



Newsletter

January - February 2009

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Developments on Heavy-duty Euro VI

The European Commission has provided a first draft of the Euro VI 'comitology' (the technical part of the Euro VI Regulation). The document does not yet contain any detail of test procedures – the Annexes that will contain them are shown only as titles. The draft consists primarily of the Articles outlining the key requirements, although several of these are also present only as headings.

One of the first Articles provides a list of definitions, including many relevant to emissions control. There is also a requirement that information be provided on the correct performance of NOx control systems under "all conditions regularly pertaining in the territory of the European Union, especially at low temperatures". Basic provisions for replacement pollution control devices are included and will be completed by a yet-to-be-published Annex.

A report for the Commission from TNO (Netherlands) on correlation factors between the European and world-harmonised test procedures has also been published. The only limit values shown in the now-agreed co-decision Regulation for Euro VI are for the European Transient and Steady State Cycles (ETC and ESC respectively). The eventual limits will be for the world-harmonised procedures (WHTC and WHSC), with limit values set through the comitology as a result of correlation factors established by the Commission's analysis, based on the work by TNO.

The factors proposed in the report are:

	NOx	CO	HC	PM
WHTC* compared to ETC	1.10	1.00	1.00	1.00
WHSC compared to ESC	1.00	1.00	1.00	1.00

* Composite test with 10% weighting for cold WHTC

The TNO evaluation covered differences in engine cycle work between the European and world-harmonised tests, evaluation of internal friction losses during the two tests, the effect of the cold-start WHTC and the effect of the soak period between cold and hot WHTC tests. It concluded that the difference in engine cycle work leads to a NOx increase of 3% for the WHTC and 1.6% for the WHSC. The additional cold-start WHTC leads to a NOx increase of 8% (for an optimised engine configuration) to 13%, and a hot soak of 5 or 10 minutes does not lead to additional NOx emissions. The report is available at:

http://ec.europa.eu/enterprise/automotive/projects/report_wh_tc_correlation.pdf.

Draft Amendments to Light-duty Euro 5 and Euro 6

The European Commission published a set of draft amendments to the Euro 5 and Euro 6 Regulations, for discussion at its Motor Vehicle Emissions Group (MVEG) meeting on 23 February 2009. The proposed amendments include the introduction of the PMP particulate mass and particle number procedures from ECE Regulation 83. They do not, at this stage, include the anticipated definition of a particle number limit for positive ignition engines. Other changes include a requirement that from 2011 the emissions test be run with daytime running lights switched on, and changes to the requirements for on-board-diagnostics for monitoring particulate filters and selective catalytic reduction (SCR) systems.

Developments on EU Motorcycle Emissions Requirements

The European Commission has launched a public consultation on a proposal for a new Framework Regulation for mopeds, motorcycles, tricycles and quadricycles. It is intended to introduce a formal proposal to Council and Parliament by mid-2009.

The proposal has three pillars: simplification of the legislation, new emissions standards and new safety measures. The simplification consists of replacing the Framework Directive and its separate Directives by a single Regulation setting out the main requirements, with a limited number of implementing Regulations giving the details such as test procedures. It is likely that referencing of UN-ECE Regulations will be used as part of the simplification.

Regarding emissions, the Commission envisages introducing new emissions limits for motorcycles, mopeds and quadricycles as well as durability requirements, evaporative emissions requirements and measurement of CO₂ emissions. It would also incorporate a revised test procedure for mopeds. The consultation says that "it seems that motorcycle limits equivalent to Euro 5 car limits would be now technologically feasible. Therefore, the Commission is also assessing whether such limits would be appropriate for motorcycles together with the Worldwide Motorcycle test cycle (WMTC)."

Other issues addressed by the consultation include the need for additional legislation for four-wheel mini-cars (category L6 and category L7 quadricycles), mainly used in France, Italy and Spain; the need for legislation for off-road quads (currently considered as part of category L7); and the need for legislation on hydrogen-powered motorcycles, tricycles and quadricycles.

The Commission has also made available the final report from LAT (Aristotle University, Thessaloniki) on their study for the Commission of possible new measures concerning motorcycle emissions.

The report notes that the introduction of Euro 5 & 6 and Euro VI means that the contribution of powered two wheelers (PTWs) will become increasingly important, if no additional regulations are brought forward. PTWs will emit more HC emissions than all other vehicle categories by 2020. The contribution of PTWs to NOx and PM emissions seems to increase after 2013, due to the introduction of DeNOx and DPF aftertreatment systems in both passenger cars and heavy-duty vehicles. Also the contribution of tricycles and quadricycles cannot be considered negligible. Quadricycles will be responsible for more than 35% of total PM from the PTW sector in 2020, corresponding to almost 2% of the total PM emitted from all road transport sectors. The report concludes that:

1. Regulations for durability need to be introduced.
2. Regulations to monitor the CO₂ and energy consumption of PTWs can be put in place.
3. Roadworthiness testing is a very suitable measure in controlling emissions from motorcycles.
4. With respect to HC emissions, In-Use Compliance (IUC) is both low-cost and a low-effectiveness measure. Evaporative emissions control appears the most cost-effective solution, while a Euro 3 stage for mopeds is the most effective one.
5. For NOx emissions control, IUC is again a low-cost, low-effectiveness measure. OBD options appear more costly and more effective. Finally, higher effectiveness, but also cost, appears from the further tightening of the emissions standards.

The report can be downloaded from http://ec.europa.eu/enterprise/automotive/projects/report_measures_motorcycle_emissions.pdf

10ppm S Petrol and Diesel is now a Legal Requirement in the EU

Limits of 10ppm sulfur for petrol and on-road diesel sold in the EU came into force on 1 January 2009. Since 1 January 2005, 10ppm S fuel has had to be available "on a balanced geographic basis", but it is only from the start of this year that the limit drops from 50ppm to 10ppm for all fuel.

EU Regulation on Hydrogen-Powered Motor Vehicles

EU Regulation (EC) 79/2009 on the Type Approval of hydrogen-powered motor vehicles was published in the Official Journal on 4 February 2009. It applies to all M and N category hydrogen-powered vehicles and to hydrogen components and systems for them. The

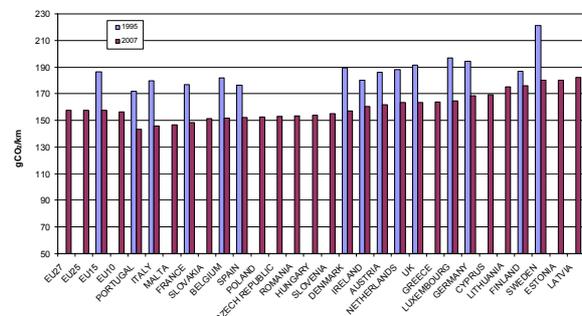
requirements primarily cover the safety and testing of hydrogen components and systems. There are no specific requirements regarding emissions, but the Euro 5/6 Regulation includes provision for hydrogen-powered vehicles to be added.

EU to help Cities buy Clean Buses

The European Investment Bank (EIB) is developing a financing facility to help cities improve their energy efficiency and buy cleaner bus fleets. A conference in Brussels on 11 February 2009 was told that the intention is to enable new technologies like hydrogen or hybrid buses to be implemented in cities using green public procurement rules. The EIB is currently working with the European Commission to set up a €15 million fund to offer cities 'technical assistance' in developing projects.

Commission Report on Car CO₂ in 2007

CO₂ emissions from new cars in Europe fell by 1.25% in 2007 to reach an average of 158g/km, according to the official monitoring report published by the European Commission on 28 January 2009. The 2007 figure is 15.1% below the 1995 starting point of 186g/km but still well above the voluntary target of 140g/km for 2008/9 agreed some years ago.



Average vehicle mass increased to 1382kg, compared to 1372kg in 2006 and 1357kg in 2005.

Plan for Improved Maritime Environmental Performance

The European Commission has issued a plan to increase the competitiveness of the EU maritime sector and improve its environmental performance by 2018. The Commission calls for a long-term "zero-waste, zero-emission" goal for the sector and reaffirmed its intention to table draft legislation to reduce greenhouse gas emissions from ships if the IMO failed to agree global reductions this year.

The Commission says the priorities should include:

- ensuring steady progress towards reducing greenhouse gas emissions from shipping.

- overseeing implementation of the amendments to IMO MARPOL Annex VI to reduce SO_x and NO_x emissions from ships. This includes assessing which sea areas qualify as Emission Control Areas.
- promoting alternative fuel solutions in ports, such as the use of shore-side electricity.
- considering modulation of registration fees, port dues and other charges to reward greener shipping.
- promoting a European Environmental Management System for Maritime Transport.

Dutch Agreement on Accelerated Introduction of OE Particulate Filters

Representatives of the transport sector and employers associations have agreed with the Dutch Environment, Finance and Transport ministers to speed up the introduction of vans and motor caravans built with an original-equipment particulate filter. At the end of 2009, 70% of new vans and motor caravans will have an original-equipment particulate filter. At the end of 2010 it will be 80% and in 2012 it will be 100%.

It has been agreed that manufacturers and importers of vans will accelerate the withdrawal of models without particulate filters. The government will encourage the process with subsidies for particulate filters worth €51 million in 2009 - 2011.

Flanders to introduce Retrofit DPF Subsidies for Euro 3 Diesel Cars

The Flemish regional government in Belgium is to subsidise the installation of retrofit particulate filters. A grant of 80% of the total cost, up to a maximum of €400, will be made available for the installation of a retrofit particulate trap on Euro 3 diesel cars or vans. The subsidy will be available after the publication in the Belgian Official Gazette in March 2009.

The Environment Ministry says that the lower PM emissions from new vehicles with particulate filters are a positive development, but older diesel vehicles still make a large contribution to emissions of particulate matter. Details are available at <http://roetfilters.lne.be>

Emissions Control in Rotterdam Harbour

The Netherlands has advised the European Commission of measures aimed at reducing pollution around the Rotterdam Harbour complex and linked to the Maasvlakte 2 zone development.

Two interlinked traffic Decrees will be made with respect to goods traffic on the Maasvlakte. Goods vehicles heavier than 3.5 tonnes will, from 1 January 2013, only be allowed access if they comply with the Euro V standard and, from 1 January 2016, only if they comply with the Euro VI standard.

Another element is an amendment to the Rotterdam Harbour Management Regulation which will limit access to Rotterdam harbour by inland waterway vessels unless they meet specific emissions requirements. From 1 January 2025, only vessels with diesel engines which comply with the emissions limits in phase II of the CCNR Regulations or Directive 97/68/EC will be allowed to enter the harbour, apart from incidental exceptions for special cases.

EU Member States & Switzerland propose New Car and Scrappage Incentives

Several EU Member States have announced incentives for scrapping older vehicles and for purchasing new low emissions / low CO₂ ones.

	Incentive	Scrapped vehicle must be at least	Replacement vehicle:	Runs until:
Austria	€1500	13 years	At least Euro 4	31/12/2009
Cyprus	€257 to €1720	13 years	Max. incentive for fuel consumption < 5 l/100km	End February 2009
France ¹	€1000	10 years	Car ≤ 160g/km CO ₂ LCVs* min. Euro 4	31/12/2009
Germany ²	€2500	9 years	Min. Euro 4 (max. 1 year old)	31/12/2009
Italy ³	€1500(car) €2500(LCV)	9 years	Car: min. Euro 4 + CO ₂ ≤ 140g/km (petrol) or 130g/km (diesel). LCV: min. Euro 4.	31/12/2009
Luxembourg	€1500 €2500	10 years	Min. Euro 4 + ≤ 150g/km CO ₂ + (for diesel) PM ≤ 5mg/km Higher bonus for ≤ 120g/km CO ₂	31/12/1009
Portugal	€1000 €1250	10 years 15 years	≤ 140g/km CO ₂	31/12/2009
Romania ⁴	€850	10 years		31/12/2009
Spain ⁵	Interest-free loan of up to €10 000	10 years/ 250 000 km	Max. value €30 000 Car ≤ 140g/km CO ₂ LCV ≤ 160g/km CO ₂	

* Light Commercial Vehicle

¹ France's "Grenelle de l'environnement" also includes a 'bonus-malus' scheme. A bonus of up to €5 000 will be extended to 2012 for cars emitting less than 60g/km CO₂, while buyers of high CO₂ vehicles have

to pay an additional tax of up to €2 600.

² Germany will also provide €500 million to promote the development of hybrid cars by 2010.

³ Italy: Incentives for new cars fuelled by LPG, natural gas, electricity or hydrogen. A similar scrapping scheme for motorcycles gives a €500 bonus.

⁴ Romanian scheme has a limit of 60 000 vehicles.

⁵ Spanish incentives apply to purchase of a used car ≤ 5 years old if scrapped car is at least 15 years old.

Switzerland is considering a 'bonus-malus' system. The basis for the bonuses of CHF2000 to CHF3000 (€1325 - €1990) would be an advanced energy label, with ratings based on a calculation of environmental issues including CO₂, NO_x, particulate emissions, and noise. To fund the incentive, car tax would be doubled to 8%.

The UK has announced a support package including loan guarantees for initiatives to reduce emissions and energy consumption. UK-based manufacturers of construction equipment (e.g. excavators, bulldozers) and their suppliers will also be eligible to apply.

UK Consultation on Regulations for Replacement Catalysts and DPFs

The UK Department for Transport has launched a consultation on two sets of draft Regulations which would introduce standards to be met by replacement catalytic converters and diesel particulate filters for passenger cars and light vans and for motorcycles and other 2- and 3- wheelers.

The legislation will implement the relevant requirements of EU Regulations 715/2007 and 692/2008 (Euro 5 & 6) for cars and vans and of EU Directives 2005/30/EC and 2006/120/EC in relation to 2- and 3- wheeled vehicles. Both will require that replacement units must be approved to the relevant standards. The consultation documents are at www.dft.gov.uk/consultations/open/devices.

Sweden announces Green Public Vehicle Fleet

Addressing an annual transport forum in Linköping on 8 January 2009, Sweden's Communications Minister Åsa Torstensson announced measures intended to create a fleet of low CO₂ cars and service vehicles in the country's public sector. She said that from February 2009 all government departments will be required to purchase hybrids and/or cars using biofuels. Government officials will also be required to use taxis or hire cars that are low-polluting and energy-efficient. At least 50% of service vehicles are to become more environmentally-friendly. In particular, light trucks should emit no more than 230g/km CO₂.

UK reports Air Quality Performance and Consults on PM₁₀ Derogation

Emissions of four key air pollutants continued a downward trend in the UK in 2007, according to new data released by the UK Department for Environment, Food and Rural Affairs (DEFRA). Emissions of nitrogen oxides decreased by 7%, non-methane volatile organic compounds by 2%, SO₂ by 12%, and ammonia by 3% compared with the previous year.

In a separate publication, DEFRA issued the UK's provisional PM₁₀ and ozone air quality data for 2008. Urban background particulate levels of PM₁₀ averaged 20µg/m³ in 2008 compared to 22µg/m³ in 2007. Roadside levels averaged 28µg/m³ compared to 29µg/m³ in 2007. However some areas do not meet EU limits. There was a slight increase in levels of ozone pollution last year compared with 2007. The number of days on which urban air pollution was classified as "moderate or higher" also rose in 2007.

Despite the slight improvement in PM₁₀ levels, the UK launched a consultation on an application to the European Commission to delay compliance with an EU limit for airborne particulate matter (PM₁₀). DEFRA says compliance with the 2005 limit value for PM₁₀ must be delayed until mid-2011 in eight geographical areas, including London and Glasgow. EU rules require a PM₁₀ daily average of no more than 40µg/m³ and that a daily level of 50µg/m³ should not be exceeded more than 35 times a year. London had a daily average of 43.3µg/m³ in 2007 and exceeded 50µg/m³ on 102 days. The consultation is at :

www.defra.gov.uk/corporate/consult/air-quality/index.htm.

London Mayor proposes suspending 3rd Phase of Low Emission Zone

The Mayor of London has announced his intention to suspend the third phase of the Low Emission Zone (LEZ), which was due to affect vans and minibuses from October 2010. The proposal is, he said, because of the detrimental impact it would have on small businesses. The proposed change will be subject to public consultation. Transport for London is advising operators of vehicles affected by the third phase of the LEZ that they should not take any action until the outcome of the consultation is confirmed. The first two phases - affecting lorries, buses and coaches - are unaffected and remain in operation.

German Air Quality in 2008

The preliminary assessment of the German Federal Environmental Agency (UBA) on air quality in Germany for 2008 says that air quality limits for particulate matter and NO₂ continue to be exceeded.

19 of the 421 monitoring stations exceeded the $50\mu\text{g}/\text{m}^3$ PM_{10} limit on more than the allowed 35 days per year. Approximately half of the monitoring stations saw NO_2 annual averages above the 2010 limit of $40\mu\text{g}/\text{m}^3$. Despite this, fine particulate pollution overall in 2008 was comparatively low as a result of favourable weather conditions. In the coming years, exceedances of the limit are to be expected in urban areas near traffic, the report says.

'Auch im Jahr 2008 Überschreitungen der Grenzwerte für die Luftqualität': is at www.umweltbundesamt.de.

Finnish State of the Environment Review

The Finnish Environment Institute and Ministry of the Environment have issued their report on the State of the Environment in 2008. The report says that air quality is now better than twenty years ago. The most noticeable positive changes are in the vicinity of industrial plants and power plants. However, the growth in automobile traffic has, the report says, slowed down the positive changes in urban areas. "The worst air pollutants are now respiratory particles. These arise from vehicle exhaust gases and from road surfaces degraded by tyres." The report is available (currently in Finnish only) from www.ymparisto.fi/ymparistontila2008.

Denmark proposes levying Charge to encourage 'Green Driving'

The Danish Government has published a new transportation strategy designed to promote fuel efficiency and reduce CO_2 emissions. Most prominent is a new "green driving charge," the level of which depends on a vehicle's mileage and location. The new driving charge, which would be offset by a reduction in the value-added tax on car purchases, would use satellite technology to track the route and time of individual journeys via transmitters installed in vehicles. The driving charge would be phased in from 2011 and initially would be applied to trucks.

Other measures include waiving the registration fee for electric car purchases, a commitment to more public transportation capacity, new energy efficiency requirements for taxis and public transportation, "green certificates" for trucks, and fresh guidelines on the purchase of vehicles for state agencies.

Cyprus gets Air Pollution Forecasting Software

The Labour Inspection Department of Cyprus has received €450 000-worth of EU-funded software for measuring and predicting airborne pollutants. The equipment will help the department carry out air quality forecasts and inform the public of possible

risks. The computer program was created by the School of Engineering of the Aristotle University of Thessaloniki and Aeoliki Ltd. Using information on weather patterns, the software can carry out calculations of air quality with a 24-hour forecast. The results will be obtained in a series of maps, graphs and a range of time series data and statistical indicators for five major pollutants (PM_{10} , $\text{PM}_{2.5}$, NO_2 , O_3 and benzene). It will be available to the public through the Labour Inspection Department's website at www.airquality.dli.mlsi.gov.cy.

Swiss Publication on Air Quality Protection on Construction Sites

The Swiss federal Environment Office (OFEV/BAFU) has issued a new document on the Directive on the Protection of the Air at Construction Sites, incorporating the new provisions on particle filtration requirements for Non-Road Mobile Machinery. The document (in French, German or Italian) is a free download from www.bafu.admin.ch

Russian delays Lower-Sulfur Fuels

The Russian government has approved delaying the production of 'Euro 3' fuel from the start of 2009 until 1 January 2011. The government also approved delaying the production of 'Euro 4' fuel from 2010 to 1 January 2012 and 'Euro 5' (10ppm S fuel) from 2013 to 1 January 2015. At present, most cars in Russia use Euro 2 standard fuel or fuel of lower standards.

NORTH AMERICA

New US President moves to improve Vehicle Fuel Efficiency

On 26 January 2009, US President Barack Obama signed an executive order asking the Environmental Protection Agency to re-evaluate a proposal by California and 13 other States for a Federal waiver to enforce their own greenhouse gas emissions standards. The California rule requires a 30% reduction in greenhouse gas emissions by 2016 from 2002 levels. The waiver was rejected by the previous US administration. President Obama also instructed the Department of Transportation to implement new Federal fuel economy standards.

US Developments on Ambient $\text{PM}_{2.5}$

A US Federal appeals court has ruled that the Environmental Protection Agency's (EPA) ambient air quality standards for fine particulate matter ($\text{PM}_{2.5}$) were deficient, and has sent them back to the EPA for corrective action. The court also overturned EPA's

refusal to adopt a separate, stronger standard to protect visibility. In October 2006, the EPA Administrator rejected the advice of its own scientific advisory panel and staff scientists for a stronger annual PM_{2.5} standard of between 13 and 14µg/m³.

In a separate development, EPA issued proposals to update its Air Quality Index (AQI) for PM_{2.5}. The proposal also would set a "significant harm" level, which States use in developing emergency episode plans. Under the proposed changes, the AQI would be considered unhealthy for sensitive groups at 35.5µg/m³.

California Report on Locomotive Emissions Reduction Options

The California Air Resources Board (CARB) has released a draft technical evaluation of options for the further reduction of locomotive and railyard emissions.

This preliminary draft discusses options such as engine replacements and the retrofitting of existing locomotives with particulate filters (DPF) or combined particulate filter and selective catalytic reduction (SCR). The technical evaluation of each option is based on the following criteria: technical feasibility, potential emissions reductions, costs, and relative cost-effectiveness. The cost of retrofitting a DPF to a locomotive is estimated by CARB at \$200 000 (€150 000) and the cost of a DPF+SCR retrofit at \$500 000 (€375 000). The draft report is at <http://www.arb.ca.gov/railyard/ted/ted.htm>.

California adopts Regulations for Aftermarket Motorcycle Components

The California Air Resources Board has issued new procedures for approving emissions-critical aftermarket parts for motorcycles. Regulations define the requirements for durability emission testing and related labelling, auditing and warranty reporting for aftermarket components including catalysts or oxygen sensors. The durability procedures mirror the requirements for certification of original equipment catalytic converters. The intent is to ensure that systems provide similar emissions performance to the standard, original equipment systems.

EPA Proposals to reduce 'Air Toxics' from Stationary Engines

On 25 February 2009, the US Environmental Protection Agency (EPA) proposed setting emissions limits for formaldehyde, benzene, acrolein and other 'air toxics' from certain stationary diesel and gas-fired engines. EPA says that in 2008, over 1 million of these engines generated electricity, powered

equipment and operated during emergencies at industrial, agricultural and other facilities.

The proposed limits would apply to engines located at:

- an area source of air toxic emissions,
- a major source of air toxic emissions with a site rating of ≤ 500hp (373kW) when engines were constructed or reconstructed before 12 June 2006,
- a major source of air toxic emissions with a site rating of > 500hp when engines were constructed or reconstructed before 19 December 2002.

To meet the proposed emissions requirements, owners and operators of these engines would need to install 'aftertreatment' controls, such as particulate filters or catalysts, to engine exhaust systems. EPA estimates that this rule will reduce air toxics emissions by 13 000 US tons (11 793 tonnes) per year, particle pollution by 2 600 tons (2 358 tonnes) and carbon monoxide emissions by 510 000 tons (462 664 tonnes), when fully implemented in 2013.

California gets Authorisation for Emissions Control on Refrigeration Units

On 9 January 2009, the US Environmental Protection Agency authorised California to enforce measures to control particulate emissions from transport refrigeration units used on trucks, trailers, shipping containers and railway trucks. The rule affects not only refrigeration units on California vehicles, but those entering the State from elsewhere.

The rules phase in from the middle of this year. The first phase covers engines of model year 2001 or older. The rules require the use of an engine that meets PM certification values, retrofitting with a particulate control system, or use of an alternative technology. Details of the requirements are at www.arb.ca.gov/diesel/tru/documents/advisory0501.pdf.

Pennsylvania introduces Anti-Idling Law

New regulations to minimise idling of heavy-duty diesel vehicles took effect in Pennsylvania on 6 February 2009. The Act restricts heavy-duty diesel vehicles from idling for more than 5 minutes per hour. Most trucks and buses are subject to the Act, although farm-related vehicles are exempt. Until 1 May 2010 trucks with sleeper cabs are exempt during times of low and high temperatures, to allow time for truckers to make alternative arrangements.

EPA guidance on Certification of Heavy-Duty Engines with SCR

The US Environmental Protection Agency (EPA) has issued a guidance letter to manufacturers on the certification of heavy-duty vehicles and engines using

Selective Catalytic Reduction (SCR) systems for the control of NO_x emissions. The guidance details a test requirement for cold operability of Diesel Emission Fluid (DEF) systems and specifies that the minimum DEF tank size must provide at least twice the range of the vehicle's fuel capacity, except for some specific vehicle applications. The letter also identifies specific tampering with an SCR system that will have to trigger illumination of a warning lamp followed by 'driver inducement measures'. This adds to the SCR guidance document EPA issued in March 2007.

Additional Funding for Diesel Retrofits

The 'American Recovery and Reinvestment Bill' includes the provision of \$300 million (€226 million) for projects that reduce diesel emissions, including retrofitting diesel vehicles and equipment with emissions control technologies, replacing engines and vehicles, and establishing anti-idling programmes. In addition to these Diesel Emission Reduction Act (DERA) grants, the plan expands the tax credit programme for plug-in hybrids, provides funds for new vehicles for the Federal fleet, and provides additional funding for the Energy Efficiency & Renewable Energy Programme run by the Department of Energy.

SOUTH AMERICA

Colombia plans to reduce Pollution

Colombian environmental officials this year hope to push ahead with regulations to reduce urban pollution. During 2009, the Environment Ministry plans to expand and modernise its network for measuring air pollution. The ministry also plans to update regulations for stationary sources of pollution in 2009, and for mobile sources in 2010.

The nation's traditionally high-sulfur fuels contribute heavily to air pollution across the country and in particular in the capital and largest city, Bogota, which frequently suffers from smog. During 2008, the state oil company, EcoPetrol, reduced the concentration of sulfur in its diesel fuel from about 1 200 parts per million (ppm) to about 200ppm and it is due to reduce it to 50ppm by the end of 2009. Sulfur concentrations in diesel fuels sold in the rest of the country, which are much higher than Bogota's, are to be reduced to 50ppm by 2013. By January 2010, all of the nation's express bus systems must be supplied with 50ppm sulfur diesel. In its agreement with EcoPetrol, the Bogota municipal government promised to buy up and retire older, highly polluting diesel buses.

Bolivia bans Imports of older Cars, and Diesel and LPG-fuelled Cars

Bolivia has issued a Supreme Decree prohibiting the importation of older used cars and of smaller diesel vehicles in an effort to limit both government fuel subsidies and pollution. Supreme Decree 29836 prohibits the importation of used cars more than 5 years old, of diesel vehicles with engines smaller than 4 000 cc, and of all vehicles that use liquefied petroleum gas. Both diesel fuel and LPG are heavily subsidised by the government. After one year, the decree prohibits the importation of used cars more than 4 years old and after two years bans the importation of used cars more than 3 years old.

Sources of PM₁₀ in Rio de Janeiro

For an aerosol source apportionment study in Rio de Janeiro, fine and coarse aerosol particle sampling was performed at ten sites, with sampling during 24 hours on a weekly basis. Mean annual PM₁₀ mass concentration ranged from 20 to 37µg/m³, values that are within the Brazilian air quality standards. Receptors models were applied to identify and quantify the aerosol sources. For fine and coarse modes, anthropogenic sources such as vehicle traffic and oil combustion represented a relatively high contribution (52-75%) of the fine aerosol mass.

Source: Maria Luiza D.P. Godoy et al, Coarse and fine aerosol source apportionment in Rio de Janeiro, Brazil; *Atmospheric Environment*, doi: [10.1016/j.atmosenv.2008.12.046](https://doi.org/10.1016/j.atmosenv.2008.12.046)

ASIA-PACIFIC

Beijing Incentives and Restrictions

Beijing has drafted a compensation scheme that will give drivers up to 25 000 yuan (€2 750) if they proactively give up their cars during 2009, according to *Beijing News*. The city would also provide preferential loans to shipping and transport companies to upgrade their vehicle fleets to meet low-emission standards, the paper said, citing the city Traffic Bureau.

The city has already banned cars from the roads on one out of five weekdays. The system is based on the numbers on license plates and is part of a six-month trial after a similar scheme proved effective during the Olympic Games. In addition, "yellow-label" cars will be fined 100 yuan if found driving within the city's Fifth Ring Road. The ban will be expanded to areas within the 6th Ring Road by 1 October 2009. Incentives would also be offered to scrap "yellow label" vehicles. The measures are expected to take about 10% of the city's 3.5 million cars off the roads.

China offers Subsidies for Alternative-Energy Vehicles

The official Chinese news agency *Xinhua* has reported a Finance Ministry statement that the Chinese Central Government will subsidise the purchase of clean-energy vehicles for public fleets in 13 cities to help the automobile industry develop 'green' technology.

The trial scheme will promote the use of electric, hybrid and fuel cell vehicles by public transport operators, taxi firms and postal and sanitary services in cities such as Beijing and Shanghai. Subsidies will be based on the difference in price between conventional and more energy-efficient vehicles. Local governments were asked to allocate money to build and maintain facilities for the vehicles. China state radio said that the Government would offer cash rebates of up to 600 000 yuan (€69 500) to buyers of alternative energy passenger cars and buses in 13 major cities, including Beijing and Shanghai. Rebates would range from 50 000 yuan for a small hybrid passenger car to 600 000 yuan for a large fuel cell powered commercial bus.

Report on NOx in Kolkata

The rise of NOx in Kolkata's air is triggering infectious diseases among children, says an environment status report submitted to the Calcutta High Court Green Bench on 9 January 2009. The report revealed that NOx emissions at Moulali and Behala Chowrasta are more than double the permissible limit of 60µg/m³ and exceed the limit in other areas. The status report says that levels of respirable particulate matter in the city are also alarmingly high.

The report says that the increasing levels of NOx are mainly because of the concentration of old diesel vehicles in the city. Nearly 65% of the city's vehicular population and nearly 99% of commercial vehicles are diesel-run. The report advises an immediate shift to LPG or CNG and says that even the use of biodiesel could reduce emissions of NOx below the permissible limit. Calcutta High Court has already ordered the replacement of 15-year-old commercial vehicles with Bharat Stage-III compliant vehicles in March 2009.

In-use Vehicle Emissions in Tianjin, China

A study on emissions of the circulating fleet in Tianjin, China used remote sensing devices and on-board portable emissions measurement systems to gather data. They concluded that the Tianjin fleet generated 690 tons of CO, 84 tons of VOC, 158 tons of NOx, 2 tons of SOx, 6 tons of PM, and about 13 400 tons of CO₂ on a typical spring day. Carburetted petrol vehicles contributed to disproportionately high share of

CO and VOC emissions. Diesel trucks and buses accounted for most of the mobile PM and NOx emissions (trucks: 44% and 27%; buses: 54% and 56%), despite the fact that they only accounted for 8% and 11% of total distance travelled respectively.

Source: Hongyan He Oliver, "In-Use Vehicle Emissions in China - Tianjin Study". Discussion Paper 2008-08, Cambridge, Mass.: Energy Technology Innovation Policy research group.

Euro 5 Fuel for Punjab and the Philippines

Seaoil is to introduce diesel fuel complying with the Euro 5 (10ppm sulfur) to the Philippines market.

Hindustan Petroleum Corporation Ltd has announced a joint venture with Mittal Energy to build a refinery at Bathinda in Punjab. The refinery, which will have a production capacity of nine million tonnes, will be completed by December 2010 and will produce Euro 5 emissions standard fuel (10ppm sulfur).

Ground-level Ozone in the Pearl River Delta of China

A new paper investigates variations of ground-level ozone and its precursors in the Pearl River Delta, one of the regions of China where rapid economic growth has been accompanied by air pollution caused by vehicle emissions. Overall, the ambient concentrations of NO₂ increased quickly between 1995 and 1996, but then slightly decreased due to stringent nitrogen oxide emissions controls. Nonetheless, ambient NO₂ levels in the Pearl River Delta remained high. The regional average concentrations of volatile organic compounds (VOCs) were 290ppb C in summer and 190ppb C in autumn. The relative incremental reactivities showed that ground-level ozone formation in the Guangzhou urban area is generally limited by the concentrations of VOCs, but there are also measurable impacts of NOx.

Source: Min Shao et al, Ground-level ozone in the Pearl River Delta and the roles of VOC and NOx in its production; *Journal of Environmental Management* Vol. 90; Iss. 1 (Jan.2009); 512-518.

RESEARCH

Air Quality, Emissions and Health

PM₁₀ and Ozone Effects on Cognitive Performance

A new paper reports on experiments to evaluate neurobehavioral effects associated with long-term exposure to ambient PM₁₀ and ozone (O₃) in adults. The researchers found that each 10ppb increase in annual ozone was associated with increased test scores, equivalent to up to 5.3 years of aging-related decline in cognitive performance.

Source: Jiu-Chiuan Chen & Joel Schwartz, Neurobehavioral Effects of Ambient Air Pollution on Cognitive Performance in US Adults; *NeuroToxicology*, doi: 10.1016/j.neuro.2008.12.011.

Effect of Traffic-Derived Air Pollutants on Infants

Research from the US supports a developing hypothesis that there may be a modest increased risk of bronchiolitis attributable to chronic traffic-derived particulate matter exposure particularly for infants born just before or during peak respiratory syncytial virus (RSV) season.

Source: Karr et al, Infant exposure to fine particulate matter and traffic and risk of hospitalization for RSV bronchiolitis in a region with lower ambient air pollution; *Environmental Research*, doi:10.1016/j.envres.2008.11.006.

Air Pollution may prompt Abnormal Heart Rhythm

A Swedish study indicates that in patients with implantable heart defibrillators, exposure to air pollution may rapidly (within 2 hours) prompt ventricular arrhythmia - a potentially life-threatening condition in which the heart rhythm becomes irregular.

Source: Ljungman et al, Rapid effects of air pollution on ventricular arrhythmias; *European Heart Journal*, 29: 2894 - 2901. December 2008, doi:10.1093/eurheartj/ehn463.

The Contribution of Vehicles to Air Quality

A new paper says that the contribution of on-road mobile sources to ambient pollutant concentrations are slightly higher than emission fractions that transportation accounts for in the Sacramento metropolitan region, reflecting the fact that, relative to other major pollution sources, mobile sources tend to have a close proximity to air quality monitors in urban areas.

Source: Guihua Wang, Song Bai and Joan M. Ogden, Identifying contributions of on-road motor vehicles to urban air pollution using travel demand model data; *Transportation Research Part D: Transport and Environment*, doi: 10.1016/j.trd.2008.11.011.

Emissions and Air Quality in Genoa

Comparing 1992 and 2010 data for Genoa shows that despite increasing vehicles and mileage, total emissions decreased by approximately 50% for NO_x and PM and 70% for HC. Primary NO₂ emissions in 2010 will be close to 1992 levels, after a decrease of about 18% in 2000. The authors say that some difficulties in complying with present and/or future NO₂ and PM₁₀ limits are still apparent, thus requiring suitable measures to be taken by the local authorities.

Source: Zamboni, Capobianco and Daminelli, Estimation of road vehicle exhaust emissions from 1992 to 2010 and comparison with air quality measurements in Genoa, Italy; *Atmospheric Environment* vol. 43 Issue 5, February 2009, pp 1086-1092, doi: 10.1016/j.atmosenv.2008.11.014.

Effect of fine Particles on US Life Expectancy

Reducing fine particles from cars, diesel engines, steel mills and coal-fired power plants has added to the life expectancy of US citizens since the early 1980s. Using life expectancy, economic, demographic and pollution data from 51 metropolitan areas, researchers found that when fine-particle air pollution dropped by 10µg/m³, life expectancy rose by 31

weeks. In some areas where fine-particle counts dropped by 13 to 14µg/m³, people typically started living about 43 weeks longer.

Source: Pope, Ezzati & Dockery, Fine-Particulate Air Pollution and Life Expectancy in the United States; *New England Journal of Medicine*, N Engl J Med 2009;360:376-86, <http://content.nejm.org/cgi/reprint/360/4/376.pdf>.

Monitoring Genotoxic Effects of Traffic Pollution

Research from Brazil uses a plant model to evaluate the genotoxic effects of atmospheric pollutants in the city of Feira de Santana, Bahia State, Brazil, in three locations with varying traffic loads. Inflorescences were collected on a monthly basis from plants growing in these locations in both passive and active monitoring regimes. The occurrence of micronuclei was found to be proportional to vehicular flux under both monitoring regimes; with the plants being accompanied by active monitoring demonstrating the greatest sensitivity to atmospheric contamination. The results indicated that locations with the most intense vehicular traffic demonstrated significant atmospheric contamination by pollutants able to damage DNA.

Source: Meireles et al, Genotoxic effects of vehicle traffic pollution as evaluated by Micronuclei Test in Tradescantia (Trad-MCN); *Mutation Research/Genetic Toxicology and Environmental Mutagenesis*, doi:10.1016/j.mrgentox.2009.02.005.

Impact of Ozone Pollution on Crops

A global air quality model was used to calculate exposure to ozone for four crops grown across the world - wheat, rice, maize and soybeans. The study predicts that by 2030, global wheat yields will be reduced by a further 2 to 6% on top of 2000 levels in most regions, assuming current emissions control legislation is implemented. The study suggests that current legislation will reduce ground ozone levels for most developed countries and China, and consequently lessen the impact on crop losses. However, in other parts of Asia and in Africa where current legislation is inadequate, these regions are projected to suffer more severe reductions in crop yields.

Source: Van Dingenen et al, The global impact of ozone on agricultural yields under current and future air quality legislation; *Atmospheric Environment* Vol.43 Issue 3, January 2009, doi:10.1016/j.atmosenv.2008.10.033.

In-Vehicle Air Quality

In a study by French institutes Inserm, CERTAM, and Air Normand continuous dynamic monitoring for particulate matter, nitrogen oxides and ozone was performed on the air entering the vehicle cabin over two different routes including a large variety of traffic and road infrastructure situations. Mean route pollutant concentrations were 200-300µg/m³ for NO₂, 150-200µg/m³ for PM₁. Much higher concentrations were recorded in road tunnels. The authors conclude that taking into account either background or traffic

proximity pollutant measurements for the calculation of daily exposure budgets leads to a significant underestimation of both PM and NO_x exposure and to an overestimation of ozone exposure.

Source: Morin *et al*, Évaluation de l'exposition aux polluants atmosphériques des conducteurs de véhicules automobiles par la mise en œuvre de mesures dynamiques dans l'habitacle du véhicule / Assessment of air pollutants in air motor vehicle cabins; *Archives des Maladies Professionnelles et de l'Environnement*; doi: [10.1016/j.admp.2008.10.024](https://doi.org/10.1016/j.admp.2008.10.024).

Exposure to Aerosol Particles in Buses and Trams

A study investigates commuter and driver exposure to aerosol particles in buses and trams in Helsinki, Finland. Fine particle number and mass concentrations in the driver's compartments were only slightly increased compared to Helsinki background air. However, the drivers were exposed to elevated levels of black carbon, which some studies have addressed to be strongly correlated with adverse health effects. Particle concentrations were smaller in the driver's compartment than in the cabin. Driver exposure to particles in the newer model of the tram and bus seemed to be lower than in older ones.

Source: Asmi *et al*, Driver and passenger exposure to aerosol particles in buses and trams in Helsinki, Finland; *Science of the Total Environment*, doi: [10.1016/j.scitotenv.2009.01.004](https://doi.org/10.1016/j.scitotenv.2009.01.004).

Emissions Measurement

Emissions from Biodiesels on the 'Athens Cycle'

Regulated and unregulated emissions of an IDI Euro 2 diesel passenger vehicle operated with low sulfur diesel and soy methyl ester blends were measured under real driving conditions (Athens Driving Cycle, ADC) and compared with those on the legislative (NEDC) test. Some of the emissions measured over the (hot-start) NEDC differed from the real-world cycle. The addition of biodiesel reduced the regulated emissions of CO, HC and PM, while an increase in NO_x was observed over the ADC. Carbonyl emissions, PAHs and nitro-PAHs were reduced with the addition of biodiesel over both driving cycles.

Source: Karavalakis, Stournas and Bakeas, Effects of diesel/biodiesel blends on regulated and unregulated pollutants from a passenger vehicle operated over the European and the Athens driving cycles; *Atmospheric Environment*, doi: [10.1016/j.atmosenv.2008.12.033](https://doi.org/10.1016/j.atmosenv.2008.12.033).

Carbonyl and NO_x Emissions with Alternative Diesel Fuels

A new paper from researchers in Brazil evaluates emissions from a number of different diesel/ethanol/biodiesel blends. The diesel/10% ethanol fuel showed higher reduction of NO_x emissions at a lower load (2kW) when compared with pure diesel. The other fuels showed a decrease of NO_x emissions in the ranges of 6.9% to 75% and 4% to 85% at 1800rpm and 2000rpm, respectively. When

ternary blends contained vegetable oil, there was a strong tendency to increase the emissions of the high weight carbonyls and decrease the emissions of the low weight carbonyls. The highest concentration of acrolein was observed when the fuel contained diesel, ethanol and biodiesel. With the exception of NO_x, the use of ternary blended fuels resulted in an increase in emissions rates of the studied compounds.

Source: Guarieiro *et al*, Emission Profile of 18 carbonyl compounds, CO, CO₂, and NO_x emitted by a diesel engine fuelled with diesel and ternary blends containing diesel, ethanol and biodiesel or vegetable oils; *Atmospheric Environment*, doi: [10.1016/j.atmosenv.2009.02.036](https://doi.org/10.1016/j.atmosenv.2009.02.036).

Speed Limits can reduce Air Pollution

Levels of air pollution can be significantly reduced in urban areas by introducing traffic speed limits, according to a new study. The researchers studied air quality along a section of the Amsterdam ring road, where the speed limit was lowered from 100km/h to 80km/h, and found that levels of some pollutants were reduced by up to 15%.

Monitoring stations measured levels of PM₁₀ and PM₁, NO_x and soot or black smoke (BS), both at the site with the reduced speed limit and at a separate section of the ring road, where speed limits had not been reduced. Taking into account variations in daily traffic flow, congestion and wind direction, the results revealed that roadside concentrations of BS decreased by 15%, PM₁₀ by 7% and PM₁ by 2% in the section with reduced speed limits.

Source: Dijkema *et al*, Air quality effects of an urban highway speed limit reduction; *Atmospheric Environment*. 42(40):9098-9105 (2008), doi: [10.1016/j.atmosenv.2008.09.039](https://doi.org/10.1016/j.atmosenv.2008.09.039).

Air Quality Modelling

Update of the TREMOVE Transport Model

TML Leuven is providing an update of the EU's TREMOVE model to bring it into line with recent research projects and other models used by the European Commission. The focus will be on updating vehicle stock and emissions data. In addition, two new baselines will be defined. The first, standard baseline is based on policies adopted until the end of 2008. The alternative will reflect likely policies until 2030.

Trends and Projections of Primary NO₂

A paper from AEA Energy & Environment, UK, presents an assessment of recent trends in primary NO₂ emissions for ten case study locations across the European Union. Estimates of the percentage of NO_x from road traffic emitted as primary NO₂ (f-NO₂) have been derived for 1995, 2000 and 2005. Trend analysis shows that f-NO₂ has increased in recent years and that the rate of increase has been greatest since 2000. AEA says that although f-NO₂ is predicted to increase further to an average of 19.6% in 2010 and

32% in 2020 as a result of the further penetration of exhaust aftertreatment technologies for diesel vehicles in the fleets, the increased fraction is expected to be offset by the large reduction in total NO_x emissions over this period, due to use of those same technologies. As a result they expect an increase in NO₂ emissions from road traffic to 2015, followed by a decline to close to 2004 levels by 2020.

Source: Grice et al, Recent Trends and Projections of Primary NO₂ Emissions in Europe; *Atmospheric Environment*, doi: [10.1016/j.atmosenv.2009.01.019](https://doi.org/10.1016/j.atmosenv.2009.01.019).

Impact of Transport on Climate

Secondary Organic Aerosol is underestimated

Levels of global secondary organic aerosol (SOA) in the Earth's atmosphere have increased by 60% since pre-industrial times, according to new research, which suggests that the effects of SOA have been previously underestimated. SOA is made up of fine particles and droplets suspended in the atmosphere and is the product of many complex photo-chemical processes. It affects the climate by increasing the reflection of the sun's rays and so cools the Earth's surface. It also contributes to atmospheric haze, as well as having an impact on human health. Emissions from fossil and biofuel burning contribute twice as much to the SOA increase as biomass burning emissions. Radiative forcing was much stronger over industrialised areas, in Eastern Europe and on the east coast of the US.

Source: Hoyle, Myhre, Berntsen and Isaksen, Anthropogenic influence on SOA and the resulting radiative forcing; *Atmospheric Chemistry and Physics Discussions* 8: 18911-18936 (2008).

Short- and Long-Term Effects of Transport

A study conducted under the EU-funded QUANTIFY project compared the effects on global mean temperature of emissions from road, air, rail and shipping. The study found that emissions from road transport have the most impact in the long term (20-100 years). Aviation has a large impact over a 10 year timescale because most of its effects result from short-lived gases, such as ozone, and induced cirrus clouds, whereas most of the impact from road transport is long-lived CO₂. Shipping illustrates this variation in the effects of emissions; SO₂ and NO_x emissions from shipping cause a cooling effect during the first 40 years, but on longer timescales CO₂ emissions from shipping cause a net warming effect.

The research suggests that policies seeking to reduce the impact of current emissions in the longer term should focus on reducing emissions from road transport. However, if emissions need to be reduced in the short term, then policies should target aviation.

Source: Berntsen and Fuglestad, Global temperature responses to current emissions from the transport sectors. *Proceedings of the National Academy of Sciences* 105(49): 19154-19159 (2008).

GENERAL

Costs of Ship Pollution

A new study by research group Trucost and the European Sustainable Investment Forum says that ship emissions of CO₂, particulate matter, SO₂ and NO_x from 11 companies in the MSCI world index, which measures equity performance in developed markets, cost an annual €7.7 bn in external damage.

Internalising the health and environmental costs of air pollution would reduce the profitability of major shipping companies by more than two-thirds, according to the authors. CO₂ is the biggest contributor to external damage costs. Carbon-efficient ships stand to gain from shifting freight away from carbon-intensive air transport, the report says.

Road Tunnel Filtration and NO_x Absorption

German company Ecovac has developed a combination of a particle filter with a catalyst and absorptive filter to clean road tunnel exhaust.

The system uses an activated aluminum oxide as the basic material which will be impregnated with a permanganate compound and a binding resin to oxidize the NO-fraction into NO₂. The resulting NO₂ is converted into an inert nitrate salt which will be irreversibly stored in the aluminum oxide. Efficiency for NO_x is claimed to be 97%. Saturated absorbent may be re-used as a fertilizer afterwards. The particle filters are made of extra fine synthetic nanofibers with a cellulose web which are frequently and automatically 'dry cleaned' by short pulses of compressed air. The filters will, says Ecovac, reduce PM_{2.5} by 99.99%. The unit will need to be exchanged only once a year with minimal disturbance of tunnel operation. Details are at www.tunnelfilter.com.

FORTHCOMING CONFERENCES

Grundlagenwissen Verbrennungsmotoren

10-11 March 2009, Stuttgart, Germany

Details at www.vdi-wissensforum.de

International Advanced Mobility Forum 2009 – Energy for Transportation 2050

10-12 March 2009, Geneva, Switzerland

Details at www.iamf.ch

Subject areas to be discussed include fuel strategies for future transport needs; biofuels, natural gas, CtL & GtL; advanced internal combustion engines; auxiliary systems for improved efficiency; new powertrain concepts; and concepts of multi-modal mobility and options for future cargo transport. The forum will be held during the Geneva Motor Show.

Grundlagen der Abgasnachbehandlung im Verbrennungsmotor

11-12 March 2009, Nürnberg, Germany

Details at www.vdi-wissensforum.de

AVL Roadshow: Partikelmesstechnik

17 March 2009, Munich, Germany

19 March 2009, Stuttgart, Germany

24 March 2009, Hannover, Germany

Details at www.avl-partikelzaehlung.de

Hybrid and Electric Vehicles: Advanced Powertrains

24 March 2009, London, UK

Details at <http://awbriefing.com/events/09-03-24.html>

Advanced technology and innovative powertrain engineering will play a critical role in optimising vehicle energy efficiency and reducing costs, thus making hybrid and electric vehicles a viable solution for the future of personal mobility.

Green Ship Technology 2009

24-25 March 2009, Hamburg, Germany

Details at www.lloydslisteevents.com

Presentations include a review of the implications of MARPOL Annex VI, the HERCULES Beta project on ship emissions, designing ships for new technology to reduce emissions, and port approaches to reducing emissions to air.

AVL Tech day: AVL-FIRE, engine & aftertreatment simulation solutions

25 March 2009, Munich, Germany

Details at www.avl-fire.de

CAPoC8 Eight International Congress on Catalysis and Automotive Pollution Control

15-17 April 2009, Brussels, Belgium

Details at www.ulb.ac.be/sciences/cpmct/capoc8

The conference covers catalyst and sorption technologies, particulate emissions control, off-cycle emissions and unregulated pollutants, materials for catalysts, washcoat and fuel-borne catalysts, modelling, on-board reforming of fuels.

SAE 2009 World Congress

20-23 April 2009, Detroit, Michigan, USA

Details at www.sae.org

Reducing Emissions to Air from Shipping

22-24 April 2009, London, UK

Details at www.lloydsmaritimeacademy.com/lw1068

The seminar will bring together equipment specialists, port authorities, fuel suppliers and shipping charterers who need to work to create new techniques to meet latest standards. Through specialist case studies, participants will explore the latest developments to reduce ship emissions.

Additives 2009: Fuels and Lubricants for Energy Efficient and Sustainable Transport

27-30 April 2009, York, UK

Details at www.rsc.org/Additives2009

The meeting aims to provide a multi-disciplinary forum to share ideas for future developments in the science and technology of fuels and lubricants.

5th AVL International Commercial Powertrain Conference

28-29 April 2009, Graz, Austria

Details at www.avl.com

Technical sessions will cover emissions compliance, hybrid powertrains, alternative fuels and electronic systems including OBD.

30th International Vienna Motor Symposium

7-8 May 2009, Vienna, Austria

Details at www.oevk.at

The symposium covers worldwide engine and powertrain development, future legislation, new engines, fuels and powertrain, hybrid technology, CO₂ reduction, and exhaust emissions control.

Diesel Engine Technology Seminar

11-12 May 2009, Lyon, France

Details at www.sae.org under Events & Education/Training

This course will explain the fundamental technology of diesel engines, aspects of engine design and emissions control design. An overview of developing technologies for the future with a comprehensive section on exhaust aftertreatment is also included.

Diesel Emissions Conference/AdBlue Forum Asia

11-13 May 2009, Beijing, China

Details at www.integer-research.com/decasia/

Euro V is planned to take effect in China from 2012. In South Korea, Euro IV standards have been in place since 2006 and Euro V will be implemented this year. Across Asia, tighter emissions limits and harmonisation of emissions regulation are under discussion. DEC Asia brings together key emissions stakeholders to identify and take advantage of opportunities in Asia.

SAE Truck & Off-Road Global Summit

13-14 May 2009, Lyon, France

Proposed papers concentrate on electronics but cover emissions monitoring, OBD requirements and concepts for aftertreatment systems, diagnostics on retrofit, fuel consumptions tests, and heat recovery.

AEGPL 2009 Congress

13-15 May 2009, Vienna, Austria

Details at www.aegpl-expo.com

This event includes LPG for vehicles and allows participants to exchange new ideas, examine technical innovations and grasp market opportunities.

EVS 24 Battery, Hybrid & Fuel Cell Electric Vehicle Symposium and Exhibition

13-16 May 2009, Stavanger, Norway

Details at www.evs24.org

Implementing Europe's Transport & Energy Policy

18-19 May 2009, Brussels, Belgium

Details at www.hartenergyconferences.com

Diesel Particulates & NOx Emissions Short Course

18-22 May 2009, Leeds, UK

Details at www.engineering.leeds.ac.uk/cpd/AutoDieselParticulatesUK.shtml

This course concentrates on the engine technology for low emissions, their fuel requirements and after-treatment techniques. It does not cover the details of the particulate measurement and analysis techniques, which are fully covered in a later companion course. However, it does cover particle size analysis and problems with the US heavy-duty transient test with very low emission diesel engines.

(Particle) Emissions of 2-stroke Scooters – science, problems, solutions & perspectives

11-12 June, 2009, Monza/Milan, Italy

The main topics will be research and reduction of emissions, development of aftertreatment devices for gaseous emissions and for (nano)particulates, lube oils & fuels, CO₂ emissions and fuel consumption, toxicity & health effects, alternative powertrains, and legislation & inventories.

SAE 2009 Powertrain, Fuels and Lubricants Meeting

15-17 June 2009, Florence, Italy

Details at www.sae.org

Engine EXPO 2009 Open Technology Forum

16-18 June 2009, Stuttgart, Germany

Details at www.engine-expo.com

Topics to be covered include the future of the internal combustion engine, evolution of hybrid technologies, biodiesel technology, engine & transmission developments, and the impact of solid SCR systems.

8th Dresden Engine Colloquium

17-18 June 2009, Dresden, Germany

Details at www.fif.mw.htw-dresden.de/8DMK.html

The theme is "the diesel engine - conflicting demands regarding climatic change and pollutant emission". The content covers heavy-duty, light-duty and NRMM applications.

Grundlagenwissen Verbrennungsmotoren

17-18 June 2009, München, Germany

Details at www.vdi-wissensforum.de

13th ETH Conference on Combustion-Generated Nanoparticles

22-24 June 2009, Zurich, Switzerland

Deadline for abstracts 20 March 2009

The conference will provide an interdisciplinary forum for the discussion of new scientific findings on combustion-generated nanoparticles, characterisation methods, type-approval and in-use compliance testing and emissions control as well as health effects due to combustion-generated nanoparticles.

PTNSS International Congress on Combustion Engines

22-24 June 2009, Opole, Poland

Details at www.ptnss.pl/kongres

The Congress covers topics in research fields on the design, manufacture, and ecological effect of internal combustion engines and fuel use.

Engine Emissions Measurement Short Course

22-26 June 2009, Leeds UK

Details at:

www.engineering.leeds.ac.uk/cpd/AutoEngineEmissions.shtml

The course covers both existing instrumentation and new developments in emissions measurement techniques and instruments, and will be of interest to those who wish to learn about the latest developments in emissions measurement technology.

Diesel Emissions Conference and AdBlue Forum 2009

23-25 June 2009, Brussels, Belgium

With the new Euro VI legislation set to take effect in Europe from 1st Jan 2013 truck and bus manufacturers need to get up to speed quicker than ever. The question is no longer 'which technology' but 'which combination of technologies' to use for emissions reduction.

12th EAEC European Automotive Congress

29 June - 1 July 2009, Bratislava, Slovakia

Details at www.eaec2009.com

Five parallel sessions allow over 100 presentations and discussions on topics of "Powertrain Efficiency", "Vehicle for the next Decade" and "Production and Transportation Systems".

VDI Fachkonferenz NOx Control

1-2 July 2009, Nürnberg, Germany

Details at www.vdi-wissensforum.de

Grundlagen der Abgasnachbehandlung im Verbrennungsmotor

8-9 July 2009, Stuttgart, Germany

Details at www.vdi-wissensforum.de

42nd IUPAC Congress: Chemistry Solutions

2-7 August 2009, Glasgow, Scotland

Details at www.rsc.org/ConferencesAndEvents/RSCConferences/IUPAC2009/index.asp

Symposia topics include catalysis for a sustainable future, biofuels, chemistry addressing climate change, and chemistry and the hydrogen economy.

Grundlagenwissen Verbrennungsmotoren

26-27 August 2009, Frankfurt am Main, Germany

Details at www.vdi-wissensforum.de

World Hydrogen Technologies Convention 2009

26-28 August 2009, New Delhi, India

Details at www.whtc2009.org

A biennial congress of the International Association for Hydrogen Energy, WHTC-2009 is being hosted by IndianOil and SIAM (Society of Indian Automobile Manufacturers), in association with the Indian Institute of Technology, Delhi and Banaras Hindu University.

AVL Congress Engine and Environment

10-11 September 2009, Graz, Austria

Details at www.avl.com/conferences

Issues addressed at the conference will include the future combustion engine - main propulsion or just emergency power supply?, powertrain electrification, and new concepts for combustion engines acting as range extenders.

9th International Conference on Engines and Vehicles (ICE2009)

13-18 September 2009, Capri, Naples, Italy

Details at www.sae-na.it/iceconf.html

Conference topics include fuel injection and combustion processes, alternative fuel power systems, powertrain technology, and exhaust aftertreatment and emissions.

SAE Heavy-duty Diesel Emissions Control Symposium

15-17 September 2009, Gothenburg, Sweden

Details at www.sae.org/events/training/symposia/hddec

18th Aachen Colloquium 'Automobile and Engine Technology'

5-7 October 2009, Aachen, Germany

Details at www.aachener-kolloquium.de

The congress will provide 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 will be presented on the ika test track.

SAE 2009 Commercial Vehicle Engineering Congress and Exhibition

6-8 October 2009, Rosemont, Illinois, USA

Details at www.sae.org/events/cve

AVL Roadshow: Abgasmesstechnik

7 October 2009, Fürth, Germany

14 October 2009, Hannover, Germany

Details at www.avl-abgasmesstechnik.de

Busworld

16-21 October 2009, Kortrijk, Belgium

Details at www.busworld.org/

APAC 15 – Asia-Pacific Automotive Engineering Conference

26-28 October 2009, Hanoi, Vietnam

Details at www.vsae.org.vn

15th Small Engine Technology Conference

3-5 November 2009, Penang, Malaysia

Details at www.setc2009.com

The conference will have presentations relating to small power sources and applications such as motorcycles, scooters, marine, agricultural and garden equipment, ATVs and portable generators.

7th FAD Conference: The challenge – exhaust aftertreatment for diesel engines

4-5 November 2009, Dresden, Germany

Details at www.fad-diesel.de

Grundlagen der Abgasnachbehandlung im Verbrennungsmotor

1-2 December 2009, Köln, Germany

Details at www.vdi-wissensforum.de

The Spark Ignition Engine of the Future

2-3 December 2009, Strasbourg, France

Details at www.sia.fr/files/evenement/onglet/2260/callforpaperSPARKIGNITIONpdf.pdf

Deadline for abstracts is 15 April 2009

This new SIA international Conference is intended to provide the opportunity for experts from OEMs and their suppliers, the oil industry, research laboratories and universities to exchange their points of view and information on the potential of the future spark ignition engine to respond to the combined low CO₂ and electrification challenges of the future.

6th International Exhaust Gas and Particulate Emissions Forum

9-10 March 2010, Ludwigsburg, Germany

33rd FISITA World Automotive Congress

30 May - 4 June 2010, Budapest, Hungary

Details at www.fisita2010.com

Deadline for abstracts is 30 June 2009

Top experts from the automotive community around the world will review the latest technical breakthroughs and innovations and show the world that our future mobility depends on engineers.