



Newsletter

July - August 2013

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Draft of Best Available Technology for Large Combustion Plants

The European Commission has published for consultation a new 'Best Available Technology Reference Document (BREF)' on technologies for large combustion plants. BREFs are developed under and support the Industrial Emissions Directive (IED) – Directive 2010/75/EU.

The IED applies to Large Combustion Plants (LCP) with a thermal input of over 50 MW from 2016. From then, LCPs must meet new emissions limit values for NO_x, SO₂ and other pollutants, although there are exemptions, some of which run until 2024. The IED has, though, made 'Best Available Technology' (BAT) conclusions more binding on regulators and industry. Permits may depart from their requirements only in limited circumstances.

The draft sets out Best Available Technology (BAT) for controlling pollution and maximising energy efficiency at new and existing plants, while considering their costs. Following initial discussions with industry, regulators and NGOs, the European Commission's IPPC Bureau considers that it may be appropriate to set more ambitious goals than the pollution limits set in the Directive.

BAT-associated emission levels (AELs) put forward in the draft BREF are significantly tighter than the existing (2006) version. It says, for example, that existing coal-fired plants over 300 MW should release an annual average of 65-180 mg/m³ NO_x, more stringent than the existing 200 mg/m³ limit.

Best Available Techniques (BAT) Reference Document for the Large Combustion Plants, Draft 1 (June 2013), DG-JRC, http://eippcb.jrc.ec.europa.eu/reference/BREF/LCP_D1_June2013_online.pdf.

EEA Overview of EU Environment Policy Targets and Objectives

The European Environment Agency (EEA) has issued an overview of the EU's 130+ separate environmental targets and objectives to be met between 2010 and 2050. The report provides examples of the analyses of progress to achieving them and concludes that implementing them remains a challenge.

The report identifies 63 legally-binding targets and 68 non-binding objectives set out in EU policy covering the period 2010–2050. Of the 63 legally-binding targets, 62 have their deadlines in 2020 or before. EEA says that most of the current targets and objectives can be seen as interim steps towards a transition to a green economy, because in most cases eradicating the problems will require longer-term efforts beyond 2020.

Regarding air pollution, the report says that the EU has generally made good progress towards its 2010 emissions targets set by the Thematic Strategy on Air Pollution. Meeting 2020 targets will require continued efforts. Only in the case of fine particulate matter (PM_{2.5}) is there an obvious need to accelerate abatement efforts significantly. Modelling also suggests that achieving the targets is technically feasible for all pollutants except PM_{2.5}.

The EU has a non-binding objective to cut energy use to levels 20% below business-as-usual projections by 2020. Although this implies that consumption must be a little lower than the level in the mid-1990s, the trend since then has moved upwards. So it appears likely that achieving the 2020 objectives will require stronger policy implementation and possibly additional policy impulses.

Towards a green economy in Europe - EU environmental policy targets and objectives 2010-2050; EEA Report 8/2013, (25 July 2013), www.eea.europa.eu/publications/towards-a-green-economy-in-europe.

EEA Report on High Ozone Pollution

A new report from the European Environment Agency (EEA) says that thresholds to protect health from ground-level ozone have been exceeded across Europe in July and August 2013, according to preliminary data. The EEA says that unusually high temperatures this summer may be contributing to poor air quality in many European cities.

Although April, May and June this year had fewer exceedances compared to the same period in 2012, the number of exceedances in July 2013 seems to be much higher than last year, according to the preliminary data reported to EEA, showing that the Information Threshold for ozone was exceeded at approximately a quarter of all measurement sites in Europe. In the first half of July concentrations exceeding the Information Threshold occurred mainly in northern Italy, Spain and southern France, but by the second half of the month similarly high pollutant concentrations were also found in parts of northern Europe.

New EEA Guidebook for Air Pollutant Emissions

A new 2013 version of the EMEP/EEA air pollutant emission inventory guidebook has been published by the European Environment Agency (EEA) and the European Monitoring Evaluation Programme (EMEP) of the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) task Force. The new edition, which is indispensable for anyone working on air pollution emissions, updates the 2009 volume.

The EMEP/EEA guidebook provides expert guidance on how to compile an atmospheric emissions inventory and is a general reference source for countries reporting air emissions inventory data under international agreements. It is also a key information source frequently used by researchers and modellers.

With more than 2 100 pages of guidance, the 2013 volume includes many new elements, including methods for estimating black carbon, improved consistency across different pollutants, and increased information on pollutant sources such as stoves, solvent use and agriculture.

The new guidebook is available from

www.eea.europa.eu/publications/emep-eea-guidebook-2013.

New EU Website to raise Awareness on Air Pollution Health Issues

Joaquin (Joint Air Quality Initiative) is a new EU cooperation project supported by the INTERREG IVB North West Europe programme. The aim of this project is to support health policy aimed specifically at air quality in Europe. To achieve this, the project will provide policymakers with the necessary proof in respect of the current local and/or regional situation. The Joaquin project will, for example, carry out measurements for promptly detecting imminent health threats. Joaquin will also be advising policymakers and motivating them to amend and improve current policy regarding air quality. A first outcome of the initiative is a new website providing information on 'Cleaner Air, Better Health':

www.cleanerairbetterhealth.eu/en.

Deutsche Umwelthilfe calls on DB to Honour Particle Filter Commitment

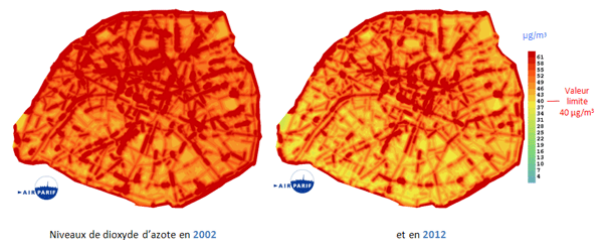
Deutsche Umwelthilfe (DUH) has called on the German railway company Deutsche Bahn to honour its commitment to use particle filters for inner-city construction.

DUH says that in a joint press conference with them on 13 September 2012, Deutsche Bahn promised to allow only equipment with particle filters to be used on railway-owned inner-city construction starting this year, but their revised tender documents violate this commitment. The criteria in the tender call only for the use of machines which comply with the current particulate mass limit. DUH says that the waiving of a particle filter on these machines increases the output of the carcinogenic, ultrafine diesel particles a thousand fold. DUH called on Deutsche Bahn to set a particle number limit in their tender documents. "The technology is available, their use is economically meaningful and the health improvements are impressive", said DUH.

Airparif Study on Exposure of Parisians to NO₂ and Fine Particulate

In 2012, between 22 and 97% of Parisians were still exposed to air quality that does not meet the respective annual standards for fine particles and nitrogen dioxide, according to an assessment by Airparif of the evolution of air quality in Paris between 2002 and 2012.

The study, commissioned by the Mayor of Paris, nevertheless emphasises a positive trend of improving Parisian air quality over the last 10 years. Thus, for maximum levels of NO₂, 45% of Parisians were exposed to levels above 50 µg/m³ in 2012, whereas 80% of the population was affected in 2002. However, only 3% of Parisians are no longer exposed to levels exceeding the annual standard. Regarding particles, in 2012, 78% of Parisians are no longer exposed to levels exceeding the quality objective.



Airparif comments that the figures have to be carefully considered as the EU air quality objectives are 2.5 times higher than the WHO recommendation.

The report is at www.airparif.asso.fr/actualite/detail/id/83.

Bradford, UK, considers Low Emission Zones

The City Council of Bradford, UK, has begun a public consultation into the ways it can reduce air pollution. In a new 'Low Emission Strategy', it has put forward a number of suggestions, including:

- Considering Low Emission Zones for buses and Heavy Goods Vehicles
- Helping bus and freight companies to invest in 'greener' fleets, such as hybrid or electric vehicles.
- Promoting the development of plants producing biomethane as a vehicle fuel.
- Applying for grants to fund a network of new charging points for electric cars across the district.
- Supporting the uptake of car clubs and car sharing initiatives.

Councillor Andrew Thornton, executive member for the environment, said: "Transport is now the major contributor to our air quality problems...Our objective is to look at all areas of the Council's activities and see where we are capable of influencing vehicle emissions and reducing them."

Spain to extend Scrappage Subsidy

Spain's Deputy Prime Minister Soraya Saenz de Santamaria has said the government will soon pass a decree to add €70 million to extend its car scrappage scheme because the initial €150 million has run out. Under the scheme, people who scrap their old car and buy a new one get a rebate of €2000, half from the government and half from the carmaker.

UK Air Quality Report for 2011

Ricardo-AEA's annual report 2011 on UK Air Quality Forecasting, prepared for the UK environment department (Defra) has now been published on the UK Air website. The report records that during 2011, there was a total of forty-four days on which air pollution rated as 'high' was recorded across the UK. Thirty-nine of these days were due to PM₁₀, one due to ozone, four due to SO₂ and none due to NO₂.

A second report, on the UK particles monitoring network, provides some details of a number of PM₁₀ pollution episodes. As these episodes were mainly PM episodes, which affect the large size fraction of the particulate; they were not expected to be seen in the particle number counts. At the Marylebone Road (London) site none of these pollution episodes could clearly be identified, because the number concentrations at a roadside site are mostly due to local traffic and local activities. However, it was noted that there seems to be a seasonal variation with lower concentrations during warm months.

UK Air Quality Forecasting: Annual Report 2011, Ricardo-AEA/R3295/ED48946 Issue Number 1, 18/02/2013, http://uk-air.defra.gov.uk/reports/cat12/1306171608_AQFAnnual11_FINAL.pdf.

Airborne Particulate Concentrations and Numbers in the United Kingdom (phase 3): Annual report 2011, NPL report No. AS 74; Sonya Beccacaci, Chantal Mustoe, David Butterfield, Jordan Tompkins, Dimitris Sarantaris, Paul Quincey, Richard Brown, Dave Green, Andrew Grieve, Alan Jones; [http://uk-air.defra.gov.uk/reports/cat05/1306241448_Particles_Network_Annual_Report_2011_\(AS74\).pdf](http://uk-air.defra.gov.uk/reports/cat05/1306241448_Particles_Network_Annual_Report_2011_(AS74).pdf).

Swiss Guide on Measurement of Emissions from Furnaces/Heaters

The Swiss Federal Office for the Environment has published a new implementation guide on the measurement of pollutant emissions from oil and gas furnaces up to 1 MW and for wood-burning plants up to 70 kW, in accordance with the Swiss Clean Air Regulation.

Emissionsmessung bei Feuerungen für Öl, Gas und Holz, BAFU (2013); www.bafu.admin.ch/publikationen/publikation/00649/index.html?lang=de (substitute [?lang=fr](http://www.bafu.admin.ch/publikationen/publikation/00649/index.html?lang=fr) for French version).

Danish CO₂ Reduction Plan

The Danish Climate and Energy Ministry has released a plan to reduce greenhouse gas emissions from

transport, agriculture and waste. Measures exclusively aimed at the energy sector were agreed in March last year.

The plan shows that a reduction of an extra 4 million tonnes of CO₂ equivalent per year will be needed to meet the target. The most cost-effective actions will be selected from a catalogue of about 80 measures compiled by an inter-ministerial working group, after consultation with parliamentarians, industry and civil society groups.

The options for transport include reducing the maximum speed on motorways from 130 to 110 km/h, a legal requirement for 1% of second-generation bioethanol to be blended in gasoline from 2020, grants for blending higher concentrations of biofuels for heavy vehicles, extended exemptions for electric vehicles, exemptions for plug-in hybrid cars in 2013-2015, and promotion of gas for heavy transport.

Ban of Daimler Cars Registrations lifted by French Court

The French Administrative Court overturned on 28 August 2013 a government suspension of Mercedes-Benz car sales because they do not use a more environmentally-friendly air-conditioning refrigerant mandated by an EU directive.

In June 2013, French authorities blocked the registration of certain car models, unless they used coolants that conformed to the MAC (Mobile Air Conditioning) Directive. But the top French administrative Court ordered the authorities to proceed with the registration of Mercedes A-class, B-class, CLA and SL cars. The Court will make a final ruling in a year's time.

The French Transport Ministry had argued that the Mercedes cars posed an environmental threat. The safeguard clause invoked by the French authorities to justify the ban was activated by Mercedes' use of R134a, an air conditioning coolant prohibited since the beginning of 2013. Daimler says that it considers that new air coolant R1234yf, which has a global warming potential (gwp) of 4, to be dangerous and has raised questions regarding its flammability.

R134a has a gwp around 1 300 times higher than CO₂; however, the Court does not consider this coolant to be a serious threat to the environment, as the majority of French car-makers use the same product.

The French Transport Ministry has "taken note" of the Court's decision, adding however that this opinion could in no way prefigure the final Court ruling, nor the European Commission's decision to launch an infringement procedure against Germany.

In the meantime, Germany's Kraftfahrt-Bundesamt (KBA) has found that there is "no sufficient evidence of a serious risk" related to the use of R1234yf. The final report from KBA will be available in autumn this year.

Moscow Refinery moves to Euro 5 Fuels

The recent commissioning of new catalytic cracking, hydrotreating and light naphtha isomerisation units at Gazprom Neft's Moscow refinery have enabled it to switch to the production of Russian Class 5 fuels, equivalent to Euro 5 (10 ppm sulfur) fuels. The refinery supplies Moscow and Central Russia.

The company says the sulfur content is some 15 times less than in Class 3 fuels permitted in Russia today. All of the company's refining assets have switched to Euro 5 standard fuel production, two and a half years ahead of regulation requirements.

Russian activities on Natural Gas Rail Locomotives and Buses

Russian Prime Minister Dmitry Medvedev has ordered the Transport and Energy Ministries, together with Gazprom and Russian Railways (RZD), to draft, by 5 November 2013, recommendations to improve regulations for the "speedy introduction of locomotives running on gas" and building the required fuelling network, the Cabinet's press service says. The ministries and companies are to determine the regions in which this technology will be used.

RZD plans to operate a Russian gas turbine locomotive, developed by Samara's Kuznetsov Scientific and Technical Complex (SNTK), on routes in the northern part of Western Siberia and on the Baikal-Amur main line. It has been conducting "controlled operation" in the Urals since January of the first gas turbine locomotive with a hybrid drive that runs on liquefied natural gas (LNG). RZD told Interfax that the company plans to roll out production of gas turbine locomotives at the Lyudinovo Diesel Locomotive Plant in the Kaluga Region.

In addition to the plans for gas-powered locomotives, Russia's GAZ Group has reported that it has started the mass production of buses operating on compressed natural gas at its Pavlovsk bus plant. The PAZ-320412 model is designed for urban and suburban routes. It is fitted with a Cummins gas engine designed to meet Euro V emissions limits. Gas storage is by means of seven 62-litre cylinders mounted under the floor. The plant will also produce the smaller PAZ-3203-32053 buses in natural gas format, with start-up scheduled for 2014.

NORTH AMERICA

US-EPA agrees California's Requirements for Bus and Refrigeration Unit Emissions

The US Environmental Protection Agency (EPA) has formally granted the California Air Resources Board (CARB) a waiver for its urban bus regulation and has confirmed that proposals to amend the state's Airborne Toxic Control Measure for in-use diesel-powered Truck Refrigeration Units (TRUs) are covered by existing EPA authorisations.

The urban bus regulation, set through several rulemakings between 2000 and 2005, applies to 2002 model-year and later diesel-engined buses for use in metropolitan areas. It sets requirements for California's public transit agencies but also sets emissions standards for new urban bus engines. Details of the urban bus regulation are at www.arb.ca.gov/msprog/bus/bus.htm.

CARB's TRU amendments, adopted in 2011, relaxed the in-use compliance requirements for all 2003 and some 2004 model year TRUs and TRU generator sets, clarified the operational useful life of TRU 'flexibility' engines that meet less stringent emissions standards, and established new reporting and record-keeping requirements for TRU manufacturers. Details are at www.arb.ca.gov/diesel/tru/tru.htm.

California ARB Paper on Selective Catalytic Reduction

A new paper from California Air Resources Board (CARB) staff takes a further look at SCR operation of in-use vehicles using PEMS (Portable Emissions Measurement Systems).

The team tested 4 different vehicles, one using EGR, three with SCR. They confirm the earlier results published by CARB (see the January-February 2013 AECC Newsletter) that emissions from the EGR-equipped truck exceeded certification values, but the SCR systems were effective in controlling NOx for typical highway driving conditions. However the new paper also reports that under operations where the SCR systems do not reach minimum operating temperature - e.g., cold starts and some low-load/slow-speed driving conditions that are not covered by the Federal Test procedure - NOx emissions are still elevated. The report says that it is important that the certification tests reflect real-world driving conditions, and suggests that one way to do this would be to use the World Harmonized Test Cycle (WHTC) because it includes substantial amounts of engine operating time at low-load/slow-speed conditions to capture urban driving conditions. The authors suggest that an alternative is to expand the

use of PEMS testing combined with OBD monitoring or data broadcasting.

In-Use NOx Emissions from Model Year 2010 and 2011 Heavy-Duty Diesel Engines Equipped with Aftertreatment Devices, Chandan Misra, John F. Collins, Jorn D. Herner, Todd Sax, Mohan, Krishnamurthy, Wayne Sobieralski, Mark Burntizki and Don Chernich; *Environmental Science & Technology* 47 (14) (2013) pp. 7892-7898, doi: [10.1021/es4006288](https://doi.org/10.1021/es4006288).

California proposes Study on Lower NOx Emissions from Heavy-duty Vehicles

The California Air Resources Board (CARB) has submitted a research proposal on “Evaluating Technologies and Methods to Lower Nitrogen Oxide Emissions from Heavy-Duty Vehicles,” to the Southwest Research Institute (SwRI).

The project is intended to provide information on the feasibility of achieving NOx emissions lower than the current engine standard for two heavy-duty engines; one a natural gas engine with three way catalysts, and one a diesel engine with Selective Catalytic Reduction. The target NOx emission rate for the project is 0.02 g/bhp-hr (approx. 15 mg/kWh), which is a 90% reduction from the current standard.

CARB says that it is projected that even when the entire on-road fleet of heavy-duty vehicles operating in California is compliant with the 2010 emissions standards, the upcoming National Ambient Air Quality Standards for PM_{2.5} and ozone cannot be achieved in California without further significant reductions in NOx emissions from the heavy-duty fleet. As technologies mature, there should be opportunities to reduce emissions below the level of the 2010 NOx standards.

Evaluating Technologies and Methods to Lower Nitrogen Oxide Emissions from Heavy-Duty Vehicles, CARB resolution 13-27, www.arb.ca.gov/board/books/2013/062713/prores1327.pdf.

US and California fine Companies for Illegal Import of Recreational Vehicles

Two Los Angeles-based consulting firms, MotorScience Inc., and MotorScience Enterprise Inc., and their owner, Chi Zheng, have agreed to settle alleged Clean Air Act violations stemming from the illegal import of 24 478 all-terrain, recreational vehicles into the US from China without testing to ensure emissions would meet applicable limits on harmful air pollution, announced the Department of Justice, the US Environmental Protection Agency (EPA) and the California Air Resources Board (ARB).

EPA’s investigation showed that MotorScience, an engine certification consultant, obtained EPA certificates of conformity for numerous vehicles without conducting required emissions testing. MotorScience arranged for emissions testing of a limited number of vehicles, and then reused those results to obtain certificates of conformity for

numerous other, dissimilar vehicles. For at least three of those vehicles, EPA confirmed that their emissions exceeded the federal limits for HC and NOx.

MotorScience and Zheng have agreed to have a stipulated judgment entered against them for a \$3.55 million (approx. €2.7 million) civil penalty and to pay an additional \$60 000 (approx. €45 000) civil penalty within six months. The United States will receive 80% of collected penalties, and California will receive the remaining 20%. The settlement also requires that for the next 15 years, before either MotorScience or Zheng may engage in any further work involving non-road vehicles and engines, they must follow a rigorous compliance plan to ensure that any emissions testing and certification applications submitted to EPA or the ARB accurately represent those vehicles and engines. Non-road vehicles and engines include recreational vehicles, generators, lawn and garden equipment, and other non-road internal combustion engines.

In 2010, the EPA already voided 12 certificates held by four US-based importers of Chinese recreational vehicles who were clients of MotorScience.

New York Incentives Programme for Cleaner Trucks

The State of New York has introduced a programme to provide ‘Voucher Incentives’ for the purchase of alternative fuel trucks and diesel emission control devices. All apply to Class 3 to Class 8 vehicles.

\$4 million (approx. €3 million) is to be made available for diesel emission control devices including Diesel Oxidation Catalysts (DOCs) and Diesel Particulate Filters (DFPs). The vouchers will cover 80% of the total cost of the technology and its installation for private fleet vehicles with Diesel engines of model year 2006 and older.

A further \$6 million (€4.5 million) will be available for Alternative Fuel Vehicles, including those operating on Compressed Natural Gas (CNG), CNG Engine Conversions, Hybrid-Electric, and All-Electric vehicles. The vouchers will cover 80% of the incremental cost up to \$40 000 per vehicle.

Both of these schemes apply to private fleet vehicles which must be registered and garaged and operate 70% of the time in the five boroughs of New York City.

\$9 million (€6.7 million) is already available as ‘Voucher Incentives’ to cover 80% of the incremental cost (up to \$60 000 per vehicle) of all-electric battery vehicles. This scheme covers both private and public fleets. Vehicles must be registered and garaged within one of NY State’s 30 counties in non-attainment.

Details of the programme are at <https://truck-vip.ny.gov/WhatisNYT-VIP.php>.

Port of Long Beach reduces Emissions

The Port of Long Beach has cut diesel particulates by 81% since 2005, according to an analysis reviewed by the US Environmental Protection Agency, the California Air Resources Board and the South Coast Air Quality Management District.

The report examines data from the 2012 calendar year. Compared to the 2005 emissions levels, all of the key air pollutants from port-related sources were reduced in 2012. In addition to the drop in diesel particulate emissions, NO_x emissions have been reduced by 54% and SO_x by 88%. Greenhouse gases were lowered by 24%. The reasons for air quality improvements include bigger ships carrying cargo more efficiently, newer ships with cleaner engines, the deadline of 1 January 2012 for full implementation of the Clean Trucks Program, increasing use of shore power, and a new low-sulfur fuel rule for ships that started in August 2012.

Campaigners call on US-EPA to regulate NO_x Emissions from Foreign Ships

On 16 July 2013, environmental NGO Friends of the Earth sent a letter to US-EPA asking them to begin rulemaking proceedings to reduce nitrogen oxides (NO_x) emissions from new ships in US waters.

This petition follows the International Maritime Organization (IMO) proposal to delay implementation of Tier III NO_x standards within Emission Control Areas (ECA) from 2016 until 2021, including within the North America ECA (see *AECC Newsletter May-June 2013*).

While US-flagged vessels are subject to domestic regulations in 2016, Friends of the Earth ask that the EPA exercise its authority under the Clean Air Act to regulate NO_x from new foreign-flagged ships in US waters, as well, by 2016.

US-EPA issues Final Rule for 2013 Renewable Fuel Standards

On 15 August 2013 the US Environmental protection Agency (EPA) issued the final rule on their renewable fuel standards for 2013. This establishes the 2013 annual percentage standards to be met for the amount of cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel. These standards apply to all gasoline and diesel produced or imported in 2013. Because of the late publication, EPA is extending the compliance deadline from 28 February 2014 to 30 June 2014.

The final standards to be achieved for 2013, represent the ratio of renewable fuel volume to non-renewable gasoline and diesel volume are:

0.004% cellulosic biofuel

1.13% biomass-based diesel
1.62% advanced biofuel, and
9.74% renewable fuel.

Details of the standards are at www.epa.gov/otaq/fuels/renewablefuels/regulations.htm#2013-8-6.

CENTRAL & SOUTH AMERICA

Air Pollution in San Jose, Costa Rica, threatens Health

Costa Rica improved the quality of its urban air by controlling suspended particles to levels that are below the minimum accepted by the World Health Organization (WHO). However, there are still high levels of fine particles. This was the main conclusion derived from the analysis by the Environmental Analysis Laboratory of the National University through the “urban lung”, a piece of special fabric that was installed in San Jose.

The laboratory detected the presence of sulfate, chloride, nitrate, phosphate, sodium, potassium, calcium, manganese, nickel, chromium and copper, vanadium and aluminium. “Just as the country reduced PM₁₀ particles and removed lead from gasoline, we will now assume this new challenge reducing fine particles through new regulations, renewal of the vehicle fleet and overall emissions reduction,” said the minister of Environment and Energy Rene Castro.

Data on air quality, prepared by the National University in 2012, revealed that vehicles over 15 years old emit 70% of pollutants. These vehicles account for 50% of the fleet of the country.

Colombia reduces Import Tariffs on Electric Vehicles and Hybrids

The Colombian Ministry of Environment and Ministry of Economy have approved the reduction of import tariffs on electric and hybrid vehicles and on recharging points over the next three years.

Up to 750 electric vehicles (whether passenger cars, buses or commercial vehicles) and 100 recharging points annually will not be subject to import tariffs. For up to 750 plug-in hybrids with combustion engines <3 litres (annually) the tariffs will be reduced from 35% to 5%. The vehicle and its recharging device must not cost more than US\$52 000.

EURASIA

Azerbaijan holds ‘Clean Air’ month

Azerbaijan's Main State Traffic Police Department and the Ministry of Ecology and Natural Resources announced that August would be a “Clean Air” month in the country. In connection with the event, the traffic

police department appealed to drivers and owners of vehicles encouraging them to use the vehicles only when their engines are regulated and ensure compliance with standard indicators of exhaust gases. Individuals and entities using vehicles with exhaust gases which contain excessive harmful substances would bear responsibility in accordance with the law.

The number of vehicles increases by between 75 000 and 85 000 a year in Azerbaijan. About 70% of the country's cars are used in the capital Baku, which makes it the most car exhaust polluted city of the country. The problem is also complicated by the use of obsolete cars, which do not comply with the modern standards and considerably pollute the environment.

ASIA PACIFIC

Hong Kong, China, starts Subsidy Programme for Replacement Catalysts

The Environmental Protection Department (EPD) of Hong Kong, China, has announced that its subsidy programme for the replacement of catalytic converters and oxygen sensors on petrol and liquefied petroleum gas (LPG) taxis and light buses will start on 15 August 2013. Vehicle owners will be able to submit applications and make reservations for replacement service in phases according to the year of manufacture of their vehicle. The whole programme will be completed by 31 March 2014.

The programme, which aims to improve roadside air quality by reducing emissions from taxis and light buses, is being conducted on a voluntary basis and the subsidy will cover the necessary components and associated replacement work. The suppliers of components and vehicle repair workshops for the replacement service were selected through open tenders held by the Government. A total of 52 vehicle repair workshops and three suppliers of components have joined the programme. The appointed contractors can request vehicle owners to pay for the difference if their charges exceed the levels of subsidy.

A spokesman for the EPD said, "At present, the catalytic converters of some 80% and 45% of road-running taxis and light buses respectively are worn out, causing excessive emissions. Replacement of worn-out catalytic converters can reduce vehicle emissions by as much as 90%."

From April next year, the EPD will use roadside remote sensing equipment to step up monitoring of any excessive emissions by petrol and LPG vehicles. Vehicles found to be emitting excessively will be required to pass an advanced (chassis dyno) emissions test within a designated period of time. Otherwise, the vehicle licence will be cancelled.

Hong Kong, China, updates Air Quality Objectives

On 10 July 2013, Hong Kong's Legislative Council passed an ordinance updating the Administrative Region's air quality objectives. The new standards are due to be implemented from 1 January 2014 and the ordinance includes a provision to review the objectives at least once every five years.

Secretary for the Environment Wong Kam-sing said that the new objectives are broadly comparable to the air quality standards adopted by the European Union and the United States. Implementing measures, outlined in March 2013, include calls for replacement of older vehicles and installation or replacement of pollution control devices (see item above).

Clean Air Network Report on Hong Kong Air Quality for January to June 2013

The '*South China Morning Post*' has reported that Hong Kong's air pollution was responsible for causing over 1600 premature deaths during the first half of 2013. The report cites a Clean Air Network study which shows that the levels of NO₂, PM₁₀, PM_{2.5} and SO₂ have increased during that period compared to the corresponding period of last year. It also said that the four pollutants have exceeded the average air quality guidelines of the World Health Organization across all 14 air quality monitoring stations, with the exception of levels of NO₂ in Tap Mun.

The study was conducted on the basis of data collected by the Environmental Protection Department between January and June 2013 and showed that NO₂ levels increased significantly at 10 of the 14 monitoring stations, exceeding the WHO target of 40 µg/m³. Clean Air Network chief executive Kwong Sum-yin called on the government to replace old commercial diesel vehicles and restrict marine vessels at berth to fuels with a sulfur content <0.5%.

Review of Hong Kong's Inspection and Maintenance Programme

On 6 August 2013 Civic Exchange, an independent Hong Kong's public policy think tank, published a review of the inspection and maintenance programme for on-road vehicles in Hong Kong, China.

This report provides an overview of the role of inspection and maintenance in a comprehensive vehicular pollution control strategy, compares Hong Kong's current inspection and maintenance programme with international best practices, and suggests ways to improve the current programme.

The report (in English) is at www.civic-exchange.org/wp/2013im-en.

China elevates Environmental Protection to a 'Pillar Industry'

There have been several press reports that China plans to accelerate investment in technology to save energy and tackle the country's severe pollution.

The State Council is reported to have said that environmental protection would be elevated to a "pillar industry" that would receive government support in the form of tax breaks and subsidies. In last year's industrial development plan, China vowed to raise the total output of environmental protection by 15% annually, generating turnover of 4.5 trillion yuan (€545 billion) by 2015. The latest State Council document reiterates that goal, promising to spur technological innovation, expand demand for green and energy saving products, and boost the related service industry. China is already investing 2.3 trillion yuan (€278 billion) in energy savings and emissions reduction in the five years through 2015, state media have said.

The State Council said eligible foreign-funded firms would enjoy the same benefits from the environmental protection plan as their Chinese counterparts. It said it would accelerate research into environmentally friendly vehicles and develop technology and equipment for the control of air, water and soil pollution. The document also highlights pilot programmes for carbon and emissions trading. Domestic Chinese companies with suitable capacity will be encouraged to target overseas projects in environmental protection.

Shanghai announces Timetable for 10 ppm Sulfur Fuel Introduction

Local authorities in Shanghai, China, have announced the timetable for implementing the Shanghai V/5 (10 ppm sulfur) standard for petrol and diesel. Manganese content will be cut to 2 ml/litre from the current 6 ml/litre. The current 3 grades of 90, 93 and 97 octane gasoline will be replaced by 89, 92 and 95 octane. The fuel will be available at two or three filling stations from September 2013 as a trial. It will then go on sale across the city from December 2013. The Shanghai Quality and Technical Supervision Bureau said the city will implement a national V standard of fuel when it is issued. Stricter restrictions banning highly polluting cars will also be introduced in November 2013 and the Bureau said that a local equivalent of the Euro V/5 standard is urgently required to tackle environmental problems.

Environmental Status Report for Mumbai, India

The Brihanmumbai Municipal Corporation's Environment Status Report for 2012-13 shows that the levels of suspended particulate matter (SPM) and NO₂ recorded at the Maravli monitoring station were the highest in the city at 531 µg/m³ and 74 µg/m³ respectively. The Central Pollution Control Board (CPCB) prescribes a permissible SPM limit of 140 µg/m³ and an acceptable NO₂ level of 40 µg/m³. These figures are, though, an improvement on 2011-12, when SPM in Maravli was at 760 µg/m³.

The city's 2012-13 report also shows high SPM levels at Bhandup, Andheri and Khar. NO₂ levels were above the CPCB limit at Andheri and Khar.

The civic report, which will be released in August, blames the poor air quality in Mumbai on increasing vehicular population, traffic jams, large-scale demolition and construction activity, and badly paved or unpaved roads. It also lays the blame on chemical factories in some areas.

World Bank Assessment of Indian Environmental Challenges

On 16 July 2013, the World Bank disclosed a three-volume report on a diagnostic assessment of select environmental challenges in India.

This report provides estimates of social and financial costs of environmental damage in India from three pollution damage categories: urban air pollution, including particulate matter and lead; inadequate water supply, poor sanitation, and hygiene; and indoor air pollution.

Volume 1 provides "an analysis of physical and monetary losses of environmental health and natural resources", volume 2 addresses "Economic growth and environmental sustainability: what are the trade-offs?", and volume 3 "Valuation of biodiversity and ecosystem services in India".

The report can be downloaded from:
<http://documents.worldbank.org/curated/en/docsearch/report/70004>.

ICCT recommends accelerating future Indian Emissions Legislation

On 16 August 2013 ICCT, the International Council on Clean Transportation, published a new paper summarizing the public health and economic benefits of early implementation of stricter standards in India over 30 years.

For the purposes of this analysis, benefits were calculated based only on avoided premature mortality resulting from lower vehicular PM_{2.5} emissions in urban areas; benefits from reductions in other

pollutants, reduced mortality in rural areas, and non-health benefits were not considered.

Nevertheless, this brief analysis makes clear that the health and economic benefits of implementing stricter fuel quality and vehicle emissions standards in India according to an accelerated timeline would be significant. Moving to 10 ppm sulfur fuels by 2017 and Bharat Stage VI standards by 2019 would result in an estimated 48 500 avoided premature deaths, with associated economic benefits of \$90 billion (€67 billion) through 2045, while the costs of accelerated standards would sum up to half of that. Furthermore, benefits would continue to accrue beyond 2045, while costs would not.

The report is at www.theicct.org/case-early-implementation-strict-fuel-quality-and-vehicle-emission-standards-india.

Seoul, South Korea, announces Lower PM₁₀ Levels in 2012

The Seoul (South Korea) Metropolitan Government has reported that the average concentration of PM₁₀ fell to 41 µg/m³ in 2012, marking the fifth consecutive year of decline. The number of days with an average reading of 30 µg/m³ or lower increased by 21 days from 2011's total to 130 days. Levels above 100 µg/m³ were recorded on only five days, down sharply from 17 days the previous year.

Over recent years, Seoul has adopted a set of measures such as cleaning more roads, tightening air pollution regulations at construction sites and introducing environmentally friendly vehicles.

Kang Hui-eun, head of the city's air and climate department, also announced that Seoul will adopt a new warning system in October 2013 against ultrafine particles (PM_{2.5}). "We are also trying to expand the range of pollutants under our control by including toxins like nitrogen dioxide in our radar," she said.

GENERAL

US-China Agreement on CO₂ Reduction include Heavy-duty Vehicles

On 10 July 2013, the United States and China announced that they had agreed five initiatives to reduce CO₂ output from the largest sources, including heavy-duty vehicles, manufacturing and coal-fired power plants. The agreements will concentrate on improving technologies. They will not seek to cut emissions by specific volumes and will not be binding. The US-China climate change working group, which officials from both countries formed in April 2013, will work with companies and non-governmental groups to develop plans by October 2013 to carry out the measures.

Final Version of WHO Report on Air Pollution and Health

The final version of the World Health Organisation (WHO) report on the REVIHAAP Project (Review of Evidence on Health Aspects of Air Pollution) has now been issued and is at http://www.euro.who.int/_data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf.

A draft version of the report, which is part-funded by the European Commission as part of the preparations for the EU Air Quality review, was released earlier this year (see *the Jan-Feb 2013 AECC Newsletter*). The new version provides more extensive rationales for the answers, including the list of key references.

This document was prepared by a large group of experts including cardiologists, epidemiologists, toxicologists and other public health experts. It presents answers to the Commission's 24 questions relevant to reviewing EU air pollution policies and to addressing the health aspects of those policies.

The review concludes that a considerable amount of new scientific information on the adverse effects on health of particulate matter, ozone and nitrogen dioxide, observed at levels commonly present in Europe, has been published in recent years. This new evidence supports the scientific conclusions of the WHO air quality guidelines, last updated in 2005, and indicates that the effects in some cases occur at air pollution concentrations lower than those serving to establish these guidelines. It also provides scientific arguments for taking decisive actions to improve air quality and reduce the burden of disease associated with air pollution in Europe.

In addition to premature deaths from respiratory and heart diseases, they found links to conditions such as diabetes and still births and adverse effects on the cognitive development of children born to mothers exposed to even low levels of air pollution. The report said that studies on NO₂ produced new evidence of long-term effects, "including harm to health at levels below existing EU limit values. The consequences for entire populations, including people with existing respiratory and heart problems, would be significant".

ETH Conference on Combustion Generated Nanoparticles

The 17th ETH Conference on Combustion-Generated Nanoparticles was held in Zürich from 24 to 26 June 2013. The conference included a presentation from AECC on the particulate emissions results of the AECC test programme on small hand-held equipment.

DG-JRC gave an update on the PMP informal group re-launch. NRMM PMP work will not start before 2014 despite its high priority ranking because of a lack of

hardware. The experimental work on sub-23 nm particles, though, is expected to start in October 2013.

Axel Friedrich, formerly of UBA, strongly promoted the use of GPFs on all GDI cars to ensure proper control of PM/PN in all engine operating conditions. He also supported an appropriate and effective revision of the NRMM Directive.

IFP presented some PM/PN measurements on a GDI car, with and without GPF. The hybrid simulated vehicle still needed a GPF to meet the $6 \times 10^{11}/\text{km}$ PN limit on the hot NEDC. Ford presented a chassis dyno comparison between PMP and a PEMS-PN instrument. West Virginia University had evaluated the particle size distribution of two CNG buses.

From an LAT-reported study on soot sensors, the 25 mg/kWh OBD Threshold Limit for Euro VI was considered feasible with resistive sensors.

A statistically significant difference was found in Black Carbon (BC) concentrations in the Milan Low Emission Zone (LEZ). BC measured inside the LEZ was 52% lower than outside. No changes were measured either on PM_{10} or on $\text{PM}_{2.5}$, corroborating previous studies in the Berlin LEZ.

It was reported that the regulation for aircraft emissions of non-volatile particle number has set the d50 cut-off point of the Condensation Particle Counter to a lower size than the automotive standard: it is 10 nm (vs. 23 in PMP). PM and PN standards for medium to large aircraft gas turbines are expected to be finalized by the ICAO (International Civil Aviation Organization) by 2016.

MECA Report on Ultrafine Particles

MECA, AECC's sister organisation in North America, has released a report prepared for them by Gladstein, Neandross & Associates which outlines the health impacts of ultrafine particulates (UFP) from cars, trucks, and off-road equipment and the benefits of reducing both the mass and number of particulate emissions through the use of particulate filters.

The report summarises the current understanding of the potential adverse health impacts of UFPs, outlines the various control strategies and technologies that can be used, and documents the success of using diesel particulate filters (DPFs) to meet and exceed US and European emissions standards.

Ultrafine Particulate Matter and the Benefits of Reducing Particle Numbers in the United States, Gladstein, Neandross & Associates for MECA (July 2013), www.meca.org/resources/MECA_UFP_White_Paper_0713_Final.pdf.

ICCT Report on Best Practices in Emission Control of in-use HDVs

On 5 August 2013, the International Council on Clean Transportation, ICCT, issued a new report that

summarises policy approaches to controlling in-use emissions from heavy-duty diesel vehicles, including freight trucks, buses, municipal government fleets, and other service vehicles. The study surveys a variety of emissions control strategies for different categories of in-use HDVs, demonstrating that multiple effective solutions exist for most fleets in both developed and developing countries. Highlighting international best practices, it is meant to serve as a general reference guide for policymakers.

The ICCT stated that heavy-duty vehicles, while typically accounting for only a small percentage of a region's vehicle fleet, emit a disproportionate share of total emissions of certain pollutants, especially particulate matter (PM) and nitrogen oxides (NOx). In addition, many have useful lifespans of 20 years or longer. Even when emissions standards for new vehicles are implemented on an aggressive timeline, it typically requires decades before older, higher-emitting vehicles are retired from service and those standards finally cover the entire fleet. Managing emissions from legacy heavy-duty fleets is therefore a key strategy for improving urban air quality.

The ICCT added that controlling emissions from HDVs presents unique challenges for policy makers. Heavy-duty vehicles exist in thousands of different configurations and operate across varied duty cycles, so control programmes must target different classes and types of vehicles. They also play a critical role in virtually every economic sector, and older vehicles are often owned and operated by small business owners or self-employed individuals.

The report is at www.theicct.org/best-practices-emission-control-in-use-hdvs.

ICCT Report on Light-duty Vehicle Emissions Compliance in India

ICCT, the International Council on Clean Transportation, published on 21 August 2013 a paper on Light-duty Vehicle Emissions Compliance in India.

This new publication analyses compliance processes in India, assessing their strengths and shortcomings.

Compliance and enforcement programmes aim to ensure that, even after a period of use, vehicle emissions of criteria pollutants (primarily particulates, nitrogen oxides, hydrocarbons, and carbon monoxide) do not exceed the original certification standards. Compliance tests protect the certification process, and ensure environmental performance over an established durability period.

Most countries with mature vehicle markets have established compliance programmes. Emerging markets, such as India, have generally modelled their programmes on European Union regulations, the

report says. But the EU is unusual in that while standards and certain norms are set by the EU as a whole, each Member State develops its own compliance and enforcement mechanisms. According to the report, the EU in-use vehicle compliance programmes are less robust than the United States', which are generally considered the most effective in the world. The ICCT report therefore also looks at relevant regulations in the United States to put India's regulations in context and provide recommendations.

The report can be downloaded from

www.theicct.org/vehicle-emissions-compliance-ldvs-india.

NRMM Aftertreatment Penetration Forecast between 2017 and 2023

On 23 August 2013, Integer Research released a new report "Emissions Control in Non-Road Mobile Machinery (NRMM) Markets: 2013 Edition".

The report predicts that the European and North American markets will dominate sales of SCR-equipped non-road equipment, with these regions accounting for more than two thirds of the machine park using SCR aftertreatment by 2023. Depending on the timing of Tier 4-equivalent legislation, China has the potential to rival both markets by 2023 and sales of NRMM with advanced aftertreatment could surpass Europe and North America by 2023.

In the base-case scenario, the global SCR-equipped NRMM park grows rapidly over the period 2017-2023, from 1 million SCR vehicles globally to 5 million by 2023. The upside scenario predicts an explosive growth between 2017-2023 which sees the SCR park expand 7-fold over this period as a result of Tier 4 Final/Stage IV phase-in and end of flexibility schemes.

As well as SCR, Integer has studied the DPF and EGR markets and predicts a rapid increase in DPF sales post 2014. The DPF market will be concentrated on the North American, European and to a lesser degree Japanese, markets following the implementation of more stringent emissions legislation. Both construction and agricultural sectors provide the main markets for DPF. The BRIC countries are not expected to require DPF until post-2017 at the earliest and will start playing a bigger role when Tier 4 equivalents are rolled out post-2020.

Bosch Overview of Diesel Markets

On 6 August 2013 Bosch released its worldwide overview of Diesel markets.

According to Bosch, a realistic estimate is that in the US diesel will be able to capture a 10% share of the light vehicle market by 2018 (from a current 2.7% of new car registrations). China currently represents only 1% of the global market for diesel passenger cars and the introduction of the China 4 emission standards on

1 July 2013 imposes more stringent requirements for commercial vehicles. This is likely to stimulate growth through the increased demand for advanced diesel technologies. There are now more than a dozen different Diesel models from various manufacturers available in Japan, Diesel sales are boosted by the monsoon in India, and banned in the Brazilian passenger segment, the press release says.

Finally, in Europe, Diesel vehicles already account for a high share of the European market (in 2012, half of new diesel vehicles in the world – and 66% of new diesel passenger cars – were registered in Europe), so growth opportunities are moderate.

Danish Particulate Filter for Ships

A Danish team has developed an integrated aftertreatment system for ships that enables the reduction of 99% of all fine particles and 40% of NOx emissions of diesel engines. They are now in search of investors to afford a production plant on the island Bornholm in Denmark.

Behind the invention is Captain Kai Brodersen and Lars Frederiksen, former board member for Notox, who developed the technology. "Our goal is to produce and deliver integrated emission filters for ships worldwide. Primarily for ships operating in coastal waters - globally there are 28 000 ships with diesel engines", says engineer Klaus Rasmussen, who owns the consulting firm Moving Energy.

Automotive Engineers' Survey on Future Regulations

With automotive regulations governing fuel economy and CO₂ emissions being discussed in Europe and the US, nearly half of automotive engineers predict those regulations will strengthen, according to a WardsAuto and DuPont survey from July 2013.

Only 8% predict regulations will relax, primarily due to economic and cost issues, and one-fourth expect no change, the results show. "Fuel and emission standards throughout the world are driving significant changes in vehicle design," said DuPont Performance Polymers President Diane Gulyas. "There are multiple solutions simultaneously getting into the market and the industry must continue to work in harmony to develop low emission, fuel-efficient vehicles that consumers want to drive."

In addition to light-weighting, the industry continues to optimize the internal combustion engine, develop hybrid and electric vehicles and alternative fuels.

The WardsAuto survey was sponsored by DuPont and conducted by Paramount Research. 43% of the 1 300 respondents work for an automotive supplier, 24% work for an OEM, and the balance work for service companies.

RESEARCH SUMMARY

Effects of Emissions and Pollution

A new report in *'The Lancet Oncology'* says that low level exposure to traffic fumes is enough to raise the risk of lung cancer.

The research analysed pooled information from 17 studies in nine European countries. In total, the data covered almost 313 000 individuals. Air pollution levels were estimated at people's home addresses and cancer diagnosis rates obtained from national and local registries. Over an average 13 year follow-up period, 2095 study participants developed lung cancer. People's chances of having the disease rose with greater exposure to small particulate matter. For every 10 µg/m³ increase in PM₁₀, the risk of lung cancer rose by 22%. For PM_{2.5}, every 5 µg/m³ increase led to an 18% increase in risk. The trend was seen below the EU air quality limits of 40 µg/m³ for PM₁₀ and 25 µg/m³ for PM_{2.5}, according to the study.

An increase in road traffic of 4000 vehicle-km per day within 100 m of the residence was associated with a 9% increase in risk for lung cancer. The results showed no association between lung cancer and NOx concentration or traffic intensity.

Air pollution and lung cancer incidence in 17 European cohorts: prospective analyses from the European Study of Cohorts for Air Pollution Effects (ESCAPE), Dr Ole Raaschou-Nielsen et al; *The Lancet Oncology* 14 (9) (2013) pp. 813-822, [doi:10.1016/S1470-2045\(13\)70279-1](https://doi.org/10.1016/S1470-2045(13)70279-1).

A second study in sister journal, *'The Lancet'*, links air pollution with a higher chance of hospitalisation of heart failure patients.

Researchers combined data from 35 studies and concluded that heart failure hospitalisation or death was associated with increases in CO (3.52% per 1 ppm), SO₂ (2.36% per 10 ppb), and NO₂ (1.70% per 10 ppb), but not ozone concentrations. Increases in particulate matter concentration were also associated with heart failure hospitalisation or death (PM_{2.5}: 2.12% per 10 µg/m³; PM₁₀: 1.63% per 10 µg/m³). The strongest associations were seen on the day of exposure, with more persistent effects for PM_{2.5}. The authors estimate that in the USA a reduction in PM_{2.5} of 3.9 µg/m³ would prevent 7978 heart failure hospitalisations and save a third of a billion US dollars a year.

Global association of air pollution and heart failure: a systematic review and meta-analysis, Anoop SV Shah, Jeremy P Langrish, Harish Nair, David A McAllister, Amanda L Hunter, Prof Ken Donaldson, Prof David E Newby, Dr Nicholas L Mills; *The Lancet* (in press), [doi:10.1016/S0140-6736\(13\)60898-3](https://doi.org/10.1016/S0140-6736(13)60898-3).

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FORTHCOMING CONFERENCES

ICE 2013 - 11th International Conference on Engines & Vehicles

15-19 September 2013, Capri, Naples, Italy

Details at www.sae-na.it

The topics of the conference will be fuel injection and combustion processes, powertrain technology, alternative and advanced power systems, exhaust aftertreatment and emissions, fuels and lubricants, and air handling, intake, and exhaust.

Sustainable2Wheels 2013: Clean Air - It's your move!

18 September 2013, Brussels, Belgium

Details at www.sustainable2wheels.eu

Sustainable 2Wheels seeks to draw together European businesses, policymakers and citizens to explore how 2-wheel transport solutions can contribute to cleaner, greener, healthier living environments. It will feature interactive discussions around policy areas such as the 7th Environmental Action Plan and European Urban Mobility Policy.

Management of Air Emissions from Shipping Seminar

24-25 September 2013, London, UK

Details at

www.lloydsmaritimeacademy.com/event/airemissions

The programme includes four real-life industry case studies detailing the practical aspects of meeting emission regulation, and three panel discussions examining LNG, port initiatives and sulfur targets.

Der Arbeitsprozess des Verbrennungsmotors / The Working Process of the Internal Combustion Engine

24-25 September 2013, Graz, Austria

Details at <http://ivt.tugraz.at/conference2013>

The congress will include optimization of combustion processes in terms of efficiency, performance, pollutants and CO₂ emissions, mixture formation, combustion and emissions, on-board sensors and monitoring, exhaust gas aftertreatment, and electrification of IC engines and its consequences.

16th Conference Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction

29 September-2 October 2013, Rhodes, Greece

Details at <http://pres13.cperi.certh.gr/index.php/en>

The aim of the conference is to review the latest development and applications of process integration for energy conservation, pollution reduction and related topics.

22nd Aachen Colloquium

7-9 October 2013, Aachen, Germany

Details at www.aachen-colloquium.com

The congress provides a wide range of technical presentations addressing current challenges of the vehicle and powertrain industry. Programme-related test vehicles, prototypes and aggregates from participating companies and institutions are presented on the ika test track.

19th Small Engine Technology Conference

8-10 October 2013, Taipei, Taiwan

Details at <http://www.setc2013.tw/index.html>

The conference programme will aim to cover new energy sources such as hybrid and electric drives, fuel cells and solar cells as well as components such as transmissions and drivetrains and fuel supply systems, fuels and lubricants, together with environmental impacts, emissions, aftertreatment and life cycle & recyclability.

4th Diesel Emissions Conference India

8-10 October 2013, Pune, India

Details at www.integer-research.com/dec-india-2013

The conference will cover issues relevant to heavy-duty commercial vehicles (including full Bharat Stage IV implementation), non-road mobile machinery, diesel generator set engines, and AdBlue[®].

2013 ASME Internal Combustion Engine Division Fall Technical Conference

13-16 October 2013, Dearborn, Michigan, USA

Details at www.asmeconferences.org/ICEF2013

Conference tracks are large bore engines; fuels; advanced combustion; emissions control systems; instrumentation, controls, and hybrids; numerical simulation; and engine design, lubrication, and applications.

CECE-CEMA Summit: Towards a Competitive Industrial Production for Europe

16-17 October 2013, Brussels, Belgium

Details at www.cece-cema-summit.eu

During the two day public event, members of the construction and agricultural machinery industries will debate with EU policy makers how to maintain a competitive industrial production sector in the EU.

Busworld 2013

18-23 October 2013, Kortrijk, Belgium

Details at www.busworld.org

Clean Power for Transport Conference

21 October 2013, Brussels, Belgium

Details at http://ec.europa.eu/transport/themes/urban/events/2013-10-21-cpt-conference_en.htm

At the conference, European Commission Vice-President Siim Kallas, Rimantas Sinkevičius, Minister of Transport and Communications, Lithuania, and other high-level speakers will discuss the Clean Power for Transport Package which the Commission adopted on 24 January 2013. In the afternoon, three panel sessions will look at the potential of alternative fuels for growth and jobs, at alternative fuels in the world and at investment into alternative fuels.

SAE/KSAE 2013 International Powertrains, Fuels & Lubricants Meeting

21-23 October 2013, Seoul, South Korea

Details at www.sae.org/events/pfl

It is intended that papers will cover fuels, combustion management, emissions reduction, advanced powertrains, engine downsizing, advanced fuel delivery, valvetrain optimization and engine control including OBD.

8th Conference on Gaseous Fuel Powered Vehicles

22-23 October 2013, Stuttgart, Germany

Details at www.iav.com/en/events/iav-tagung/8th-conference-gaseous-fuel-powered-vehicles-propulsion-systems-towards

The conference is intended to cover new developments in the fields of natural gas/biogas/LPG and hydrogen drivetrains, market development and general political conditions, and development trends in

engine management, hybridisation and exhaust gas aftertreatment.

1st IMarEst Shipping Emissions Conference

22-23 October 2013, Limassol, Cyprus

Details at www.imarest.org/OurEvents/EventListings/EmissionsConference/22-23October2013.aspx

Key themes include emissions regulation, the emerging energy mix, the case for methanol, hybrid propulsion and energy efficiency.

Diesel Emissions Conference & DEF Forum USA 2013

22-24 October 2013, Atlanta, USA

Details at www.integer-research.com/dec-usa-2013

The conference will bring together over 250 attendees from across the diesel emissions supply chain to gain vital information and to participate in discussions on the legislative issues that shape the industry and the optimum strategies to meet such demanding standards.

2^e assises nationales: Qualité de l'air

23-24 October 2013, Paris, France

Details at <http://www.assisesdelair2013.ademe.fr>

The conference is organised by the Ministry of Ecology, Sustainable Development and Energy and ADEME, in partnership with the Ministry of Social Affairs and Health. It is intended to share experiences in improving the quality of indoor and outdoor air and provide understanding of the conditions for success in implementing effective measures to promote air quality.

Plugging the Sustainability Gap: Boosting the European Electric Vehicle Market

29 October 2013, Brussels, Belgium

Details at www.publicpolicyexchange.co.uk/events/DJ29-PPE2.php

This international symposium seeks to move the current EV debate forward and examine the existing market entry barriers for alternative vehicles. The symposium will explore the need for flexible partnerships between diverse industries such as energy providers, manufacturers, suppliers and retailers to ensure improvements in both consumer acceptance and perceptions.

3rd Aachen Colloquium China

5-6 November 2013

Details at www.aachen-colloquium-china.com

Energy in the EU

5-6 November 2013, Brussels, Belgium

Details at www.ipt.org.uk/ParliamentaryTrainingandCompanySeminars/EnergyintheEU.aspx

This conference will provide a comprehensive overview of current energy policy in the EU including a view of policy from inside the Commission and Parliament.

SAE 2013 Energy Saving & Emission Reduction Forum

6-7 November 2013, Shanghai, China

Details at www.sae.org/events/eser

The forum will gather experts from the development and manufacturing sectors of the automotive industry, to discuss the latest technology applications addressing common concerns pertaining to effective saving of energy and reducing emissions.

Commercial Vehicle Megatrends Europe 2013

12 November 2013, Brussels, Belgium

Details at <http://cvmeurope2013.automotiveworld.com>

Topics will be fuel efficiency, emissions reduction and market outlook.

Automotive Megatrends Europe 2013

13 November 2013, Brussels, Belgium

Details at <http://ameurope2013.automotiveworld.com>

Topics will be powertrain, safety and connectivity.

SAE 2013 Fuels, Lubricants and Aftertreatment Symposium: Achieving Fuel Economy and GHG Targets

18-21 November 2013, Long Beach, California, USA

Details at www.sae.org/events/file

The maturity of biofuels technology, the refinement of aftertreatment, and the evolution of lubricants and lubricating fluids can be critical tools in achieving and exceeding regulatory targets in the US and Globally. The symposium will focus on these changing and growing technologies and their impact on fuel economy and emission reductions objectives.

Homologation Conference

25-26 November 2013, Munich, Germany

Details at www.tuev-sued.de/automotive/veranstaltungen/fachtagung-homologation-2013

The conference is intended to provide a forum for an exchange of experiences, for providing updates on new developments in the area of vehicle homologation, type certification and type approval worldwide, and to assist with questions relating to homologation during the course of daily work.

Internal Combustion Engines: Performance, Fuel Economy and Emissions

27-28 November 2013, London, UK

Details at www.imeche.org/events/C1370

This conference provides a forum for IC engine experts looking closely at developments for personal

transport applications, though many of the drivers of change apply to other transport sectors.

4th IMarEST Ship propulsion Systems Conference – Efficiency and Compliance

27-28 November 2013, London, UK

Details at

<http://www.imarest.org/OurEvents/EventListings/ShipPropulsionSystems/27-28November2013.aspx>

Key themes will include future developments in slow and medium speed engines, fuel alternatives, and the effect of operational practice on CO₂ emissions.

International Conference - Real Driving Emissions

2-4 December 2013, Cologne, Germany

Details at www.real-driving-emissions.eu/PM

The conference will discuss the latest developments on the EU's Real Driving Emissions regulations, provide insights into PEMS data evaluation models, review current PEMS technology and application solutions, examine simulation models for RDE strategies and look for exhaust system optimization methods to enlarge the operational window.

The 2nd Annual European Future Transport Conference

3 December 2013, Brussels, Belgium

Details at www.eu-ems.com/summary.asp?event_id=180&page_id=1502

The conference will assess how the European Commission's Clean Power for Transport Package will help reduce GHG emissions from transport as well as support Europe's economic growth and industrial competitiveness.

The Spark Ignition Engine of the Future

4-5 December 2013, Strasbourg, France.

Details at www.sia.fr/evenement_detail_spark_ignition_engine_of_1181.htm

This SIA international Conference intends to provide the opportunity to exchange points of view and information on the potential of the future spark ignition engine to respond to the main challenges of mobility, CO₂, emissions and hybridization.

Air Quality Monitoring – New Technologies, New Possibilities

10-11 December 2013, London, UK

Details at <http://aamg-rsc.org/2013/07>

The meeting will focus on the challenges of helping regulations and strategies evolve to make the best use of resources and new instrumentation, including that for NO₂ and particulate matter.

10th ACEM (Motorcycle Industry) Conference

29 January 2014, Brussels, Belgium

Details will be at www.acem.eu

11th Green Ship technology Conference

March 2014, Oslo, Norway

Details will be at www.informamaritimeevents.com/event/greenshiptechnology

14th Stuttgart International Symposium "Automotive and Engine Technology"

18-19 March 2014, Stuttgart, Germany

Details at www.fkfs.de/english/company/events/stuttgart-symposium-2014

Organized by the FKFS (Stuttgart Research Institute for Automotive and Automobile Engine Technology).

8th International Exhaust Gas and Particulate Emissions Forum

1-2 April 2014, Ludwigsburg, Germany

Details at www.abgas-partikel-forum.com/index.html

SAE World Congress

8-10 April 2014, Detroit, Michigan, USA

Details at www.sae.org/congress

FISITA 2014 World Automotive Congress

2-6 June 2014, Maastricht, the Netherlands

Details at www.fisita2014.com

Congress topics will include clean and efficient engine technologies, new energy powertrains, and new mobility and vehicle concepts.

SAE 2014 Heavy Duty Diesel Emissions Control Symposium

17-18 September 2014, Gothenburg, Sweden

Details will be at www.sae.org/events