEVs), plug-in hybrid (PHEVs) and battery electric vehicles (BEVs) account for a 2.1% share of the EU market. The remaining percentage is captured by alternative powertrains such as liquefied petroleum gas (LPG), compressed natural gas (CNG) and fuel cell vehicles.

The ICCT report is at http://theicct.org/sites/default/files/publications/ICCTbriefing_EU-CO2_201507.pdf.

Report on Low Carbon Transport Fuel Policy for Europe Post-2020

The Institute for European Environmental Policy (IEEP), the International Council on Clean Transportation (ICCT) and Transport and Environmental Policy Research (TEPR) published on 13 July 2015 a report on Low Carbon Transport Fuel Policy for Europe Post-2020 prepared for Transport & Environment (T&E).

To meet the EU long-term targets to reduce transport's greenhouse gas (GHG) emissions, action will be needed to reduce the carbon intensity of the fuels consumed, to improve the energy efficiency of transport vehicles and to improve the efficiency of the overall transport system. The report aims to provide an analysis of a range of policy tools and mechanisms that could be employed to deliver GHG emission reductions in transport fuels, the strengths, opportunities and limitations they imply, and to explore the need for action

and the EU's role within this. It takes as its starting point an analysis of the need to decarbonise transport fuels and promote low carbon alternatives.

According to the report, to be effective low carbon fuels action in Europe should deliver in the following four fields:

- Fossil fuels: measures to support the choice of fuels to ensure that their GHG footprint declines over time or remains static in line with wider decarbonisation priorities and measures that promote informed decision making processes on fuel choices;
- Biofuels: measures to provide a clear basis for differentiating between biofuels and the risk associated with their usage (i.e. biofuels that deliver no or limited emission reductions or will result in unacceptably high risks for the broader environment and/or food prices);
- Electricity: measures to increase the share of electricity in transport and for electricity in the transport sector to be progressively renewable into the future;
- Hydrogen: measures to increase the share of hydrogen used in transport and to be progressively renewable into the future; measures to support rollout of dedicated fuelling infrastructure as vehicles come online; and measures to support policies aimed at the wider penetration of hydrogen vehicles.

The report is at [www.ieep.eu/assets/1789/IEEP TEPR ICCT 2015 Low Carbon Transport Fuel Policy for Europe Post 2020.pdf](http://www.ieep.eu/assets/1789/IEEP_TEPR_ICCT_2015_Low_Carbon_Transport_Fuel_Policy_for_Europe_Post_2020.pdf).

ICCT Report on Hybridization in the US

On 23 July 2015 the International Council on Clean Transportation (ICCT) published a report titled 'Hybrid Vehicles: Technology development and cost reduction', the first in a series of technical briefing papers on trends in energy efficiency of passenger vehicles in the US.

The paper notes that since their introduction, sales of hybrid vehicles and the number of hybrid models have both risen steadily in the US, with that growth trend accelerating sharply starting in 2003. The 45 hybrid models available in 2014 captured about 2.75% of the overall US passenger vehicle market.

Hybrids are far from a mature technology, according to ICCT, and innovations are coming rapidly. Improved batteries designed with high power density for hybrid applications are on the near horizon. Hybrid systems other than the input power-split design pioneered by Toyota almost two decades ago present huge opportunities to reduce cost through better design, learning, and economies of scale.

The paper suggests that before 2025 full-function P2 hybrids (i.e. single-motor, twin-clutch hybrid systems) are likely to fall to half the cost of 2010 systems, without factoring in additional cost reductions enabled by

vehicle weight reduction. 48 V systems have the potential to be significantly more cost effective, achieving most of the benefits of a full-function hybrid at much lower cost. Some manufacturers might deploy them as stepping stones to higher-voltage systems, with the lower-cost systems used to accelerate market acceptance while the costs of all hybrid systems come down. Low-cost hybrid systems have already been made standard on a few mainstream models.

If the cost of full-function hybrids can be cut in half, their cost-effectiveness will come well within the range of current technologies being used to comply with vehicle efficiency standards. And mild hybrid systems should be even more cost-effective. Thus, even without considering the other consumer benefits of hybrid systems (such as instant low-speed torque and lots of electrical power), it appears likely that cutting hybrid costs in half and development of mild hybrid systems should put these technologies into the consumer mainstream by 2025.

The ICCT report is at http://theicct.org/sites/default/files/publications/ICCT_TechBriefNo1_Hybrids_July2015.pdf.

Study on TTIP Implications for US and EU Automotive Industry

On 1 July 2015 the US think tank Peterson Institute for International Economics released a policy brief on gains from harmonizing US and EU automotive regulations under the Transatlantic Trade and Investment Partnership (TTIP).

TTIP aims at harmonizing regulations across the EU and the US and the policy brief focuses on the gains that both partners could reap from regulatory coherence in the automobile industry, using the trade effects of the UNECE 1958 Agreement which establishes a set of uniform standards for vehicles and their components relating to safety, environment, energy, and antitheft requirements.

The EU and US safety and environmental regulations are both relatively high and well enforced, but have different requirements. While there are barriers to harmonizing environmental regulations, notably in the driving pattern required during testing (including distance, speed, and whether the car is allowed to warm up before testing begins), there is also room from a manufacturing perspective to create one model for both markets that adheres to the most stringent emissions regulation, the study says. Nevertheless, the study section on equivalence of regulations focuses on safety regulations because although environmental standards also differ, they are less distortionary from an economic perspective.

Considering the large gains from harmonization, one proposal for the US and EU automotive sector is for the

US to join the UNECE 1958 Agreement. However, this approach has high logistic and legal costs. An alternative approach would be to leave established regulatory systems in place in both the US and the EU but have both countries accept the other's regulations as valid in their own market. Such a policy could be adopted either for all vehicle regulations or for a range of particular components.

The study estimates that harmonization of auto regulations would increase US-EU auto trade by at least 20%, resulting in national income gains for both partners together of over \$20 billion (€18 billion) per year in the long run.

ACEA, the EU vehicle manufacturers' association, commented on the study on 17 July 2015 and added that industry estimates that this rise would represent over 240 000 more vehicles traded annually.

The study is at www.iie.com/publications/pb/pb15-10.pdf.

UBA recommends Ban on SOx Scrubber Discharges

EU countries should ban wastewater discharge generated by SOx scrubbers to limit ships' environmental impact, a study for the German Environmental Protection Agency UBA has recommended.

Limiting the discharge generated by scrubbers is the best way to prevent potential damage, such as the release of pollutants, increased acidity and increased temperature and turbidity, the researchers said.

Adopting unilateral discharge restrictions would be easier within international maritime law than imposing prohibitions or design requirements for scrubbers. The study advocates a common EU approach. In the longer term, the researchers recommended regulating the discharge of scrubber effluents within the framework of the International Maritime Organization (IMO) to avoid putting EU ports at a competitive disadvantage.

The EU Sulfur Directive requires ships operating in the Emission Control Area of the Baltic Sea, the North Sea and the English Channel to use marine fuel with a maximum sulfur content of 0.1% from January 2015 but scrubbers can be used as an alternative. "In principle, the use of clean liquid (diesel) and gas (LNG) fuels is preferable to an exhaust gas aftertreatment for the purpose of sulfur reduction," the researchers said.

The report is at www.umweltbundesamt.de/publikationen/impacts-of-scrubbers-on-the-environmental-situation.

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FORTHCOMING CONFERENCES

12th International Conference on Engines and Vehicles

13-17 September 2015, Capri, Naples, Italy

www.sae-na.it/ice2015.asp

The conference is organized by SAENA (Italian SAE section) with Argonne National Laboratory (USA) and Istituto Motori CNR - Napoli (Italy) and will address engine modelling and diagnostics; engine combustion; hybrid and electric powertrains; new engines, components, actuators & sensors, fuels and lubricants, and exhaust aftertreatment and emissions.

SAE 2015 Gasoline Compression Ignition Engine Symposium

17-18 September 2015, Capri, Italy

www.sae.org/events/gcie

Technical Sessions will address the technologies and strategies regarding consumption and emission regulations, the fuel implications for gasoline compression ignition (GCI) and the viability for GCI combustion for production applications.

CITA Presentation on Sustainable Emissions Testing (SET) Project

22 September 2015, Brussels, Belgium

CITA has undertaken the SET Project with the aim of assessing available approaches of in-use vehicle testing and to adapt vehicle inspection techniques to new and stricter pollutant emission thresholds. More than 3000 vehicles have been tested in the field and the data retrieved have been analysed in order to compare OBD read out versus the tailpipe emissions test; to define suitable thresholds for PM-measurement devices for diesel vehicles; to define new thresholds for CO measurement and to compile a precise recommendation including a cost-benefit analysis.

6th International CTI Conference: Emission Challenges

22-23 September 2015, Troy, USA

www.emission-control-systems.com

The conference will address emission challenges, including reflections on greenhouse gas, On-Board Diagnostics and criteria pollutants.

ACEM (Motorcycle Industry) 2015 Conference

24 September 2015, Brussels, Belgium

www.acem.eu/index.php/280-acem-to-host-conference-on-motorcycling-and-innovation-in-september-2015

The theme of ACEM's 2015 annual conference will be LET'S INNOVATE! Motorcycles, mopeds, tricycles and quadricycles, the smart choice.

International Conference on Environmental Engineering and Pollution Technology (ICEEPT 2015)

1-3 October 2015, Phuket Island, Thailand

www.iceept.org

The conference is aimed at building an adequate forum for the discussion of the many aspects related to the creation and development of environmental engineering and pollution technology, both from a theoretical perspective and from the practical exemplification of their potential applications.

24th Aachen Colloquium

5-7 October 2015, Aachen, Germany

www.aachener-kolloquium.de/en

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

SAE 2015 Commercial Vehicle Engineering Congress

6-8 October 2015, Rosemont (IL), USA

www.sae.org/events/cve

10th GreenPort Congress

7-9 October 2015, Copenhagen, Denmark

www.greenport.com/congress/home

Congress will highlight the innovations in equipment and technology to allow port users to adhere to environmental policy, whilst illustrating practical solutions through case studies from the global logistics chain.

World Automotive Diesel Emissions Summit 2015

15-16 October 2015, Chongqing, China

www.cbibiz.com/51400/index.html

The present and future of diesel vehicles, SCR and automotive-grade urea.

BusWorld

16-21 October 2015, Kortrijk, Belgium

www.busworld.org

Asia Diesel Engine Summit 2015

20-21 October 2015, Beijing, China

www.duxes-events.com/DE

The conference will address policies & regulations, market climate, green product trends, fuel economy improvements, and aftermarket.

8th China Off-Highway Vehicle Summit 2015

22-23 October 2015, Beijing, China

www.duxes-events.com/OHV8

The conference will address market climate, policies and regulations, OEM's development strategy, new growth points in the OHV market, technical development trends of core spare parts & product updating, and aftermarket.

8th Integer Emissions Summit & DEF Forum USA 2015

27-29 October 2015, Chicago, USA

www.integer-research.com/conferences/ies-usa-2015

The conference will examine the latest US developments in emissions legislation and advanced emissions reduction technologies for the on- and off-highway sectors, light-duty vehicles and passenger cars, marine vessels and host the DEF Forum.

3rd International Conference Real Driving Emissions

27-29 October 2015, Berlin, Germany

www.real-driving-emissions.eu

Conference programme includes an update on current EU regulations, latest test drive results, PEMS technology review, data evaluation tools, RDE simulation strategies, PEMS testing logistics, and engine optimization approaches.

Conference includes AECC presentation "New results from Real-Driving Emission testing campaigns on Diesel and gasoline Euro 6b vehicles."

CAPoC10

28-30 October 2015, Brussels, Belgium

<http://capoc.ulb.ac.be>

Tenth International Congress on Catalysis and Automotive Pollution Control.

13. FAD Conference: The Challenge – Exhaust Aftertreatment for Diesel Engines

4-5 November 2015, Dresden, Germany

www.fad-diesel.de/conference-2015

Main topics of the conference will include future emission requirements in the on-road segment; emission targets and solutions for non-road diesel engines; contributions from the research and development; future clean air measures; RDE requirements and solutions for emission reduction;

technologies for NO_x aftertreatment; future fuels and requirements on exhaust aftertreatment; and new technologies for exhaust aftertreatment.

Ricardo Motorcycle Conference

16 November 2015, Milan, Italy

www.motorcycleconference.com

Main subject areas of the conference will be future powertrain technologies, future vehicle technologies, and motorcycle market drivers.

Les Respirations

23 November 2015, Paris, France

www.lesrespirations.org/edition-2015

The Theme of the forum, organized one week ahead of the COP21 conference, is 'Air Quality: growth work for cities'

9th International Exhaust Gas and Particulate Emissions Forum

23-24 February 2016, Ludwigsburg, Germany

www.forum-emissions.com/index.html?lang=en

The AVL Forum will focus on further development of spark-ignition and compression-ignition combustion processes including hybrid solutions and the use of conventional and alternative fuels. In all of this, capturing real-driving emissions is as important as quantifying lowest emissions during steady-state and transient operations via measuring techniques.

6th Integer Emissions Summit & ARLA 32 Forum Brazil 2016

1-2 March 2016, São Paulo, Brazil

www.integer-research.com/conferences/ies-brazil-2016

The conference will provide an in-depth insight into the latest research, developments, technologies and opinion on all aspects of Diesel emissions reduction in Brazil.

31st BAUMA 2016

11-17 April 2016, Munich, Germany

www.bauma.de

31st edition of the world's leading trade fair for construction machinery, building material machines, mining machines, construction vehicles and construction equipment.

SAE 2016 World Congress & Exhibition

April 12-14, 2016, Detroit, Michigan, USA

www.sae.org/congress

6th European Transport Research Conference – Moving Forward: Innovative Solutions for Tomorrow's Mobility

18-21 April 2016, Warsaw, Poland

www.traconference.eu

The conference topics address the main challenges in transport and mobility of people and goods with respect to energy, environment, safety and security as well as socio-economic issues.

7th AVL Large Engines TechDays

19-20 April 2016, Graz, Austria

www.avl.com/large-engines-techdays

Forum for information, exchange and discussion for the large engine industry community, representing manufacturers, suppliers and users.

9th Integer Emissions Summit & AdBlue[®] Forum Asia 2016

26-28 April 2016, Shanghai, China

www.integer-research.com/conferences/ies-asia-2016

The conference will address Asia's unique emissions control challenges and examine cost-effective, regulation compliant emissions reduction strategies.

21st International Transport and Air Pollution (TAP) Conference

24-26 May 2016, Lyon, France

<http://tap2016.sciencesconf.org>

The aim of TAP 2016 will be "Towards energy transition and cleaner transport" and their implication to air quality, with an emphasis on the programme topics.

Deadline for abstracts: 30 November 2015

SIA Powertrain: The clean compression ignition engine of the future

1-2 June 2016, Rouen, France

www.sia.fr/evenement_detail_sia_powertrain_rouen_2016_welcome_1261.htm

The topics to be addressed include new Diesel engines for passenger cars, commercial vehicles, heavy-duty trucks, off-road, industrial applications, and range extenders; downsizing, fuel injection technology, combustion processes, turbocharging, air & EGR management systems and exhaust aftertreatment; electrification and hybridization; innovative concepts for emissions and CO₂ reduction; engine, vehicle tests & calibration techniques; new fuels and lubricants; future emission regulations; environment and air quality; eco-mobility; and worldwide market evolution.

Deadline for abstracts: 30 September 2015

6th Freiburg Workshop "Air Pollution and models"

7-8 June 2016, Freiburg, Germany

www.ivu-umwelt.de

20th ETH Conference on Combustion Generated nanoparticles

13-16 June 2016, Zurich, Switzerland

<http://nanoparticles.ch>