



# Newsletter

January - February 2014

## INTERNATIONAL REGULATORY DEVELOPMENTS

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## EUROPE

### 3<sup>rd</sup> Comitology Regulation for Heavy-Duty Euro VI published

On 18 February 2014 the third comitology package amending the Euro VI Regulation was published in the EU's Official Journal as Commission Regulation (EU) No 133/2014 and enters into force on 10 March 2014.

The new regulation updates the numerous Euro VI references to the 06 series of amendments of UN Regulation 49 and introduces requirements for Type-Approval (including reference fuel specifications) and In-Service Conformity of dual-fuel engines as well as complementary requirements for gas-fuelled engines.

It also introduces a particle number limit of  $6 \times 10^{11}/\text{kWh}$  for Positive Ignition (PI) engines, to be measured on the World Harmonized Transient Cycle (WHTC). The limit applies to new types from 1 September 2014, and one year later to all vehicles.

It establishes, for PI engines, an On-Board Diagnostic (OBD) threshold limit for CO of 7500 mg/kWh, applicable from 1 September 2014/2015 for new types/all vehicles respectively.

Finally, light-duty Euro 6 OBD requirements are allowed to be used for heavy-duty vehicles of less than 7.5 tonnes and the application of amendments related to the certificate of conformity are delayed until 1 July 2014 to ensure sufficient lead time for the adaptation of the information systems.

The Framework Directive 2007/46/EC is also amended to reflect changes induced in the Euro VI Type-Approval certificate.

Commission Regulation (EU) No 133/2014 is at [http://new.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL\\_2014\\_047\\_R\\_0001\\_01](http://new.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2014_047_R_0001_01).

### Amendments to Euro 5/6 and Euro VI Regulations published

A new Regulation containing amendments to both light-duty Euro 5/6 and heavy-duty Euro VI was published in the EU's Official Journal on 13 February 2014 as Commission Regulation (EU) No 136/2014. It also includes amendments to the Framework Directive 2007/46/EC.

The main changes are addition of E10 (10% ethanol in petrol) and B7 (7% biodiesel) reference fuels for Euro 6 and alignment of the existing heavy-duty reference fuels with the new light-duty specifications; addition of the possibility of combining Euro 6c emissions with Euro 6-1 (preliminary) OBD thresholds; and addition of power measurement procedures to Euro 5/6.

Specifications are added for E10 and B7 reference fuels in the Euro 5/6 Regulation. They have to be used for new type-approvals not later than 16 months after

the start of Euro 6 for the relevant vehicle category (until then manufacturers have the option of using E5 or E10, B5 or B7). All new vehicles have to be type-approved using E10 or B7 (as appropriate) from Euro 6c: 1 September 2018 (M1 & N1 Class I) / 1 September 2019 (N1 Class II & III). There is, though, a note that if technical evidence for vehicles certified with E5 or B5 shows significantly higher emissions when tested with E10 or B7, the Commission should make a proposal advancing these introduction dates.

The table of characters for Type-Approvals has once again been updated. This now allows the combination of Euro 6c emissions with Euro 6-1 preliminary OBD threshold requirements until September 2018 (M1 & N1 class I) or September 2019 for the rest.

Characters ZA to ZC were previously for Euro 6c emissions plus Euro 6-2 (full) OBD, starting in September 2017 for M1 and N1 Class I (ZA) / 2018 for N1 Class II (ZB) and N1 Class III & N2 (ZC). These now become ZD to ZF, and ZA to ZC become Euro 6c emissions + Euro 6-1 OBD.

There are also some changes to the B7 reference fuel specification in the heavy-duty Euro VI Regulation and substantial changes to the E10 specification so as to align with the new Euro 6 specifications.

Finally, changes to the Framework Directive align it with the changes to Euro 5/6 & VI Regulations.

Commission Regulation (EU) No 136/2014 is at [http://new.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL\\_2014\\_043\\_R\\_0012\\_01](http://new.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2014_043_R_0012_01).

### Publication of Euro 4 & 5 Delegated Acts for Motorcycles

On 21 February 2014 the delegated act on Environmental and Propulsion unit Performance Requirements (REPPR) of L-category vehicles was published in the Official Journal as Commission Delegated Regulation (EU) No 134/2014.

This is the third and last delegated act to Regulation (EU) 168/2013 on two- and three-wheel vehicles and quadricycles (L-category) to be published and will enter into force on 1 January 2016, with the Euro 4 stage. It establishes the detailed technical requirements and test procedures for type I test (cold-start tailpipe emissions), type II test (emissions at idle and free acceleration), type III test (crankcase gases emissions), type IV test (evaporative emissions), type V test (durability of emissions control devices), type VII test (CO<sub>2</sub> emissions, fuel and electric energy consumption, or electric range), type VIII test (On-Board Diagnostic), and type IX test (noise).

Annex II on the type I test describes the drive cycles, including which versions of the World harmonized Motorcycle Test Cycle (WMTC) are to be used for the

various sub-categories of vehicles, and the detailed test and emissions measurement procedures, including reference fuels.

Annex VI covers the durability requirements, either based on mileage accumulation on the new Standard Road Cycle for L-category Vehicles (SRC-LeCV) or on the US EPA Approved Mileage Accumulation (AMA) durability cycle. The AMA cycle is significantly less representative for the EU fleet and traffic situation than the SRC-LeCV and is to be phased out but can be used for Euro 4 type-approvals. The environmental study on Euro 5 will evaluate whether it can be fully replaced by SCR-LeCV after 31 December 2020.

In the long term, when the revisiting process at the UN level is finished, references to equivalent UNECE Regulations will replace the text of this delegated act.

Previously, in January 2014 the two other delegated acts were published in the Official Journal as Commission Delegated Regulations (EU) No 3/2014 and (EU) No 44/2014, covering respectively vehicle functional safety requirements (RVFSR) and technical requirements and test procedures regarding vehicle construction requirements (RVCR). The latter also establishes performance standards for technical services and the procedure for their assessment.

The remaining implementing Regulation on Administrative Requirements (RAR) is still expected from the Commission to finalize the Euro 4 & 5 package for powered-two and -three wheelers and quadricycles.

The 3 delegated acts are available from [http://ec.europa.eu/enterprise/sectors/automotive/document/s/directives/motorbikes/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/automotive/document/s/directives/motorbikes/index_en.htm).

## **Publication of the Directive on Emissions from Recreational Craft**

A new Directive on emissions from recreational craft was published in the Official Journal of the European Union on 28 December 2013 as Directive 2013/53/EU.

The new Directive covers vessels between 2.5 and 24 metres long, including motor boats, sailing yachts and water scooters. It includes a Stage II, requiring roughly a 20% reduction in NO<sub>x</sub> and HC emissions and a 34% cut in particulate emissions compared to Stage I.

Work-specific CO and HC+NO<sub>x</sub> limits are provided for Spark Ignition (SI) engines depending on the rated engine power and the type of engine (stern-drive vs. outboard) while CO, HC+NO<sub>x</sub>, and particulate emissions limits are defined for Compression Ignition (CI) engines depending on the rated engine power and the swept volume. Contrary to Stage I, Stage II no longer sets different emissions limits for 2- and 4-stroke SI engines.

Member States have until 18 January 2016 to transpose the Directive into national law. The Stage II

requirements will enter into force on 18 January 2017. However, small and medium-sized enterprises making outboard SI engines with a power rating equal to or less than 15 kW have until 18 January 2020 to comply.

The Commission will review the feasibility of adopting tighter limits by 2022 and will consider the introduction of new requirements for evaporative emissions.

Directive 2013/53/EU is available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:354:0090:0131:EN:PDF>.

## **Commission Proposal for Amendment of Euro 5/6 and Euro VI Regulations**

On 31 January 2014, the European Commission adopted a proposal for a co-decision Regulation that would amend both the Euro 5/6 light-duty and Euro VI heavy-duty Regulations.

The Commission proposes to replace reference to the old “regulatory procedure with scrutiny” (RPS) with powers for “delegated acts”. The Lisbon Treaty, which entered force in 2009, did away with the RPS where Member State committees voted on secondary legislation and then passed it to the Council and Parliament for a three-month scrutiny period. However, RPS continues to exist in older legislation such as Euro 5/6 and Euro VI. Under the new “delegated act” process, the Commission approves secondary legislation directly and then passes it to the Council and Parliament for scrutiny.

The Commission proposed this update in view of the introduction of the complementary “pot-pourri” regulatory elements. This includes setting NO<sub>2</sub> emissions limits for cars and light-duty vehicles. Further impact assessment would nevertheless be needed before setting NO<sub>2</sub> limits through delegated acts.

The proposal also suggests including vehicles’ methane emissions and adding them to CO<sub>2</sub> as their equivalent mass of CO<sub>2</sub>, based on methane’s global warming potential. In the meantime CH<sub>4</sub> emissions would no longer be considered as a regulated pollutant.

The proposal would also allow the Commission to introduce low temperature (-7°C) emissions limits for NO<sub>x</sub> and NO<sub>2</sub>. Existing limits for carbon monoxide and THC emissions should be revised to take account of technological progress.

Possible future updates to the UNECE Particulate Measurement Programme (PMP) and new test cycles and procedures that would reflect emissions generated by real-driving on the road would also be introduced into Euro 5/6 and Euro VI by delegated acts.

It also proposes widening the application of type-approval rules in terms of vehicle mass for vehicles that fall into both light-duty and heavy-duty categories.

Finally, the proposal says that the ammonia limit set in the Euro VI Regulation was established to control the slip of ammonia from urea-SCR systems so it is suggested to delete the NH<sub>3</sub> limit value requirement for positive ignition engines.

The Commission proposal now has to be approved by the European Parliament and Council. MEP Thomas Ulmer (Germany, EPP) has been appointed Rapporteur for the dossier in the Environment Committee in the Parliament.

The co-decision proposal is at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2014:0028:FIN:EN:PDF>.

## **Agreement on 2020 Target for CO<sub>2</sub> Emissions from Vans**

On 11 February 2014 the European Council adopted a CO<sub>2</sub> emissions target for light-duty vehicles of 147 g/km in 2020. This followed adoption of the draft Regulation by the European Parliament on 14 January 2014.

The target is for the maximum average emissions authorised for the entire fleet of models made by each manufacturer registered in the EU of vans of up to 3.5 tonnes laden. It will apply to manufacturers producing more than 1 000 vehicles per year.

The approved text foresees termination in 2018 of the current “super credits” system giving extra weighting to vehicles emitting less than 50 g/km of CO<sub>2</sub>. The text also points to loopholes in the current CO<sub>2</sub> test protocol and the current procedure will have to be replaced as soon as possible by the new World Light-duty Test Procedure (WLTP), defined by the UN. By the end of 2015, the Commission will have to review the specific emissions targets and the modalities set out in order to establish the CO<sub>2</sub> emissions targets for new vans beyond 2020. The adopted text does not specify any limit but values between 105 and 120 g/km by 2025 have circulated during trilogue negotiations.

The new Regulation has yet to be published in the Official Journal.

## **EU Climate and Energy Policies Framework for 2030**

On 22 January 2014 the European Commission adopted a new EU framework on climate and energy for 2030 including a reduction in greenhouse gas (GHG) emissions by 40% below the 1990 level, an EU-wide binding target for renewable energy of at least 27%, and renewed ambition for energy policies.

The proposal does not include any biofuel targets for the transportation sector beyond 2020. The Commission emphasized that “first generation biofuels have a limited role in decarbonizing transport. A range of alternative renewable fuels and a mix of targeted

policy measures building on the Transport White Paper are thus needed to address the challenges of the transport sector in a 2030 perspective and beyond.”

The European Parliament also adopted on 5 February 2014 a non-legislative resolution calling for three binding climate and energy targets for 2030.

MEPs want a reduction in domestic greenhouse gas emissions of at least 40% from 1990 levels, an energy efficiency target of 40%, and a commitment to producing at least 30% of total final energy consumption from renewable energy sources. These targets should be binding and implemented through individual national targets, taking account of each Member State’s situation and potential. The Parliament indicated that “the Commission communication is short-sighted and unambitious on a number of levels, specifically as regards the lack of national targets for renewable energy and of any meaningful new action to incentivise energy efficiency.”

Also, on 17 February 2014, Energy Cities, an alliance of more than thousand European cities, wrote to the president of the European Council Herman Van Rompuy, calling for binding 2030 targets of 40% for energy efficiency and 30% for renewable energy.

## **Parliamentary Question on Electric Vehicles Carbon Footprint**

On 17 January 2014, Climate Action Commissioner Hedegaard answered a written question by MEP Tannock (UK, ECR) on the environmental impact of electric vehicles.

The Commissioner cited in particular the JEC Consortium Well-to-Wheels analysis which assessed fuel cycle greenhouse gas emissions for a wide range of different technologies for comparable cars under the current type-approval test. The report showed that a current battery electric vehicle has CO<sub>2</sub> emissions of around 78 g CO<sub>2</sub>eq/km using the EU average electricity mix, while diesel vehicles emit 145 g CO<sub>2</sub>eq/km in average over the full energy life cycle. According to the Commission, technological improvement is expected to reduce these emissions to about 57 and 106 g CO<sub>2</sub>eq/km respectively in 2020.

## **JRC Report on Determination of Whole Vehicle Heavy-duty CO<sub>2</sub>**

The Joint Research Centre (JRC) of the European Commission published in January 2014 a new ‘Proof of Concept’ report on the ‘Development of a CO<sub>2</sub> certification and monitoring methodology for Heavy-Duty Vehicles (HDV)’.

Due to the diversity and particular characteristics of the HDV sector, the Commission decided that the core of the methodology for monitoring CO<sub>2</sub> emissions from HDV would be based on vehicle simulation, similar to

approaches adopted in the US and Japan. The report thus investigates the plausibility of such a simulation-based approach via an experimental study conducted on 2 heavy-duty vehicles, one engine, and simulation.

The JRC concludes that simulation tools, and in particular VECTO, can reproduce real world performance of HDV with satisfactory accuracy. In the study, the simulated fuel consumption of on-road real world operation was calculated within a  $\pm 3\%$  range from the real world measurement and in several cases even closer than that ( $\pm 1.5\%$ ). According to EU legislation, a  $\pm 3\%$  margin is considered acceptable for the passenger car CO<sub>2</sub> declaration (measured on chassis dyno); therefore, the report concludes that a future HDV CO<sub>2</sub> certification scheme can be based on vehicle simulation tools.

**Development of a CO<sub>2</sub> certification and monitoring methodology for heavy duty vehicles - Proof of concept report**, G. Fontaras, M. Rexeis, S. Hausberger, A. Kies, J. Hammer, L-E. Schulte, et al. (2014), [doi: 10.2790/12582](https://doi.org/10.2790/12582).

## **JRC Report on Emissions and Traffic Models and Vehicle Simulation Tools**

The Joint Research Centre (JRC) of the European Commission has also published a new report on emissions and traffic models and the evaluation of vehicle simulation tools.

The study gives a description of emission calculation (e.g. COPERT) and traffic models and vehicle simulation tools (e.g. VECTO). An analysis of the tools used by JRC was performed for various case studies, including simulator vs. experiment comparisons.

The report concludes that vehicle simulation software applications can be used for estimating fuel consumption factors and CO<sub>2</sub> emissions factors and for analysing the energy performance of a vehicle over various operating conditions provided the necessary input data and parameters are available. It also says that the comparison between virtual tests made with vehicle simulators and actual experiments performed either in the lab or on-road suggests that fuel and energy consumption estimations of high accuracy are possible with all software tested when it comes to conventional powertrains. Complex powertrain architectures demand more input data and additional knowledge of the control strategies of the vehicles.

Also, there is a great margin for inter-model interfacing for covering all ranges of analysis from individual powertrains and vehicles to fleet-wide calculations. In the future, traffic situation-based or fleet-wide emissions calculators (e.g. TREMOVE) should use the results of vehicle simulators in order to better reflect the performance of vehicles which will incorporate new technologies. The Commission should invest more in the application of such tools both for policy analysis and

for monitoring the implementation of regulation, the report adds. JRC uses vehicle simulation tools for emission factor development and performance analysis. Their application should be further expanded for technology and policy assessment, cost-effectiveness and emissions monitoring.

**Overview of emission and traffic models and evaluation of vehicle simulation tools**, M. Kousoulidou, G. Fontaras, L. Lonza, P. Dilara (2013), [doi: 10.2790/98977](https://doi.org/10.2790/98977).

## **NGO Assessment of the Year of Air**

On 6 January 2014, a group of five European environmental and health Non-Governmental Organizations (European Environmental Bureau, Transport & Environment, AirClim, ClientEarth, and Health & Environment Alliance) released their assessment of the European Year of Air, calling upon EU co-legislators to start working on the Commission's clean air package as soon as possible and raise the level of ambition of the proposals.

Campaigners welcomed the proposal to revise the National Emission Ceilings (NEC) Directive but were worried by the lack of ambition of the 2020 targets and the lack of 2025 binding targets.

Regarding sectoral legislation to cut emissions from major sources, NGOs welcomed the proposal to regulate emissions from medium scale combustion installations (1-50 MW) but call for more efforts on reducing emissions from shipping, cars, Non-Road Mobile Machinery (NRMM), and agriculture. The NGO coalition called upon the Commission to adopt, no later than in the first quarter of 2014, a legislative proposal aligning particulate mass, particle number and NO<sub>x</sub> standards for NRMM with Heavy-duty Euro VI.

They stressed that the Commission did not propose any new, stricter EU standards for cars, apart from a voluntary scheme for Super Ultra-Low Emission Vehicles (SULEV) and called for the new Portable Emissions Measurement Systems (PEMS) test to enter into force in 2014, not in 2017, with driving conditions that include the most polluting ones. They also requested that periodic inspection tests include robust emissions measurements and called for the development of fuel-neutral Euro standards.

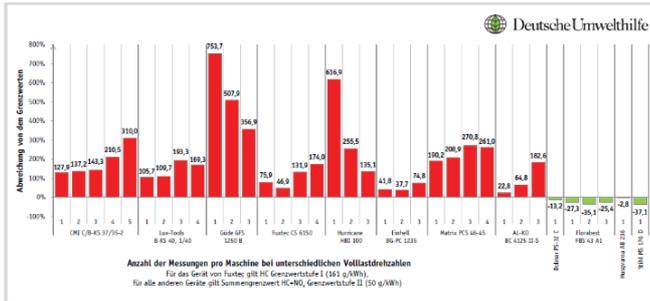
Finally, NGOs noted the lack of action on infringements of air quality limit values in Member States.

## **DUH's Benchmark of Emissions from Hand-held Equipment**

On 20 February 2014 environmental NGO Deutsche Umwelthilfe (DUH) released results of an investigation on pollutant emissions from a selection of market available hand-held equipment.

Out of the twelve chainsaws and brushcutters tested at TÜV Nord, eight emitted significantly more CO, HC, or NOx than the regulatory limits.

As a result, DUH is calling for an immediate sales ban. Jürgen Resch, CEO of DUH said "It is a scandal that brushcutters and chainsaws that do not comply with the regulatory provisions and harm the health of the user by their high pollutant emissions can be sold".



According to DUH, only Baden-Württemberg has conducted emissions measurements of hand-held equipment. "The aim of the legislation is to protect human health and the environment by limiting hazardous emissions in the exhaust gas", said Axel Friedrich who supervised the test as a technical advisor to the DUH. "High emissions damage the equipment user (e.g. by carcinogenic benzene emissions) and the environment by high hydrocarbon emissions that lead to increased ozone concentrations. Also the risk of accidents increases due to high CO concentrations."

DUH announced further legal actions against manufacturers of devices for which emissions exceedances were observed.

The report is at [www.duh.de/uploads/media/Hintergrundpapier\\_Abgasemissionen\\_mobiler\\_Maschinen\\_180214\\_01.pdf](http://www.duh.de/uploads/media/Hintergrundpapier_Abgasemissionen_mobiler_Maschinen_180214_01.pdf).

## Blue Angel Eco-Label for Replacement Catalytic Converters

On 10 February 2014 environmental NGO Deutsche Umwelthilfe (DUH), the German UBA (Federal Environmental Agency), and RAL gGmbH handed over the first Blue Angel labels for replacement catalytic converters to LRT Automotive and HJS Emission Technology.

The Blue Angel is an environmental label for products and services around the world. It was created in 1978 in Germany and it considers itself as a market-conform instrument of environmental policy designed to distinguish the positive environmental features of products and services on a voluntary basis. The new Blue Angel label for replacement catalytic converters aims at certifying eco-friendly devices that ensure durable low exhaust emissions. The label awarding procedure includes in particular simulated ageing of the

converter which goes beyond requirements set in UN Regulation No 103 on replacement catalysts.

## Air Pollution in Germany in 2013

On 16 February 2014, the Federal Environment Agency (UBA) released its preliminary assessment of air pollution in Germany in 2013.

The evaluation is based on preliminary, not final audited data from the monitoring networks of the Länder and the UBA. NO<sub>2</sub> exposure was similar to previous years, with more than half of the urban traffic monitoring stations exceeding the allowable annual average NO<sub>2</sub> concentration of 40 µg/m<sup>3</sup>. There were also persistent exceedances of fine particle concentrations but, compared with previous years however, 2013 was one of the least polluted years.

Thomas Holzmann, Vice President of UBA commented that "the fine particles limit has been exceeded in only 3% of monitoring stations. That seems low, but reflect the actual health burden on the population... According to UBA's calculations, there is approximately 47 000 premature deaths per year due to the high particulate pollution - due to acute respiratory disease, cardiopulmonary disease or lung cancer. We advocate a rapid strengthening of the current EU limit values based on the scientific recommendations of the World Health Organization (WHO)." The WHO recommends PM<sub>10</sub> annual mean concentrations of less than 20 µg/m<sup>3</sup>; this figure was exceeded in almost 51% of monitoring stations in Germany in 2013.

The UBA report is at [www.umweltbundesamt.de/publikationen/luftqualitaet-2013](http://www.umweltbundesamt.de/publikationen/luftqualitaet-2013).

## Automobile Club questions LEZs Effectiveness in Germany

On 28 January 2014, the Stuttgart-based Auto Club Europa (ACE) called for the Federal Transport Minister Alexander Dobrindt to examine whether Low Emissions Zones (LEZ) in Germany are still justified.

According to ACE, the Federal Motor Transport Authority (KBA) figures for 2013 show that 96.4% of the country's 43.3 million cars were entitled to a green sticker allowing them to drive in LEZ.

The German Association of Cities argued however for the retention of the LEZs until both PM and NOx air quality standards are met. They also encourage the Federal Government to introduce the Euro 6 standard earlier than September 2015.

## Classification of UK Air Quality Zones

On 17 December 2013, the UK Department for Environment, Food, and Rural Affairs (DEFRA) published a report reviewing the assessment regime of the UK's air quality monitoring under the Ambient Air Quality Directive 2008/50/EC and a report on the

classification of UK zones against European Air Quality Directive assessment thresholds. The latter is a five-year review covering the period 2006-2010.

Assessment thresholds are specified for sulfur dioxide, nitrogen oxides (NO<sub>x</sub>), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), lead, benzene, carbon monoxide, arsenic, cadmium, nickel, and benzo[a]pyrene. In addition, examination of ozone concentrations has been made over the five year period. The assessment uses a combination of measured data from the national monitoring network and national air quality models to determine which category each zone falls into relative to the assessment thresholds (below the lower threshold, between the lower and upper ones, or above the upper one).

As a result of the review, increases in monitoring for PM and NO<sub>2</sub> will be made. A reduction in monitoring of CO and SO<sub>2</sub> has been implemented due to the low concentrations present. Minor changes have also been made to ozone and benzene monitoring. There is potential for future rationalisation of lead monitoring but this will be considered alongside the other metals.

## **Commission takes Legal Action against UK for Persistent NO<sub>2</sub> Problems**

On 20 February 2014, the European Commission announced that it has launched legal proceedings against the UK for its failure to cut excessive levels of nitrogen dioxide.

The Commission notes that the UK Supreme Court has declared that air pollution limits are regularly exceeded in 16 zones across the UK (Greater London, the West Midlands, Greater Manchester, West Yorkshire, Teesside, the Potteries, Hull, Southampton, Glasgow, the East, the South East, the East Midlands, Merseyside, Yorkshire & Humberside, the West Midlands, and the North East). The Court also noted that air quality improvement plans estimate that compliance with EU standards will only be achieved by 2025 in London, and in 2020 for the other 15 zones.

The EU ambient Air Quality Directive sets NO<sub>2</sub> limits that should have been achieved by 1 January 2010 unless an extension was granted until 1 January 2015. Nevertheless, the UK has not presented any such plan for the zones in question. The Commission therefore states the UK is in breach of its obligations, and a letter of formal notice has been sent. The UK has two months to respond.

## **New Low Emission Zones in Oxford and Brighton, UK**

On 1 January 2014 a Low Emission Zone (LEZ) came into force in Oxford (UK) and on 14 January 2014 the city council of Brighton (UK) approved a proposal to implement a LEZ from 1 January 2015.

The LEZ in Oxford is the UK's second outside London, after Norwich's small city centre LEZ put in place standards for nitrogen dioxide emissions from local buses in 2008. In order to comply with the new LEZ, Oxford's bus engines have to meet the Euro V standard for NO<sub>x</sub>. Buses must also switch off their engines when waiting for more than a minute. Euro IV buses operating between October 2012 and January 2013 are exempt from the LEZ requirement until the end of 2015.

While praising the introduction of the LEZ in Oxford, Green Party city councillor Mr Craig Simmons said that the measures should nevertheless apply to all polluting vehicles in the city centre, not just buses.

In Brighton, only buses meeting the Euro V standards will be allowed to drive on North Street and Western Road from 1 January 2015 onwards. Exemptions will be available for buses retrofitted to meet Euro V or for vehicles due to be replaced within 12 months. More than 95% of the city's buses will pass through the LEZ so it is expected to improve air quality across the city.

Brighton's city council considered applying LEZ rules to trucks and private cars but this was considered not practical or cost effective. The council is nevertheless also working to reduce taxi emissions, for instance through a no-idling policy at taxi ranks.

## **Commission urges Belgium to Act on PM<sub>10</sub> Pollution**

The February infringements package published by the European Commission on 20 February 2014 included a reasoned opinion calling on Belgium to take action to curb PM<sub>10</sub> air pollution.

The Commission said citizens in Brussels, Ghent port zone, Antwerp, Flanders and Liege have been exposed to unhealthy levels of PM<sub>10</sub> since 2005. It believes that since 2005 Belgium has not taken measures to protect citizens' health, and it is therefore asking Belgium to take "forward-looking, speedy and effective action to keep the period of non-compliance as short as possible". If Belgium fails to act, the Commission may take the matter to the EU Court of Justice.

## **French Report on Vehicle Identification for Air Quality**

On 19 December 2013, the French Ministry for Environment, Sustainable Development, and Energy, released a report on possible vehicle identification methods for future environmental zones.

13 urban zones and 2 regions in France are facing legal action from the European Union because of ambient PM<sub>10</sub> and NO<sub>2</sub> regulatory limit breaches but, unlike other Member States such as Germany, Italy, the UK, and Scandinavian countries, France has not yet established any Low Emission Zone.

The analysis of the composition and evolution of the French vehicle fleet has shown a stabilization at 38 million vehicles, with a renewal rate of 5% per year. Vehicles were classified according to the ranking established in May 2012 which attributes 1\* to 5\* to vehicles depending on their Euro standard. 1\* and 2\* vehicles, the most polluting ones, represent 20.5% of the fleet, 3\* vehicles represent 17.3%, and 4\* and 5\* vehicles, the less polluting ones, represent 62.2% of the 38 million vehicles fleet. The report recommends the use of a three-color code label (red/orange/green) corresponding to 1\* and 2\* vehicles, 3\* vehicles, and 4\* and 5\* vehicles. Insurance labels would be the most pragmatic tool and the system could rapidly be introduced in 2014.

The report proposes to ban access to LEZs to red-labelled vehicles (i.e. Diesel cars and vans up to Euro 2 and heavy-duty vehicles up to Euro III) representing 8 million vehicles. Regulation options include vehicles control at green zones entrance, parking access restrictions, and differential parking fees.

The report is available at [www.cgedd.developpement-durable.gouv.fr/IMG/pdf/008897-01\\_rapport\\_cle27148d.pdf](http://www.cgedd.developpement-durable.gouv.fr/IMG/pdf/008897-01_rapport_cle27148d.pdf).

## **2011 Air Pollution Inventory in France**

On 19 December 2013, CITEPA (Interprofessional Technical Centre for Studies on Air Pollution) published key-figures of air pollution emissions in France in 2011.

The factsheet includes a comparison to past inventories, since 1990, and highlights an increase in national emissions of ammonia and nitrous oxide in 2011 compared to 2010. Emissions inventories are also provided by sector contribution, for pollutants responsible for acidification and eutrophication (e.g. SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, CO), for greenhouse gases (e.g. CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>), for heavy metals, for persistent organic pollutants, and for particles (e.g. total suspended particles, PM<sub>10</sub>, PM<sub>2.5</sub>, and PM<sub>1</sub>).

The CITEPA factsheet is at [www.citepa.org/images/II\\_citepa/Antiseches\\_ed2013\\_jan14.pdf](http://www.citepa.org/images/II_citepa/Antiseches_ed2013_jan14.pdf).

## **Ireland breached NO<sub>x</sub> Emissions Ceiling again in 2012**

On 6 February 2014 the Irish Environmental Protection Agency (EPA) released its national emissions inventory for four key pollutants in 2012.

EPA shows that NO<sub>x</sub> emissions increased in 2012 and continue to breach the national NO<sub>x</sub> ceiling. Ireland exceeded the limit of 65 kt set out in the National Emission Ceilings (NEC) Directive by 6.2 kt in 2012, up from 4 kt in 2011, but down from 11.7 kt in 2010.

The road transport sector has been one of the main contributors to the high NO<sub>x</sub> levels, responsible for over 47% of national emissions in 2012. The power generation and industrial sectors have also been major

sources; and the NO<sub>x</sub> emissions increase between 2011 and 2012 was due to increases in emissions from coal fired electricity generation and cement production. Emissions of sulfur dioxide (SO<sub>2</sub>), volatile organic compounds (VOCs) and ammonia (NH<sub>3</sub>) were well within the required EU emissions limits.

## **PM Concentrations in Austria in 2013**

The Austrian federal Environment Agency (Umweltbundesamt) published on 2 January 2014 preliminary data on the country's fine Particulate Matter (PM) concentrations for 2013.

In 2013, PM concentrations in Austria were as high as in 2009 or 2012, and significantly lower than in 2010 or 2011. A major factor for the lower concentrations was the relatively warm weather in January-February and in October-December 2013 which meant lower PM emissions from domestic heating. Frequent westerly weather patterns have also ensured favourable propagation conditions and the long-range transport from East Central Europe brought only very small contributions to the concentration of particulate matter in Austria in 2013.

The limit of the EU Air Quality Directive for PM<sub>10</sub> for the daily mean value (35 days average values over 50 µg/m<sup>3</sup> in the calendar year) was exceeded in 2013 only in Graz. The more stringent national limit of the Air Pollution Control Act (25 daily mean values above 50 µg/m<sup>3</sup>) was however exceeded also in Vienna as well as at individual measuring points in Carinthia, Lower Austria, Linz, Salzburg and Styria.

The highest PM<sub>2.5</sub> concentrations were measured in Graz and Vienna and were around 20 µg/m<sup>3</sup>, therefore below the 25 µg/m<sup>3</sup> threshold to be met by 2015.

These figures are based on preliminary data from air quality surveys of the provincial governments and the Federal Environment Agency. The final data will be published in the second quarter of 2014.

## **Particulate Pollution Measures in Greece**

On 26 December 2013 new measures to tackle extreme air pollution were published in the Greek government Gazette. The measures were decided at an emergency meeting by the Ministers of Finance, of Health and of Environment, Energy and Climate Change on the day before.

According to the decisions, warnings will be issued for specific days where suspended particulates are 'alarming' to stop using the alternative heating sources in cities throughout Greece, to stop central heating in public buildings and to restrict vehicle circulation. The pollution rate to be used will be a maximum of 150 mg/m<sup>3</sup>, above which emergency measures will be announced in all cities in Greece.

Industrial plants and production units will be asked to reduce their activities by 30% on high-pollution days; exceptions are granted to plants that use continuously-burning furnaces or units running on natural gas.

Private cars without a catalytic converter and all vehicles, private or commercial, running on Diesel will also be banned from circulating on days when warnings are issued. This measure includes school buses and public-use trucks in urban areas, while taxis will go under the alternating-day circulation plan, depending on odd- or even-numbered plates.

## **Spain extends Scrapping Scheme**

On 10 January 2014 Spanish Deputy Prime Minister Ms Soraya Saenz de Santamaria announced that Spain has expanded its car scrapping subsidy programme by €175 million. It is estimated that it should generate a related tax income of €1 billion.

This is the fourth extension of the PIVE programme totalling €465 million subsidy. Under the scheme, car owners who scrap their old car and buy a new one get a subsidy of €2000, half from the government and half from the car manufacturer.

## **Czech Republic gets EU Funds to replace Old Buses**

The Czech Environment ministry announced on 23 January 2014 that the Czech Republic is to receive Kč1 billion (€ 36 million) from the European Union's Cohesion Fund to replace old polluting buses.

The subsidy at the amount of 85% of total costs will be used to replace old municipal public transport buses with eco-friendlier CNG ones in the Moravian-Silesian, South Moravian and Usti regions. The funding will cover about 154 CNG buses and ten filling stations.

Air quality in the Moravian-Silesian and Usti regions ranks among the worst in the country, being polluted by industry, transport, and domestic heating.

A study commissioned by the Environment Ministry showed that the bus replacement programme will save 3.54 tons of particulate matter, 40.2 tons of nitrogen oxides, 8.5 tons of volatile organic compounds (VOCs), and 0.008 tons of polycyclic aromatic hydrocarbons (PAHs) annually.

## **Subsidies for Russian Car Industry**

On 21 January 2014 the Moscow Times reported that Russian automakers will receive subsidies from the federal budget for a total sum of 270.7 billion Roubles (€ 5.8 billion) for 2014-2016.

According to the government 81.2 billion Roubles will be spent on supporting development and production of Euro 4 and Euro 5 compliant vehicles. 8.1 billion Roubles (€175 million) will actually be spent on

research and development work, as well as testing of vehicles over the three-year period.

Subsidies should help achieve the Russian target of an increase in production up to 3.1 million cars and 280 000 light commercial vehicles per year.

## **Largest Ukraine Refinery starts producing Euro 5 Diesel Fuel**

On 31 December 2013 Naftogaz Ukrayiny, Ukraine's national oil and gas company, announced that its largest oil refinery by capacity, located in Kremenchuk, has completed modernization of its equipment in order to start production of Diesel fuel that meets Euro 5 quality standards.

"Now the refinery can produce diesel fuel with sulfur content of no more than 10 ppm, which corresponds to the latest European environmental standards," the refinery said. "The new kind of diesel fuel also has excellent low temperature characteristics, which allows the use of fuel even in arctic climate conditions."

## **NORTH AMERICA**

### **US EPA recommends Lower Ozone Ambient Standards**

On 31 January 2014, the US Environmental Protection Agency (EPA) released its second draft Policy Assessment (PA) for the Review of the Ozone National Ambient Air Quality Standards.

EPA staff analyses are based on the scientific and technical information, as well as uncertainties and limitations related to this information, assessed in other EPA documents, including the second draft Health Risk and Exposure Assessment (REA) for Ozone.

On potential alternative standards, the EPA staff concludes that it is appropriate to consider ozone standards with the same indicator, averaging time and form as the current standard but with lower levels than the current 75 parts per billion, between 60 and 70 ppb.

The draft PA, the draft REA for the primary ozone standard, and the draft REA for the secondary ozone standard are available for public comment until 24 March 2014.

### **US EPA proposes Standards for New Woodstoves and Heaters**

On 3 January 2014, the US Environment Protection Agency (EPA) proposed standards for air pollution from new woodstoves and heaters, beginning in 2015.

These proposed regulations would significantly reduce particulate matter emissions and other pollutants including CO and volatile organic compounds. The proposal, affecting a variety of wood heaters manufactured beginning in 2015 but not affecting

heaters and stoves already in use, would make the next generation of stoves and heaters an estimated 80% cleaner than those manufactured today.

EPA proposed to regulate emissions from several types of new wood-fired heaters, including woodstoves, fireplace inserts, indoor and outdoor wood boilers, forced air furnaces and masonry heaters. Many residential wood heaters already meet the first set of proposed standards, which would be phased in over five years to allow manufacturers time to adapt emissions control technologies.

EPA is now taking comment on the proposal until 5 May 2014 and expects to issue a final rule in 2015.

The EPA proposal is at <http://www2.epa.gov/residential-wood-heaters/proposed-new-source-performance-standards-residential-wood-heaters>.

## **President Obama orders New Heavy-Duty Fuel-Efficiency Standards**

On 18 February 2014 US President Barack Obama ordered the development of new fuel-efficiency standards for medium- and heavy-duty trucks.

The new regulations are to be drafted by the US Environmental Protection Agency (EPA) and the Department of Transportation (DOT) by March 2015 and completed a year later. The limits on greenhouse gas emissions from trucks would combine with previous rules on passenger cars and light trucks fuel-efficiency and pending rules to limit CO<sub>2</sub> emissions of power plants. Experts said it should enable meeting the target of cutting CO<sub>2</sub> emissions in the US by 17% from 2005 levels by 2020 but it is still far from the goal of an 80% reduction by 2050.

## **US Federal Awards for Green Ports and Transit Buses**

The US Environmental Protection Agency (EPA) is soliciting proposals that achieve significant reductions in diesel emissions in terms of tons of pollution produced by diesel engines and diesel emissions exposure, from fleets operating at marine and inland waterways ports. The total estimated funding for this competition is approximately \$4 million (€ 4.5 million).

EPA anticipates awarding two to five cooperative agreements from this announcement. EPA will fund verified exhaust control technologies, verified/certified engine upgrades, verified locomotive idle reduction technologies, verified marine shore connection systems, certified engine repower, non-road diesel vehicles and equipment, drayage truck replacement, and clean alternative fuel conversions.

In parallel the US Federal Transit Administration announced the availability of \$24.9 million (€28 million) of funds for the deployment of low- or no-emission

(LoNo) transit buses. The LoNo Program provides funding for transit agencies for capital acquisitions and leases of zero emission and low-emission transit buses. A zero-emission bus produces no direct CO<sub>2</sub> and no particulate matter emissions under any possible operational mode and condition. Hydrogen fuel-cell buses and battery-electric buses qualify as no-emission transit buses. A low-emission bus is defined as any transit bus that is powered by an engine that produces lower non-methane hydrocarbons (NMHC) and NO<sub>x</sub> than legally permitted under EPA standards.

## **Catalyst Performance Study on US Outboard Marine Engines**

On 16 January 2014, the California Air Resources Board (ARB) published the final report on exhaust emissions reduction potential using catalysts in the small, four-stroke outboard marine engine segment.

Mercury Marine was contracted by ARB to develop and test several catalyst-equipped prototype engines ranging from 6 to 40 hp over a period of 350 hours in a real-world, salt-water environment. The extended durability of two larger outboard engines (200 hp) equipped with catalytic converters, which had previously been developed and evaluated in ARB's Innovative Clean Air Technologies project, was also evaluated. Results of both of these projects are expected to provide guidance for the adoption of future outboard marine emissions standards in California.

The large outboard engines (using closed-loop fuel control at most emission mode points) were able to meet the 5 g/kWh HC+NO<sub>x</sub> target, similar to the sterndrive/inboard limit. The CO emissions of the large outboards did not maintain levels below the current 75 g/kWh standard for sterndrive/inboard engines but a 25 g/kWh standard could be met when considering only Modes 2-5 (alternate standard for sterndrive/inboard engines larger than 6 litres). The report also concludes that work is needed to develop a more robust mounting design for the ceramic catalyst element used in the large outboard engines.

The small outboard engines tested reduced the amount of HC+NO<sub>x</sub> emissions output compared with their non-catalyst counterparts but air/fuel ratio control was the most critical factor. It was actually a larger factor than the engine degradation or catalyst deterioration.

The final report is available at [www.arb.ca.gov/msprog/offroad/recmarine/final%20report--marine%20outboard%20catalyst%20research%20project.pdf](http://www.arb.ca.gov/msprog/offroad/recmarine/final%20report--marine%20outboard%20catalyst%20research%20project.pdf).

## **ICCT Technical Report on Ethanol Blends above E10**

On 4 February 2014 the International Council on Clean Transportation (ICCT) released a study on technical barriers to the consumption of higher blends of ethanol

above 10%. The study was commissioned by the US Bipartisan Policy Center in the context of the renewable fuel standard debate.

The paper examines technical issues with using higher blends of ethanol than E10 in vehicles, and fuelling infrastructure and changes that could be made to accommodate these blends. ICCT concludes that technical barriers do not prevent the use of higher blends of ethanol, and slow uptake of blends like E15 and E85 is due to other factors, including high cost, legal and warranty issues, and consumer acceptance.

The ICCT report is at

[http://theicct.org/sites/default/files/publications/ICCT\\_ethanol\\_revised\\_02\\_03\\_format.pdf](http://theicct.org/sites/default/files/publications/ICCT_ethanol_revised_02_03_format.pdf).

## **Air Quality Monitoring strengthened in Mexico**

On 20 January 2014 the Environmental Commission of Megalopolis agreed on priority actions to strengthen and expand the air quality monitoring network throughout Mexico.

An investment of 120 million pesos (€6.6 million) was agreed to improve air quality monitoring stations, of which 50 million pesos will go to the creation of eleven new monitoring stations: three in Mexico City, three in Morelos, three in Puebla, and two in Tlaxcala. The remaining 70 million pesos will be used to upgrade existing monitoring stations.

## **EURASIA**

### **Azerbaijan shifts to Euro 4 Standards**

On 15 January 2014 Azerbaijani Prime Minister Artur Rasizade signed the Order No 2 on the country's transition to the Euro 4 ecological standards.

According to the decision, the Euro 4 standard will apply from 1 April 2014 to vehicles imported and manufactured in Azerbaijan to reduce the emission of vehicle pollutants into the atmosphere and improve the environmental situation in the country.

The head of the country's State Committee on Standardization, Metrology and Patents said at a press conference on 24 January 2014 that given the pace of adoption of ecological standards in the country, the State Oil Company of Azerbaijan (SOCAR) is now considering the production of fuel complying with standards surpassing Euro 5 at a new complex for oil and gas processing and petrochemical production.

## **ASIA PACIFIC**

### **National Environmental Authority to be set up in India**

Following a Supreme Court order on 6 January 2014, a National Environmental Appraisal and Monitoring

Authority (NEAMA) will be created in India before 31 March 2014.

The NEAMA, referred to as the National Environment Protection Authority within the Environment Ministry back in 2010 when it was first planned, was envisaged as an autonomous body, partly inspired by the US Environment Protection Agency.

Under the 1986 Indian Environment Protection Act, most projects require environmental clearance at the state or central level. These are at present processed for recommendation by state or central level appraisal committees and then cleared by the state or central environment ministries. If the NEAMA is set up in the form it was proposed in 2010, the clearance process would be substantially overhauled with the autonomous agency taking over command of these clearances.

### **Severe Particulate Pollution in Delhi**

The Central Pollution Control Board (CPCB) in India and the Delhi Pollution Control Committee showed that the level of fine particulate matter (PM<sub>2.5</sub>) has severely peaked to 4622 µg/m<sup>3</sup> in West Delhi's Shadipur area in the last week of December 2013 and mid-January 2014. This concentration corresponds to 70 times the national standard (60 µg/m<sup>3</sup>) and over 100 times the World Health Organization one.

In terms of average concentration, PM<sub>2.5</sub> in the air in Delhi has stood between 450 and 500 µg/m<sup>3</sup> during the winter 2013-2014; this is about twice the average PM<sub>2.5</sub> pollution levels in Beijing, China which have ranged between 200 to 350 µg/m<sup>3</sup>.

A CPCB air pollution inventory study in 2010 said that high particulate matter pollution in Delhi was caused by vehicular and industrial emissions, and dust particles.

### **Fuel Quality in India**

At a special conference on Research & Development in the Fuel Sector at Petrotech 2014 in India, Dr Saumitra Chaudhuri, member of the Planning Commission of the Indian government, said it may take time before Bharat Stage (BS) IV is applicable nationwide and alternative options like electric vehicles and hybrids could be considered, as well as the use of CNG in buses.

India may introduce intermediate BS IV+ norms before moving to the more stringent BS V in order to allow oil companies and vehicle manufacturers to prepare for the transition. According to the proposal, BS IV+ norms will allow 40 ppm sulfur content, against 50 ppm in BS IV. An expert committee has been formed to evaluate the introduction of BS IV+. The committee is expected to submit its report in March 2014.

Chaudhuri hoped that the oil industry will be capable of supplying BS IV+ fuel by 2017, either by new capacities or by expanding their existent capacities.

In April 2010, the BS IV automotive fuel norms were implemented in 13 cities across India. Mr LN Gupta, Secretary of the Oil Industry Development Board informed conference participants that the Ministry of Petroleum and Natural Gas now intends to expand BS IV fuel norms to fifty more cities by 2015, of which BS IV has already been implemented in 26 cities.

## **Supreme Court urges India to reduce Air Pollution in Delhi**

On 10 February 2014 the Indian Supreme Court urged the central and four state governments to effectively reduce air pollution in the Delhi region.

The central government and Delhi, Uttar Pradesh, Haryana and Rajasthan governments were notified of a report by the Environmental Pollution Control Authority (EPCA) which demonstrates that toxic air pollution has seriously increased in Delhi.

To protect public health in Delhi, that report urges the central government and the petroleum and natural gas ministry to come up with a long term taxation policy to maintain a 30-35% price differential between diesel and CNG. Priority should also be given to the transport sector in polluted cities. Other recommendations in the EPCA report include an additional 30% environment compensation charge on private diesel cars with revenues invested to produce 10 ppm sulfur diesel fuel, and higher taxes on cars combined with a drastic tax reduction on public transport vehicles.

The EPCA report also calls on the Petroleum and Road Transport and Highways Ministry to introduce nation-wide Bharat Stage (BS) IV emissions standards by 2015, BS V for cars by 2016, and BS VI by 2021.

A recent study by US-based Desert Research Institute and the Indian Institute of Technology in Delhi said India needs nation-wide enforcement of BS V standards no later than in 2015 to stabilize PM<sub>2.5</sub> at the 2011 level despite the estimated five-fold increase in vehicles between 2011 and 2030.

**Re-fueling road transport for better air quality in India**, Sarath K. Guttikunda, Dinesh Mohan; *Energy Policy* (in press), doi: [10.1016/j.enpol.2013.12.067](https://doi.org/10.1016/j.enpol.2013.12.067).

## **Vehicles of Brihanmumbai Municipality must be upgraded to Bharat Stage IV**

On 24 December 2013, the Bombay High Court of Justice granted a six-month extension period to the Brihanmumbai Municipal Corporation (BMC) to upgrade its vehicles like dumpers, fire engines and ambulances, engaged in essential services, to the Bharat Stage (BS) IV emissions standards.

BMC was allowed to use its old vehicles until 30 June 2014 despite there being a ban on 15-year-old vehicles from plying in the city.

BS IV has been implemented in the city since April 2010, however, the BMC still wants to continue with BS III for some of its vehicles providing essential services. While granting relaxation, the judges noted that a number of extensions have been granted already. The High Court said that it might not grant any further relaxation.

## **New Class for All-Terrain Vehicles to allow Local Manufacturing in India**

According to an Economic Times report on 10 January 2014, the Indian Minister of Road Transport and Highways has approved a proposal establishing a new class of vehicles – All Terrain vehicles (ATVs).

The proposal outlines the emissions and safety norms these vehicles will have to comply with to be manufactured and sold in the country. The Ministry will now seek the views of various stakeholders.

Currently, ATVs are imported to India with an import duty of nearly 100% being levied on them. Prices for such vehicles range from Rs 0.7-3 million (€ 16 000-70 000), and are expected to come down drastically if manufactured locally. ATVs are expected to be used primarily in adventure sports and for border security in difficult terrains.

Leading manufacturers such as Honda, Suzuki and Yamaha sell ATVs in global markets, but are yet to introduce them in India. However, Polaris, which already imports and sells ATVs in India, and Honda are believed to be considering manufacturing ATVs in India soon, according to the Economic Times.

## **China sets Emissions Reduction Targets for curbing Air Pollution**

On 7 January 2014, Chinese state media reported on new regulations setting provincial targets to reduce fine particle air pollution by 5 to 25 percent.

Under the new regulations, Beijing, its neighbouring city Tianjin and northern Hebei province will have to cut the amount of PM<sub>2.5</sub> by 25% annually, state news agency Xinhua said, citing the Ministry of Environmental Protection. Shanghai, the eastern provinces of Jiangsu, Zhejiang, Shandong and northern Shanxi will have to impose cuts of 20%. Reductions of 15% were set for Guangdong and Chongqing and 10% for the Inner Mongolia Autonomous Region.

On 9 January 2014, state media also reported on a 5% NO<sub>x</sub> reduction target for 2014, citing Zhou Shengxian, the Minister of Environmental Protection. The level of NO<sub>x</sub> was expected to fall by more than 3.5% in 2013,

coming to the 2010 level for the first time in three years. Total emissions of NO<sub>x</sub> were expected to fall 10% by 2015 from the 2010 level, but the figures in fact rose by 2.82% by the end of 2012 according to a report released in December 2013 by the National Development and Reform Commission. To meet the 2015 reduction goal for NO<sub>x</sub> emissions, the annual reduction now has to reach 4.8% in 2014 and 2015.

The Ministry of Environmental Protection (MEP) announced on 23 February 2014 that 12 teams of inspectors would visit construction sites and factories producing steel, glass, cement and coal products in Beijing, Tianjin, and in the Hebei province to see how authorities are enforcing environmental policies. Those found to be violating production standards will be publicly identified.

News agency Reuters reported on 10 February 2014 that the Chinese government was considering a reorganization of ministries in March 2014 that would dissolve the Ministry of Land and Resources and transfer some powers to the MEP, long regarded as too weak to properly enforce national, industrial pollution control legislation.

## Air Pollution in China and Vehicles' Contribution

On 29 January 2014 the Chinese Ministry of Environmental Protection (MEP) released a report on pollution and emissions of national vehicles in 2012.

The report indicates that motor vehicles pollution is the most important reason for air pollution in China and for dust-haze and photochemical smog. In the country's fleet, China IV or higher standard is met by only 10% of vehicles, while 7.8% do not even meet China I. The eco-label classification indicates that green-label vehicles nevertheless represent 86.6% of the fleet.

Yellow-label vehicles, which only represent 13.4% of the vehicles park, emitted 58.2% of NO<sub>x</sub> emissions, 81.9% of PM, 52.5% of CO, and 56.8% of HC in 2012.

On 2 January 2014, the Beijing Environmental Protection Bureau (EPB) released data on the major air pollutant concentrations in Beijing in 2013.

PM<sub>2.5</sub> that authorities began to monitor in 2013 was on average 89.5 µg/m<sup>3</sup>, 2.5 times the national standard, the data show. As for other major air pollutants, the figures showed a slight reduction in the average concentration of SO<sub>2</sub> and PM<sub>10</sub> compared with 2012, but NO<sub>2</sub> increased by 7% year-on-year.

The head of Beijing's Environmental Monitoring Centre said that, compared with 1998, the concentration of SO<sub>2</sub> declined by 78%, NO<sub>x</sub> by 24%, and PM<sub>10</sub> by 43%. But considering the rising number of automobiles and the increasing energy consumption, Beijing's goal to reduce PM<sub>2.5</sub> concentration to 60 µg/m<sup>3</sup> by the end of

2017 – down 25% from 2012 – will "remain very challenging", he said.

A report released by the Chinese Academy of Sciences on 30 December 2013 said secondary inorganic aerosols (fine, solid particles comprising sulfate and nitrate that result from a photochemical reaction) are responsible for 26% of Beijing's PM<sub>2.5</sub>, whereas vehicle emissions account for about 4%. However, the Bureau contradicted that report, saying that automobile emissions are still the major source of PM<sub>2.5</sub> in Beijing. Figures from the Bureau reveal that automobile emissions account for 22.2% of PM<sub>2.5</sub> concentration, after pollution from neighbouring provinces (24.5%). It is followed by coal consumption (16.7%), industrial pollution (16.3%) and dust (15.8%).

On 20 February 2014, the Beijing EPB issued an emergency pollution alert for the first time since the warning system was unveiled in October 2013, because of PM<sub>2.5</sub> hazardous concentrations.

On 10 January 2014 the Hong Kong Environmental Protection Department approved HK\$11.4 billion (€1.6 billion) in funding to replace 82 000 pre-Euro IV diesel commercial vehicles in a programme that will begin on 1 March 2014. The plan should lead to a cut in levels of respirable suspended particulates and NO<sub>2</sub> by 80% and 30% respectively, the department said.

Details on phasing-out of pre-Euro IV vehicles are at [www.epd.gov.hk/epd/english/environmentinhk/air/prob\\_solutions/Phasing\\_out\\_diesel\\_comm\\_veh.html](http://www.epd.gov.hk/epd/english/environmentinhk/air/prob_solutions/Phasing_out_diesel_comm_veh.html).

Ageing buses and trucks have led to a worsening in air quality in Hong Kong since 2007, environmental advocacy group Clean Air Network said. NO<sub>2</sub> levels are getting worse because of local emissions, rather than from China's Pearl River Delta region. The Central district's air quality monitor recorded NO<sub>2</sub> concentration levels of 126 µg/m<sup>3</sup> in 2013, according to a report released by the environmental group on 10 January 2014. The report also indicates that particulate matter levels exceeded World Health Organization guidelines by two to three times at all monitoring stations.

A scheme to replace catalytic converters on 20 000 taxis and public light buses powered by LPG is also expected to be approved by summer 2014 in Hong Kong, while a plan to retrofit about 1400 Euro II and III franchised buses with Selective Catalytic Reduction devices is also scheduled for approval this year. "By 2016, all pre-Euro vehicles will be banned from the streets...Our whole vehicle fleet will be dramatically cleaner in about four or five years", undersecretary for the environment Dr Christine Loh Kung-wai told the South China Morning Post on 11 February 2014.

## **ICCT Reports on Euro IV/V and Fuel Quality Standards in China**

The International Council on Clean Transportation (ICCT) has published two policy updates about China. One is on the supplemental WHTC testing for Euro IV/V heavy-duty vehicles in China and the other summarizes the historical and future timelines for China's nationwide gasoline and diesel fuels quality standards. ICCT reports that China's Ministry of Environmental Protection (MEP) has issued a new, nationwide standard requiring China IV and V (equivalent to Euro IV and V) heavy-duty diesel engines for use in urban vehicles to be tested over the weighted cold/hot-start World Harmonized Transient Cycle (WHTC). The new standard stipulates revised limit values for NOx emissions over the WHTC – up by 20% for China IV and 40% for China V. ICCT notes that “given that urban excess NOx emissions from Euro IV and V vehicles have been commonly measured to be 2-3 times the ETC limit value, these new limit values should be effective at forcing manufacturers to adopt different NOx control strategies that function over a broader range of operating conditions.”

The standard will apply, for China IV, from 1 January 2015 to all diesel-fuelled public buses, postal trucks, and municipal cleaning vehicles (e.g. garbage trucks) over 3.5 tons for use in urban applications. For China V, the new standard will become effective on the same date the full China V standard goes into force. This decision follows similar action by the Beijing city government in 2013.

The second ICCT policy update summarizes the historical and future timelines for China's nationwide fuel quality improvement, including comparison with corresponding vehicle emissions standard implementation. It notes that three new standards were issued: China IV diesel (50 ppm) in February 2013, China V diesel (10 ppm) in June 2013, and China V gasoline (10 ppm) in December 2013. Together, these standards lay out a roadmap for improving China's nationwide fuel to world-class quality.

The two ICCT reports are available at [www.theicct.org/sites/default/files/publications/ICCTupdate\\_ChinaVHTC\\_feb2014.pdf](http://www.theicct.org/sites/default/files/publications/ICCTupdate_ChinaVHTC_feb2014.pdf) and [www.theicct.org/sites/default/files/publications/ICCTupdate\\_ChinaVfuelquality\\_jan2014.pdf](http://www.theicct.org/sites/default/files/publications/ICCTupdate_ChinaVfuelquality_jan2014.pdf).

## **MIDDLE EAST**

### **Teheran to turn to Euro 5 Gasoline**

Iran plans to turn to Euro 5 gasoline in order to reduce the capital's constantly increasing air pollution, the IRNA news agency reported on 6 January 2014.

Iran currently distributes 13 million litres of gasoline conforming to Euro 4 and Euro 5 standards in big cities

including Tehran, Karaj, Isfahan, and Arak but the managing director of National Iranian Oil Refining & Distribution Company, Abbas Kazemi, said that Tehran's gas stations will only distribute gasoline conforming to the Euro 5 standard in two years.

The Mehr news agency reported on 25 December 2013 that the Iranian environment department had urged the oil ministry to import high-quality gasoline because air pollution had reached an alarming level in big cities. Several meetings have been held between officials of the environment department and the oil ministry in this regard. Moreover, it has been announced that all new cars should meet the Euro 4 standard by mid-2014.

The air over Iran's capital, Tehran, is among the most polluted in the world. Motor vehicles account for 70% of pollution in the city. Low quality gasoline and diesel is partially responsible for the problem.

## **UNITED NATIONS**

### **European Commission proposes EU to oppose IMO Tier III NOx Control Delays**

The European Commission published on 17 February 2014 a proposal for a Council decision on the position to be adopted by the EU concerning the delay of the Tier III NOx emission standards. The proposed delay is to be discussed at the environment committee (MEPC) meeting of the International Maritime Organization (IMO) in April 2014.

The Commission said Europe should oppose the postponement of NOx Emission Control Areas (NECAs) as proposed by the MEPC committee. Poland, Estonia and Latvia originally supported Russia's proposal for a delay in May 2013, while Denmark, Germany, Finland and Sweden opposed it.

The immediate impact of the IMO proposal in Europe would be to severely delay the implementation of a planned NECA in the Baltic Sea. Countries in the region have agreed in principle through the HELCOM forum to establish a NECA although they have not yet made a formal proposal to the IMO. But if the delay proposal passes, any other countries that want to establish NOx controls, for instance in the North Sea, would also be subject to the delay.

In a memorandum to Member States, the Commission noted that failing to limit maritime NOx emissions would “impair the possibility” for Baltic and North Sea countries to protect ecosystems by limiting eutrophication, an objective set out in several environmental directives. It would also make it more difficult to meet PM<sub>10</sub> and PM<sub>2.5</sub> limit values.

## GENERAL

### Report on Ultra-Low Emissions Natural Gas Heavy-Duty Vehicles

On 28 January 2014, a new report examining the critical role that ultra-low emissions Heavy-duty natural gas (NG) engines can play in helping California achieve its air quality, climate and energy security goals was released by consulting company Gladstein, Neandross & Associates (GNA).

The report titled “Pathways to Near-Zero-Emission Natural Gas Heavy-Duty Vehicles” showcases the technologies currently under development that could deliver near-zero-emission Heavy-duty NG engines by 2020. These technologies include advanced aftertreatment and waste heat recovery, lean-burn plus lean-NOx traps, further refinements in reducing friction and parasitic energy losses, and widespread utilization of renewable and natural gas and hydrogen blends.

The report says that application of known and proven engine and emissions control technologies is widely believed by engine manufacturers and other researchers to mean that Heavy-duty NG engines can meet a NOx emission level of 0.05 g/bhp-hr (67.05 mg/kWh), 75% below today’s standard. This can be achieved in the near term, and certainly prior to the 2023 deadline to achieve the 80 ppb ozone air quality standard. The report also suggests that a 90% reduction in NOx emissions from US 2010 standards is achievable in the longer term, “which will enable Heavy-duty Natural Gas Vehicles to emit no more NOx from the tailpipe than would be emitted by power plants providing electricity to equivalent Heavy-duty Battery Electric Vehicles.”

The report is at [www.gladstein.org/pdfs/Pathways to Near-Zero Emissions 1-24-14.pdf](http://www.gladstein.org/pdfs/Pathways_to_Near-Zero_Emissions_1-24-14.pdf).

### JEC Consortium Report on the Effect on Euro 4 Cars of Oxygenates in Gasoline

The JEC Consortium (DG-JRC, EUCAR, Concawe) released on 18 February 2014 a new report on the effect of oxygenates in gasoline on the fuel consumption, regulated emissions, and particle emissions of three Euro 4 passenger cars.

Substituting oxygenates for hydrocarbons in gasoline decreases the overall energy content of the resulting blend which is also expected to increase the volumetric fuel consumption (FC). A major objective was thus to determine whether Euro 4 gasoline cars can improve their efficiency when running on oxygenate/gasoline blends and reduce this FC penalty by taking advantage of either higher Research Octane Number (RON) or the properties of the oxygenate.

In addition to a 95 RON base gasoline, five other specially blended fuels were evaluated that varied in RON, oxygen content, and oxygenate type. Results were compared for the New European Driving Cycle (NEDC), the US06 part of the Supplemental Federal Test Procedure (SFTP), and three constant speeds.

Over all vehicle test conditions, the results show that the FC changes in direct proportion to the fuel’s volumetric energy content with higher volumetric energy contents resulting in better FC. Except possibly for one vehicle over one test cycle, the results show that the use of oxygenates or higher octane did not provide a volumetric FC benefit.

For regulated pollutant emissions, all three vehicles complied with the Euro 4 emissions limits for NOx, CO, and total hydrocarbons (THC) over the NEDC. Fuel properties had little effect on these emission levels. Driving cycle and vehicle technology were actually found to have a much greater impact than fuel properties on regulated pollutants and PM mass and number emissions.

The JEC report is at [http://iet.jrc.ec.europa.eu/about-jec/sites/iet.jrc.ec.europa.eu/about-jec/files/documents/jec\\_ethanol\\_report\\_online\\_final\\_v2.pdf](http://iet.jrc.ec.europa.eu/about-jec/sites/iet.jrc.ec.europa.eu/about-jec/files/documents/jec_ethanol_report_online_final_v2.pdf).

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## Transport, Climate Change & Emissions

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## FORTHCOMING CONFERENCES

### SIA Lecture - L'injection directe essence

11 March 2014, Paris, France

[www.sia.fr/evenement\\_detail\\_injection\\_directe\\_essence\\_1223.htm](http://www.sia.fr/evenement_detail_injection_directe_essence_1223.htm)

*Lecturer: Jérôme Hélie - Senior Expert Spray-Mixture Formation - Continental Automotive France. This lecture series is intended for engineers, technicians, researchers and students interested in the development of techniques to reduce engines' energy consumption and their polluting emissions.*

### 14<sup>th</sup> Stuttgart International Symposium "Automotive and Engine Technology"

18-19 March 2014, Stuttgart, Germany

[www.fkfs.de/english/company/events/stuttgart-symposium-2014](http://www.fkfs.de/english/company/events/stuttgart-symposium-2014)

*Organized by the FKFS (Stuttgart Research Institute of Automotive Engineering and Vehicle Engines).*

### 11<sup>th</sup> Green Ship Technology Conference 2014

18-20 March 2014, Oslo, Norway

[www.informamaritimeevents.com/event/greenshipotechnology](http://www.informamaritimeevents.com/event/greenshipotechnology)

*The conference will include retrofitting and opportunities for alternative marine fuels.*

### AVL Roadshow Real Driving Emissions

18 March 2014, Rhein-Main, Germany

20 March 2014, Stuttgart, Germany

25 March 2014, Hannover, Germany

[www.avl-fahrzeugmesstechnik.de](http://www.avl-fahrzeugmesstechnik.de)

### 5<sup>th</sup> VERT Forum

21 March 2014, Dübendorf, Switzerland

[www.empa.ch/plugin/template/empa/22/140102/---/l=1](http://www.empa.ch/plugin/template/empa/22/140102/---/l=1)

*The VERT Forum, hosted by EMPA, will discuss evolution of diesel converter technologies (Diesel Particle Filter and deNOx technologies) and their performance in the field.*

### SIA Lecture - EVE, Energy Via Exhaust: récupération de chaleur par cycle de Rankine

25 March 2014, Paris, France

[www.sia.fr/evenement\\_detail\\_eve\\_energy\\_via\\_exhaust\\_1224.htm](http://www.sia.fr/evenement_detail_eve_energy_via_exhaust_1224.htm)

*Lecturer: Julien Melis - Responsable des Essais – Exoès. This lecture series is intended for engineers, technicians, researchers and students interested in the development of techniques to reduce engines' energy consumption and their polluting emissions.*

## 7<sup>th</sup> Integer Emissions Summit Asia

25-27 March 2014, Beijing, China

[www.integer-research.com/dec-asia-2014](http://www.integer-research.com/dec-asia-2014)

*The conference will examine diesel emissions regulation compliant strategies of leading on- and non-road vehicle and engine manufacturers and the growing opportunities for the AdBlue market.*

## Technical and economic challenges of the new European Air Package

26 March 2014, Paris, France

[www.citepa.org/fr/inscriptions-aux-manifestations-et-formations#JE2014](http://www.citepa.org/fr/inscriptions-aux-manifestations-et-formations#JE2014)

*CITEPA (Interprofessional Technical Centre for Studies on Air Pollution)'s annual Conference organised under the aegis of the French Environment Ministry, will focus on the new Air Policy Package and will provide detailed insight into the technical and economic issues at stake.*

## Europe's 2<sup>nd</sup> Annual L-NGV 2014

26-28 March 2014, London, UK

[www.lng-fuelledvehicles.com](http://www.lng-fuelledvehicles.com)

*The L-NGV Forum 2014 has been developed to drive progress in the NGV community and accelerate the commercial uptake of gaseous fuels in transport across Europe.*

## 8<sup>th</sup> International Exhaust Gas and Particulate Emissions Forum

1-2 April 2014, Ludwigsburg, Germany

[www.abgas-partikel-forum.com/index.html](http://www.abgas-partikel-forum.com/index.html)

*The focus of the forum is on issues related to the development of petrol and diesel combustion including hybrid solutions and the use of conventional and alternative fuels. Requirements for Real Driving Emissions and the increase of efficiency and robustness of exhaust aftertreatment systems also play a role, as does the technology of recording even the lowest emissions at transient operation.*

## SIA Lecture - Hybrid Air : Gestion énergétique optimisée et impact environnemental de la technologie

8 April 2014, Paris, France

[www.sia.fr/evenement\\_detail\\_hybrid\\_air\\_gestion\\_energetique\\_1225.htm](http://www.sia.fr/evenement_detail_hybrid_air_gestion_energetique_1225.htm)

*Lecturer: Andres Yarce - Responsable Conception Prestations/Fonctions Hybrid Air - PSA Peugeot Citroën. This lecture series is intended for engineers, technicians, researchers and students interested in the development of techniques to reduce engines' energy consumption and their polluting emissions.*

## SAE 2014 World Congress

8-10 April 2014, Detroit, Michigan, USA

[www.sae.org/congress](http://www.sae.org/congress)

## 6<sup>th</sup> International Conference Selective Catalytic Reduction

28-29 April 2014, Stuttgart, Germany

[www.scr-systems.de](http://www.scr-systems.de)

*The conference will address how to incorporate SCR technology with all its various components in existing vehicle platforms, the latest innovations in validation and testing and examine methods for sensors, catalysts and OBD functions with regard to DeNOx technologies, and how SCR system space can be optimized and sufficient exhaust system temperatures be achieved without compromising fuel consumption.*

## CLEPA Global Management Programme

28-30 April 2014, London, UK (module 1)

23-25 June 2014, London, UK (module 2)

[www.clepa.eu/strategic-issues/global-management-programme](http://www.clepa.eu/strategic-issues/global-management-programme)

*Jointly developed by CLEPA and Imperial College Business School, the Global Management Programme (GMP) will provide knowledge and tools to successfully tackle the challenges the auto supply sector is facing in the fields of innovation, investment, and internationalization.*

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

6-7 May 2014, Graz, Austria

[www.avl.com/large-engines-techdays2014](http://www.avl.com/large-engines-techdays2014)

*Leaders and opinion makers from the Large Engines Industry will share their views on future trends and upcoming challenges around 'Gas & Dual Fuel'. "Impulse speeches" by renowned personalities from outside the industry will cover issues like availability of gas, costs, politics and environment.*

## 5. Freiburger Workshop "Luftreinhaltung und Modelle"

6-7 May 2014, Freiburg, Germany

[www.ivu-umwelt.de/front\\_content.php?idcat=3](http://www.ivu-umwelt.de/front_content.php?idcat=3)

*Topics of the workshop "Air Pollution and Models" cover a wide range of air pollution control planning, including the development of HBEFA, impact analyses of measures, an innovative measurement concept and alternative particle metrics, examples of modelling practice, polluter analysis and the current state of the environment-oriented traffic management.*

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

8-9 May 2014, Vienna, Austria

[www.xn--vk-eka.at/veranstaltungen/\\_veranst\\_symp\\_en.htm](http://www.xn--vk-eka.at/veranstaltungen/_veranst_symp_en.htm)

*The conference will present the latest results in worldwide engine and powertrain development, future legislation, fuels and components, drive train electrification, hybrid technology, CO<sub>2</sub> reduction, and exhaust emissions control.*

## **Advanced Emission Control Concepts for Gasoline Engines 2014**

19-21 May 2014, Düsseldorf, Germany

[www.emissioncontrol-gasoline.com](http://www.emissioncontrol-gasoline.com)

*Topics of this 3<sup>rd</sup> international conference include an update of regulations and legislation on PM for GDI engines, insight into latest trends in Three Way Catalyst design, advanced concepts of portable emissions monitoring systems with focus on gasoline particulate matter number measurement, latest strategies to reduce gasoline emissions through smart in-engine management, and newest trends in gasoline based emission control.*

## **4<sup>th</sup> Integer Emissions Summit Brazil**

20-22 May 2014, Sao Paulo, Brazil

[www.integer-research.com/dec-brazil-2014](http://www.integer-research.com/dec-brazil-2014)

*The conference will examine current and future Brazilian diesel emissions legislation and the latest in advanced optimum emissions reduction technology.*

## **SIA Powertrain: The Clean Compression Ignition Engine of the Future**

21-22 May 2014, Rouen, France

[www.sia.fr/evenement\\_detail\\_sia\\_powertrain\\_rouen\\_2014\\_1200.htm](http://www.sia.fr/evenement_detail_sia_powertrain_rouen_2014_1200.htm)

*The Clean Compression Ignition Engine Conference intends to give powertrain developers and researchers the opportunity to obtain an overall picture of state-of-the-art technologies and look ahead to future tasks and challenges.*

## **36<sup>th</sup> Motorship Propulsion & Emissions Conference**

21-22 May 2014, Hamburg, Germany

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

*The conference will address how ship energy efficiency is working now and will focus on how ship operators can navigate the current market to improve the efficiency of their ships. Topics include high fuel costs; and complex and complicated imminent legislation, including Tier III regulation.*

## **2014 JSAE Annual Spring Congress and Exposition**

21-23 May 2014, Yokohama, Japan

[www.jsae.or.jp/2014haru/index\\_e.html](http://www.jsae.or.jp/2014haru/index_e.html)

## **7<sup>th</sup> Emission Control 2014**

22-23 May 2014, Dresden, Germany

[www.emission-control-dresden.de/index.html](http://www.emission-control-dresden.de/index.html)

*The latest results and methods of development will be represented. Amongst others engine developing engineers and manufacturers of exhaust treatment systems and other important components will be contributing.*

## **4<sup>th</sup> International Exhaust Emissions Symposium**

22-23 May 2014, Bielsko-Biala, Poland

[www.bosmal.com.pl/News/7/146/4th+Exhaust+Symposium.html](http://www.bosmal.com.pl/News/7/146/4th+Exhaust+Symposium.html)

*The main topics of the symposium include emissions legislation for all automotive sectors, fuel economy, new methods of PM testing, compounds which are potential candidates for emissions regulation, emissions test equipment (including PEMS) and emissions reduction technology including aftertreatment.*

## **FISITA 2014 World Automotive Congress**

2-6 June 2014, Maastricht, the Netherlands

[www.fisita2014.com](http://www.fisita2014.com)

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

## **Green Week 2014: Circular Economy**

3-5 June 2014, Brussels, Belgium

<http://ec.europa.eu/environment/greenweek>

*The theme of Green Week 2014 is Circular Economy, Resource Efficiency and Waste. A circular economy is the logical solution for a resource-constrained world. It's a place where almost nothing is wasted, where the re-use and remanufacturing of products has become standard practice, and where sustainability is built into the fabric of society.*

## **Emissions 2014**

11-12 June 2014, Troy, MI, USA

[www.emissions2014.org](http://www.emissions2014.org)

*The 2014 conference's technical program will have a special focus on emissions durability.*

## **Aerosol Technology 2014 Conference**

16-18 June 2014, Karlsruhe, Germany

[www.gaef.de/AT2014](http://www.gaef.de/AT2014)

*The international conference is organized by the Gesellschaft für Aerosolforschung (GAeF) for researchers from science and industry to discuss applied as well as fundamental aspects of aerosol based particle technology. Topics include combustion aerosol particle formation & characterization and aerosol measurement techniques & particle characterization.*

## **10<sup>th</sup> Integer Emissions Summit Europe**

17-19 June 2014, Düsseldorf, Germany

[www.integer-research.com/dec-europe-2014](http://www.integer-research.com/dec-europe-2014)

*The conference will examine the latest legislation, optimum diesel emissions reduction technologies and strategies for Heavy-duty commercial vehicles, NRMM, passenger cars and marine applications.*

## 18<sup>th</sup> ETH Conference on Combustion Generated Nanoparticles

22-25 June 2014, Zürich, Switzerland

[www.lav.ethz.ch/nanoparticle\\_conf](http://www.lav.ethz.ch/nanoparticle_conf)

Deadline for abstracts: 11 April 2014

## EU Sustainable Energy Week

23-27 June 2014, Brussels and across Europe

[www.eusew.eu](http://www.eusew.eu)

*Launched in 2006 as an initiative of the European Commission, the EU Sustainable Energy Week has become a reference point for public authorities, energy agencies, private companies, NGOs and industry associations engaged in helping to meet the EU's energy and climate goals.*

## Engine Expo 2014

24-26 June 2014, Stuttgart, Germany

[www.engine-expo.com](http://www.engine-expo.com)

## 5<sup>th</sup> Conference MinNOx

25-26 June 2014, Berlin, Germany

[www.iav.com/en/events/iav-tagung/5th-conference-minnox?sl=true](http://www.iav.com/en/events/iav-tagung/5th-conference-minnox?sl=true)

*The conference on Minimization of Nitrogen Oxide Emissions from Combustion Engines through Exhaust Gas Aftertreatment will cover emissions legislation, technologies, simulations and application of MinNOx systems, and synergetic reduction of nitrogen oxide and CO<sub>2</sub> emissions.*

## 2014 Cambridge Particle Meeting

27 June 2014, Cambridge, UK

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

*Topics of interest include combustion aerosols, aerosol-based nanotechnology, and new instrumentation.*

Deadline for abstracts: 19 April 2014

## 5<sup>th</sup> NGVA Europe International Show & Workshops

7-10 July 2014, Brussels, Belgium

[www.ngv2014brussels.com](http://www.ngv2014brussels.com)

## Gaseous Fuels for Road Vehicles

11 September 2014, London, UK

[www.imeche.org/events/S1807](http://www.imeche.org/events/S1807)

*This seminar will examine the application and use of gaseous fuels in vehicles. Delegates will be able to explore the different types of gases that can be used as fuels, and gain an insight into the benefits gaseous fuels have over traditional liquid fuels. What difference can they make to emissions, and CO<sub>2</sub> and fuel consumption? How can they be applied to passenger and commercial vehicles?*

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

11-12 September 2014, Graz, Austria

[www.avl.com/engine-environment-2014](http://www.avl.com/engine-environment-2014)

*The theme for 2014 is Engine 2020: spark versus compression ignition in a new environment.*

## SAE 2014 Emission Control from Large Ships Symposium

15-16 September 2014, Gothenburg, Sweden

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

*Co-organized by SAE International, the International Association for Catalytic Control of Ship Emissions to Air (IACCSEA), and the Exhaust Gas Cleaning Systems Association (EGCSA), this symposium will update attendees on pending emissions regulations and on technologies now available to address them.*

## AVL Emission Roadshow

16-17 September 2014, Stuttgart, Germany

23-24 September 2014, Magdeburg, Germany

30 September - 1 October 2014, Neuss, Germany

## SAE 2014 Heavy-Duty Diesel Emissions Control Symposium

17-18 September 2014, Gothenburg, Sweden

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

*Attendees will hear and interact with the most knowledgeable leaders from the global, heavy-duty diesel powertrain industry who best understand the complicated science of the pollutants emitted during engine combustion and how to treat them.*

## 20<sup>th</sup> International Transport and Air Pollution Conference (TAP 2014)

18-19 September 2014, Graz, Austria

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

*This year's main theme will be energy efficient transport and its implications to air quality. In this context, special focus will be given to the following topics: emissions measurement and modelling, tunnel and remote sensing measurements, greenhouse gas emissions from transport modes, energy efficient technologies, future technologies, electric vehicles and alternative fuels, real drive emissions, forecasts, policies and scenarios in transport, urban air quality, traffic management and evaluation, intelligent transport systems, non-road (ports, rail, mobile machinery), particle number and matter from GDI, non-exhaust PM, primary and secondary aerosols, and source apportionment.*

**23<sup>rd</sup> Aachen Colloquium Automobile and Engine Technology 2014**

6-8 October 2014, Aachen, Germany

[www.aachener-kolloquium.de](http://www.aachener-kolloquium.de)

**SAE 2014 International Powertrain, Fuels & Lubricants Meeting**

20-23 October 2014, Birmingham, UK

[www.sae.org/events/pfl/2014](http://www.sae.org/events/pfl/2014)

**7<sup>th</sup> Integer Emissions Summit USA**

28-30 October 2014, Chicago, USA

[www.integer-research.com/dec-usa-2014](http://www.integer-research.com/dec-usa-2014)

*The conference will examine the latest legislation, optimum diesel emissions reduction technologies and strategies for Heavy-duty commercial vehicles, Off-highway vehicles, light-duty vehicles and passenger cars, marine vessels, natural gas vehicles, and Diesel Exhaust Fluid.*

**5<sup>th</sup> Integer Emissions Summit India**

19-21 May 2015, New Delhi, India

[www.integer-research.com/dec-india-2014](http://www.integer-research.com/dec-india-2014)

*The conference will explore the challenges and opportunities, and examine successful diesel emissions control strategies, for the Indian on-road and non-road mobile machinery (NRMM) sectors.*