Newsletter

July - August 2012

INTERNATIONAL REGULATORY DEVELOPMENTS

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Association for Emissions Control by Catalyst AISBL

Diamant Building
Boulevard A. Reyers, 80
B-1030 Brussels
Belgium

Tel: +32 2 706 81 60
Fax: +32 2 706 81 69
info@aecc.eu
www.aecc.eu

EUROPE

Further Euro 5/6 Comitology covers Hydrogen and 'H2NG' Vehicles

On 13 July 2012 Commission Regulation (EU) No.630/2012 was published in the EU's Official Journal. This new Regulation amends the light-duty Euro 5/6 Regulation (EC) No.692/2008 as regards emissions requirements for vehicles using hydrogen or mixtures of hydrogen and natural gas (H2NG) plus information requirements for electric vehicles (EVs).

The new Regulation first amends the definition of a 'hybrid electric vehicle', adding a phrase to include vehicles which draw energy from a consumable fuel only for the purpose of re-charging the electrical energy/power storage device. This would therefore ensure that systems such as range extenders are included. New definitions are also added for 'electric power train', 'pure electric vehicle', 'flex fuel H2NG vehicle' and 'hydrogen fuel cell vehicle'.

In the case of a flex fuel H2NG vehicle, the fuel composition range may vary from 0% hydrogen to a maximum percentage of hydrogen within the mixture that has to be specified by the manufacturer. The manufacturer has to demonstrate, on the parent vehicle of the family, its ability to adapt to any percentage within this range. It also has to demonstrate its capability to adapt to any natural gas/ biomethane composition that may occur across the market, regardless of the percentage of hydrogen in the mixture. The emissions test for parent vehicles of a family has to be conducted with 4 different gases: 100% H-gas (high calorific fuel natural gas/biomethane); 100% L-gas (low calorific fuel natural gas/biomethane); a mixture of H-gas and the maximum percentage of hydrogen specified by the manufacturer; and a mixture of L-gas and the maximum percentage of hydrogen specified by the manufacturer. For members of a family, emissions tests have to be conducted with one of the natural gas/biomethane reference fuels and with a mixture of the same gas and hydrogen at the maximum percentage of hydrogen specified by the manufacturer. (Factors determined from the parent vehicle are then used to give results for the other fuel but the manufacturer can opt to test on all four fuels). The requirements also clarify that LPG parent vehicles have to be tested on the two extreme reference fuels.

The table of test requirements for type approval is extended to include columns for flex-fuel H2NG vehicles, pure EVs and hydrogen fuel cell EVs. In addition the existing columns for hydrogen PI vehicles, petrol/hydrogen bi-fuel and flex fuel CI diesel (B5)/biodiesel vehicles are completed. EVs and hydrogen fuel cell vehicles have only to be subjected to the test for CO_2/fuel consumption/electrical energy consumption and electric range. Hydrogen PI vehicles are subject to the test for gaseous pollutants (NOx only), durability, in-service conformity, OBD and CO_2/fuel consumption but not PM or PN. Flex-fuel H2NG vehicles have to be tested for gaseous pollutants, in-service conformity and CO_2/fuel consumption on both fuels, and for idle emissions, crankcase emissions and durability on NG/biomethane only. They also are not tested for PM or PN, or for evaporative emissions or emissions on the test at -7°C. The flex-fuel CI vehicles have to be tested to the same requirements as normal CI vehicles, using only the B5 (5% biodiesel) reference fuel. This is, however, described as a temporary provision with other requirements for biodiesel to be specified later.

A hydrogen reference fuel specification for IC engines (min. 98% H_2) and one for fuel cell vehicles (min. 99.99% H_2) are added to Annex IX.

There is a further significant amendment to the text on the pollutant gases to be measured. These now include water and hydrogen. Water has to be measured using an NDIR analyser calibrated with either water or propylene and hydrogen has to be measured using a sector field mass spectrometer. The resulting emissions measurements, though, appear to be used only in the calculations for H_2 and H2NG vehicles.

The new Regulation can be downloaded from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:182:0014:0026:EN:PDF.

European Economic Area adoption of Euro VI Published in Official Journal

On 2 August 2012, publication in the EU's Official Journal confirmed the adoption of the Euro VI Regulation (EC) No.595/2009 into the agreement on the European Economic Area (EEA). The agreement allows Iceland, Liechtenstein and Norway to participate in the EU Internal Market.

Regulation (EC) No.79/2009 (type-approval of hydrogen-powered motor vehicles) is also adopted into the agreement, as is (EU) No.183/2011 which amends the Framework Directive.

2020 CO_2 Targets confirmed in European Commission Proposals

On 11 July 2012 the European Commission confirmed the proposals for the 2020 CO_2 emissions targets of a 95 g/km fleet average for new cars and 147 g/km fleet average for new light commercial vehicles.

The mandatory targets for 2020 were already envisaged in existing legislation but required confirmation. The Commission's analysis showed that

the 2020 targets are achievable, economically sound and cost effective; the technology is readily available, its cost is substantially lower than previously thought and its implementation should benefit consumers and industry.

As with the existing Regulations, the proposals are based on vehicle mass. The Commission says it assessed a wide range of other possible bases for the future Regulation. All of these parameters except using the area of the vehicle ('footprint') were found to be undesirable. The possible use of footprint instead of mass was analysed in detail. It does offer some benefits, including slightly lower costs. However, it was considered that providing certainty for manufacturers ruled out a change of the basis for the regulation for 2020.

The maximum Excess Emissions Premium is maintained at €95 per g/km per vehicle. Regarding test cycles, the Commission says that while it is clear that the emissions test cycle gives very different results from real world driving, there is no evidence that test cycle results do not correlate to real world emissions. The Commission is nevertheless taking part in the international efforts to develop a new global test procedure for light-duty vehicles (WLTP) and it is hoped that this will result in more realistic CO_2 values than the current test procedures.

The proposal for cars includes 'super credits' to provide a 'technological stimulus' incentive for manufacturers. Super credits would enable cars that emit less than 35 g/km to count as 1.3 vehicles. The credits will be available for a period of four years (2020-23) but limited to 20 000 cars per manufacturer over the duration of the scheme.

Manufacturers responsible for less than 500 registrations of new passenger cars or light commercial vehicles per year are excluded from the obligation of having a CO_2 target and more flexibility is allowed in the timing of decisions granting small volume derogations.

The proposals have been submitted to the European Parliament and the Council for discussion and adoption under the normal legislative procedure. The proposals would amend the two existing Regulations that established binding requirements for manufacturers to meet the 2015 mandatory target for cars and the 2017 target for vans.

The draft Regulation on cars CO_2 is available from http://ec.europa.eu/clima/policies/transport/vehicles/cars/docs/regulation_2012_393_en.pdf and that on vans is at http://ec.europa.eu/clima/policies/transport/vehicles/vans/docs/regulation_2012_394_en.pdf.

European Commission Proposal on Roadworthiness Testing

The European Commission has proposed a new Regulation on periodic roadworthiness tests (including emissions tests) for motor vehicles and their trailers, to replace Directive 2009/40/EC.

The "Roadworthiness Package" will carry over the existing requirements covering roadworthiness tests and roadside inspections but extends the scope to new categories of vehicle, including all types of powered two- and three-wheelers, light trailers up to 3.5 tonnes and tractors with a design speed exceeding 40 km/h. Vehicles of historic interest (at least 30 years old) and those belonging to the armed forces and emergency services are excluded.

The proposal would also increase the frequency of inspections for older vehicles. Vehicles of category L (motorcycles etc.), M1 (cars), and N1 (light commercial vehicles) would have to be tested when 4 years old, after a further 2 years, and then annually. If an M1 or N1 vehicle reaches 160 000 km by its first roadworthiness test it then has to be tested annually. Vehicles of category M1 registered as taxis or ambulances and vehicles of categories M2, M3, N2, N3 and T5 would have to be tested when 1 year old and then annually.

The annex to the proposal would require the manufacturer to provide emissions Type Approval data and details of key emissions control equipment. Emissions tests at roadworthiness checks or roadside inspections include checks for the presence of original emissions equipment, leak checks and either OBD checking of the proper functioning of the emissions control system or measurement of idle CO and λ (petrol engines) or free acceleration opacity (diesels).

The proposal would also allow the Commission to amend the Regulation to take into account the evolution of the EU type-approval legislation. This includes any new test procedures for checking the conformity of in-use NOx and particulate emissions for systems with modern emissions aftertreatment.

The Commission proposal is available from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0380:FIN:EN:PDF.

European Commission Working Document on Inland Waterway Transport

The European Commission has issued a Staff Working Document on 'promoting, greening and integrating inland waterway transport in the single EU transport area'.

The document says that the mid-term report of the NAIADES Action Programme identifies as a major concern the poor progress made on reducing air

pollutant emissions (notably NOx and PM) of vessels. "Already today road freight transport uses more modern and cleaner engines than inland waterway transport. It is only due to its scale advantage over the road, that in many cases the emission per tonne km does not exceed that of road transport. It is however expected that, in 2020, due to the rapid modernisation of the fleet of trucks in Europe, the emissions per tonne km for road haulage will in many cases also be better than for inland waterway transport."

In discussion of possible measures for a NAIADES II programme, the document also says that "Contrary to road transporters, barge operators have no strong economic or regulatory incentives to reduce inland waterway transport emissions. The Commission services are therefore preparing new measures for inland waterway transport to catch up. For the medium term, a proposal amending Directive 97/68/EC on emissions from Non-Road Mobile Machinery could introduce Stage IV emissions limits for new engines used in inland waterway vessels. A longer term framework for improvement of the environmental performance of the fleet is however needed including innovative propulsion systems and in particular with more stringent measures which are also applicable to the existing fleet. Such a stable framework would support the modernisation of the fleet, reduce its dependency upon increasingly expensive fossil fuels and make it more energy-efficient…The Commission services will review the business as usual scenario and investigate options for achieving by 2020 an overall performance regarding emissions levels for inland waterway transport that is better or at least comparable to the performance of road transport." The indicative planning detailed in the annex identifies 2013 for possible Commission proposal(s) for emissions limits for existing and new inland barges' engines.

As a result, the Commission has now announced the formation of a common expert group on emissions reduction for inland waterway transport. The objective of this group is to support the Commission in developing legislative measures to reduce the emissions of the inland waterway transport sector, with special emphasis on air pollutants. A first meeting has been called in September 2012.

European Commission considers Regulation of Smaller Combustion Plants

The European Commission is considering several measures to regulate emissions to air from combustion plants of less than 50 MW rated thermal input. Plants of this size are not included in the 2010 Industrial Emissions Directive (IED). A consultancy study prepared by AMEC for the Commission and published by DG-Environment on 23 July 2012 compares three options with a 'do nothing' baseline.

The first of the 3 main options ('Full IED') is to include units of 1 to 50 MW as a new activity in Annex I of the IED and to set EU-wide minimum emissions limit values based on the most stringent national limits applied by Member States. The second option is to extend existing limit values for 50-100 MW plants to those < 50 MW. The third option ('Light IED') would include 1-50 MW installations as a separate chapter in the IED but setting limit values for air pollutants without requiring a full pollution permit for different types of environmental impacts such as air and water pollution. Such rules already apply to small solvent plants under the IED. The report also considers the possibility of an alternative approach for very small plants of 1 to 5 MW. The main option for these appears to be to regulate the emissions of new units through product standards similar to those adopted under ecodesign rules.

The report finds that, for all three main options, the benefits of controlling emissions from small combustion plants would outweigh compliance and administrative costs. The 'Light IED' option would be less burdensome than the two other options, AMEC says. The Commission will now conduct further analysis, including economic and social impacts. Stakeholders will be consulted once the work is finalised.

European Commission publishes Rules on Aircraft Emissions

On 21 August 2012, implementing rules for the airworthiness and environmental certification of aircraft and components were published in the Official Journal as Commission Regulation (EU) No.748/2012, repealing the existing Regulation (EC) No.1702/2003.

For emissions, the Regulation calls up applicable emission requirements for an aircraft and engine that are prescribed in Annex 16 to the Chicago Convention. This covers the prevention of intentional fuel venting, emissions from turbo-jet and turbofan engines intended for propulsion only at subsonic speeds and, in a separate chapter, emissions of turbo-jet and turbofan engines intended for propulsion only at supersonic speeds. The European Aviation Safety Agency has to issue certification specifications providing for acceptable means to demonstrate compliance with the noise and the emission requirements. The engine type-certificate data sheet will include a record of emissions compliance and the engine manufacturer has to provide a statement that each completed engine is in compliance with the applicable emissions requirements current at its date of manufacture.

Decisions on Requests for Delays in meeting NO_2 Air Quality Limits

The European Commission has rejected more than half of requests from six more Member States to delay the 2010 deadline for meeting NO_2 air quality targets. Member States can request delays until 2015 if plans to meet the target are in place.

Only Finland's application, which relates solely to Helsinki, was approved in full. Italy, which submitted applications for 48 zones, was granted 18 extensions to 2015, three to 2013 and one to 2014. The rejected zones include Rome, Naples and Turin, none of which are expected to meet the targets by 2015. The Commission granted Belgium extensions for the port and city of Antwerp but refused one for Brussels, which is not expected to comply with the Air Quality Directive requirements until 2018. Austria only won full extensions for Carinthia and Linz. Lower Austria must become compliant next year. The remaining six zones in its application, including Vienna and Salzburg, were refused extensions. The Czech Republic was granted more time to meet the hourly limit in Prague, but the capital and 3 other zones did not win extensions to the annual limit, partly due to poor and inconsistent data. Spain's application for three extensions also failed.

Eleven EU Member States exceed Air Emissions Limits under LRTAP

A report from the European Environment Agency published on 30 July 2012 says that emissions of most air pollutants have fallen over the last two decades in Europe, but many Member States have exceeded internationally-agreed pollutant limits set to protect human health. Road transport, households, power plants, agricultural activities and certain industry sectors continue to emit significant amounts of air pollution.

In 1999, many of the countries that now comprise the European Union committed to cut emissions of air pollutants under the Gothenburg Protocol of the Convention on Long-Range Transboundary Air Pollution (LRTAP Convention). The EEA's annual report presents a summary of the main emission trends over the past decades. It shows that eleven countries exceeded the 2010 ceilings for the four important air pollutants regulated under the Protocol.

Among the 11 EU Member States that exceeded the international emissions ceilings, Denmark and Spain exceeded three ceilings (for NOx, non-methane volatile organic compounds (NMVOCs) and ammonia) while Germany exceeded two ceilings (NOx and NMVOCs). Austria, Belgium, France, Ireland, Luxembourg, the Netherlands, Sweden (all NOx) and Finland (ammonia) exceeded one ceiling.

Road transport, households, electricity generating plants, agriculture and certain industry sectors are collectively the most important sources of several different pollutants. The 47% reduction of NOx emissions over this period was largely due to the introduction of the three-way catalytic converter in petrol vehicles, as well as reductions from industry as a result of tighter controls on emissions. Improved vehicle catalysts in road transport also contributed to the reduction in CO and NMVOCs.

European Union emission inventory report 1990–2010 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP), European Environment Agency Technical report No. 8/2012 (30 July 2012), www.eea.europa.eu/publications/eu-emission-inventory-report-1990-2010.

DG-JRC Report shows Improved Air Quality in EU Harbours

A new report from DG-JRC says that SO_2 emissions from shipping have sharply decreased in EU ports thanks to the EU policy which limits the sulfur content of fuels for ships at berth or at anchor in ports.

Scientists at the Commission's Joint Research Centre measured key air quality parameters in Mediterranean harbours before and after the entry into force of the low-sulfur requirements in January 2010. In European harbours they found an average decrease of 66% in concentrations of SO_2. Measurements taken in a non-EU port showed that SO_2 levels remained the same. There was, though, no reduction in any of the other air pollutants that were measured in all four harbours.

The air quality measurements were carried out using an automated monitoring station on the cruise ship Costa Pacifica which followed a fixed weekly route in the Western Mediterranean during 2009 and 2010.

Impact of a European directive on ship emissions on air quality in Mediterranean harbours, Clara Schembari, Fabrizia Cavalli, Eleonora Cuccia, Jens Hjorth, Giulia Calzolai, Noemi Pérez, Jorge Pey, Paolo Prati, Frank Raes; *Atmospheric Environment* (in press), doi: 10.1016/j.atmosenv.2012.06.047.

European Commission publishes Analysis of Future Fuel Prospects

The European Commission's Mobility and Transport Directorate (DG-MOVE) has published a consultancy report on the prospects of developing infrastructure for alternative fuels. The report gathers information on the subject from Member States and industry experts.

The report by consultancy Exergia provides further input to the Commission's preparatory work on an EU strategy for developing 'greener' fuels, which will be published later this year. It contains a summary of responses to a consultation that was first published in November 2011, together with further stakeholder feedback on how many filling stations could be built for various fuel types, minimum geographical

coverage and likely costs. The report also contains figures on the number of existing refuelling stations and vehicles using alternative fuels across Europe, as well as projections for the future. One chapter provides information on policies to promote alternative fuels in Member States.

The consultancy report is available from http://ec.europa.eu/transport/urban/studies/urban_en.htm.

French Ministerial Letter on Low Emission Zones (ZAPA)

Delphine Batho, the French Minister for Ecology, Sustainable Development and Energy, wrote on 12 July 2012 to local authorities that had volunteered to establish Low Emission Zones (ZAPA) in France.

The Ministry says that while air pollution is responsible in France for nearly 40 000 premature deaths each year, the country still lags behind in the implementation of the EU Directive on air quality 2008/50/EC. To remedy this problem, the "Grenelle de l'Environnement" had launched the ZAPA initiative, allowing agglomerations to limit access to city centres by the most polluting vehicles. This tool has nevertheless proved to be too rigid and socially unjust, excessively penalizing owners of older vehicles, the Ministry statement says.

In the letter, the Minister reaffirmed her support to local authorities, while stressing her intention to adapt the framework. She also announced her intention to engage in a more general discussion on the necessary structural measures to improve air quality. She indicated that air quality would be part of the national consultation on energy transition. A working group will be set up soon with ZAPA-volunteer local authorities to examine the difficulties they face and develop comprehensive and applicable action plans.

EU Member States' Activities on Low-CO_2 Vehicles

The **UK** has announced that it is aiming to speed up the commercialisation of low-carbon vehicle technologies with public and private sector investment totalling £56 million (€71.8 million). Over £27 million of public funding, along with £29 million of private sector money, will be invested in 17 research and development projects led by carmakers such as Ford, Jaguar Land Rover and Nissan, the UK's Technology Strategy Board said in a statement on 24 July 2012.

A statement from **France**'s Industry Ministry has announced that the government will increase incentives for buyers of fully electric cars to €7 000 from the current figure of €5 000. Subsidies on hybrid cars will double to €4 000. The subsidy rises are due to take effect at the end of 2012. The increased subsidies are part of an aid package, discussed at a cabinet meeting on 24 July 2012. The package will also free up €150 million in state-backed loans to motor industry sub-contractors and oblige the government to make a quarter of its car purchases electric or hybrid vehicles. Despite existing incentives, electric and hybrid vehicles made up only 0.2% and 0.8% respectively of French car registrations in the first quarter of 2012.

The **Estonian** government is proposing to prolong its support arrangement for the purchase of electric cars until the end of 2014 and to extend it to externally chargeable hybrid vehicles. The exact terms and conditions are to be set out by the Minister of Economy and Communications.

The existing regulation signed in July 2011, enables both legal entities and private persons to apply for a subsidy covering up to 50% of the price of the vehicle, but not exceeding €18 000. In addition €1 000 would be paid for the acquisition of a charger and its installation. The present subsidy, which covers fully electric vehicles with a maximum speed of over 60 km/h could be applied for until 30 November 2012.

The change in the government regulation arises from amendment of the agreement on carbon emissions trade between Estonia and Mitsubishi, the government said. The subsidy is financed using funds paid by Mitsubishi Corporation under an agreement with Estonia on the sale of carbon emission rights. In addition Estonia is setting up a country-wide electric car charging network as part of the same deal and will get 507 electric cars from Mitsubishi that will be distributed to social workers.

NORTH AMERICA

Appeals Court upholds US EPA's NO_2 Air Quality Rule

A US federal appeals court has upheld the Environmental Protection Agency's 2010 rule to limit NO_2 emissions near major roadways. The American Petroleum Institute had led opposition to the 100 ppb 1-hour National Ambient Air Quality Standard and had sued to overturn it. The appeals panel concluded that the record adequately supports EPA's conclusion that material negative health effects result from ambient air concentrations as low as 100 parts-per-billion.

California starts Enforcement of Large Spark Ignition Engines Regulation

On 9 August 2012 the California Air Resources Board (CARB) issued a notice that, following granting of a waiver from the US EPA, it now intends to enforce all of the requirements of the large spark-ignition (LSI) Engine Fleet Regulation.

The LSI Fleet Regulation established emissions limits for equipment powered by spark ignition engines >1 litre displacement / 25 hp (18.6 kW), including forklifts, industrial sweepers and scrubbers, portable generators, airport ground support equipment, and certain agricultural and forestry operations.

Details of the LSI regulation are on the CARB website at www.arb.ca.gov/msprog/offroad/orspark/orspark.htm.

Canadian Rules on Diesel Sulfur Content for Large Ships and Stationary Engines

Under final regulations published on 4 July 2012, operators of large vessels in Canada's territorial waters will have to use diesel fuel with significantly lower sulfur levels starting from 1 June 2014. The amendments to regulations under the Canadian Environmental Protection Act harmonise Canadian standards with those in the United States, Environment Canada said in a statement published with the regulations in the Canada Gazette, Part II. The amendments also harmonise the two countries' standards for sulfur in diesel fuel used in stationary engines effective 1 June 2014, the department said.

The fuel sulfur content standard meets Canada's commitments under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), for the Emissions Control Area (ECA) in waters within 200 nautical miles of the Canadian and US East and West Coasts.

The regulatory amendments create a new category of diesel fuel for use in large ships of more than 400 gross tonnes that would limit the maximum sulfur content to 1000 mg/kg (typical levels are currently 25 000 mg/kg max.). Compliance may be accomplished through the use of low-sulfur marine fuel or adoption of other measures, such as scrubbing, that produce equivalent emissions.

The amendments also limit sulfur levels in diesel fuel for use in stationary engines to 15 mg/kg for stationary engines of <30 litres/cylinder and to 1000 mg/kg for stationary engines greater than this displacement.

A request by the Canadian petroleum industry to retain the current 500 mg/kg limit for diesel fuel used in locomotives, rather than moving to 15 mg/kg from 1 June 2014, to align with U.S. requirements, was accepted pending the collection of additional information, Environment Canada said. The refining industry will gather data on sulfur pickup in Canadian pipelines and distribution systems, which often carry both crude and refined products, and provide it to Environment Canada in 2014.

New York State proposes adopting California LEV III and GHG Standards

The Department of Environmental Conservation of New York State (DEC) has issued a proposal to amend the State's emissions standards for motor vehicles and motor vehicle engines. The proposal will incorporate California's LEV III low emission vehicle, greenhouse gas (GHG), and zero emission vehicle (ZEV) standards as well as the requirements on environmental performance labels, and new aftermarket and used catalytic converter standards. The Department is also incorporating California's emissions warranty and recall provisions.

The proposals are available at www.dec.ny.gov/regulations/83559.html and comments are being accepted until 27 September 2012.

NESCAUM Report on Emissions from Back-up Electricity Generators

The Northeast States for Coordinated Air Use Management (NESCAUM) issued a report on 1 August 2012 concluding that the expanded use of back-up diesel generators could be leading to clean air violations, undermining the progress being made by more stringent US EPA air rules.

The report says that although originally intended to provide back-up or emergency generation when facilities lost power, these engines are now also directly and indirectly providing electricity to the grid through participation in demand response programmes. In addition, traditional integrated utilities may use these engines for voltage or frequency regulation. The report focuses on engines classified as 'emergency', thus avoiding emissions limits, while operating during non-emergency periods through participation in a demand response programme.

In particular, concerns have been raised that demand response programmes provide financial incentives for the use of uncontrolled back-up generators on the hottest summer days, creating a spike in emissions, including NOx, when conditions would be most conducive to the formation of ground-level ozone. In addition, because emergency diesel generators are often located in densely populated areas near ground-level, their increased use for electricity generation will also increase the public's exposure to other emissions.

NESCAUM's preliminary analyses indicate that uncontrolled diesel back-up generators operating under the exemption included in the Environmental Protection Agency (EPA)'s recent proposal could by themselves create hotspots exceeding the national health-based 1-hour NO_2 air quality standard.

Recommendations in the report include that the EPA should require the use of ultra-low sulfur diesel for all back-up diesel engines participating in demand response programmes, that States and the EPA should set a time frame to phase out the participation of the oldest and largest emitting diesel engines and that the owners of back-up diesel generators earning revenue in non-emergency demand response programmes should be required to install the appropriate pollution controls.

The report is available at http://www.nescaum.org/items-of-interest.

Proposals to amend California Verification Procedures for Retrofits

The California Air resources Board (CARB) issued, on 5 July 2012, a set of proposed amendments to the verification procedure, warranty and in-use compliance requirements for 'in-use strategies to control emissions from diesel engines' (i.e. diesel retrofit). The proposal aims to lower the costs of testing whilst maintaining stringency.

The proposals include replacing one phase of in-use compliance emissions testing with in-field testing; significantly increasing the sales triggers that determine when in-use testing must begin; adding functional testing to reduce the need to remove and replace entire systems for in-use emissions compliance testing; adding recall provisions; more explicit pre-installation assessment and installer requirements; clarifying the high backpressure notification and safety testing requirements; and clarifying the attributes of an emission control group and the selection of test engines.

Details of the proposals can be downloaded from www.arb.ca.gov/regact/2012/verdev2012/verproisor.pdf.

Port of New York and New Jersey announces Clean Ship Incentives

The Port Authority of New York and New Jersey has announced an incentive programme for ocean-going vessels that call in the port.

The three-year $4.875 million (€3.9 million) Clean Vessel Incentive (CVI) programme aims to encourage ship operators to improve their engines, use cleaner fuels, and upgrade their technology to reduce emissions from ocean-going vessels. The CVI provides financial incentives to ships achieving a score of 20 points or higher based on the World Port Climate Initiative's Environmental Ship Index (ESI). Additional points are allocated to vessels that participate in the port's speed-reduction programme. Currently, 14 European ports have an ESI incentive programme and the Port of Los Angeles has also adopted an ESI incentive programme.

The Port Authority anticipates that about 600 vessels a year will participate in the programme, providing annual emission reductions of some 182 tons of NOx, 38 tons of particulate matter, and 264 tons of SO_2.

Alaska tries to block US Low-Sulfur Fuel Requirement for Ships

The state of Alaska is suing the US administration to block the federal regulation that would require large marine vessels sailing in southern Alaska waters (within 200 miles of the coast) to use low-sulfur fuel. The rule was scheduled to be enforced by the US Environmental Protection Agency and the US Coast Guard from 1 August 2012. The Alaska Department of Law said in a statement that the low-sulfur fuel requirement would be costly and would harm Alaska's cruise industry.

US Final Rule on Fuel Economy and Greenhouse Gas Emissions

On 28 August 2012, the US Environmental Protection Agency (EPA) and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) issued the final version of the standards that will further reduce the CO_2 emissions of US cars and light-duty trucks for model years 2017 to 2025, reaching a fleet average of 163 g/mile CO_2 in 2025.

Details of the original proposals were given in the AECC Newsletter of November-December 2011. The final rule includes continuation of the programme for averaging, banking, and trading of credits that is established in the 2012-2016 programme, including credits for improved air conditioning systems. It also includes an expanded and streamlined version of the credits for CO_2-reduction measures that are not reflected in the current test procedures. There are incentives for electric vehicles, plug-in hybrid electric vehicles, fuel cell vehicles, and compressed natural gas vehicles and for advanced technologies including hybridisation for full-size pickup trucks.

Mexican CO_2/Fuel Economy Proposals

The Mexican government published its final proposal for fuel economy/CO_2 standards in the Official Journal of Mexico (Diario Oficial de la Federación), on 11 July 2012, together with the accompanying regulatory impact assessment published by COFEMER, the Federal Regulatory Commission. The documents are open for 60 days of public comment, after which time the government will respond to comments and publish the final standard.

The proposal, published jointly by the Economy, Energy and Environment Ministries, covers vehicles up to a gross vehicle weight of 3857 kg. The average corporate weighted fuel economy goals would

commence in 2014 and mandate an average new car fleet fuel economy of 14.9 km/litre in 2016. Compliance curves for passenger cars and light trucks are based on vehicle footprint. These are harmonised in stringency to US and Canadian regulations.

The proposals (in Spanish) are available at http://www.dof.gob.mx/nota_detalle.php?codigo=5258936&fecha=12/07/2012.

Report says Saskatchewan is an Air Quality Green Zone

A report on air quality in the Canadian province of Saskatchewan over a 10-year period shows good performance for the five major pollutants measured in Canada – SO_2, CO, NO_2, ozone and particulate matter. The Ministry of Environment says the entire province is considered an air quality green zone.

The report details data from 2000 to 2009, but the ministry says that more recent data - which is available on the ministry's website - is continuing to show good environmental performance. The province is now aiming to release air quality report updates annually and expand monitoring into other areas.

98% Reduction in VOCs in Los Angeles

According to a study by the US National Oceanic and Atmospheric Administration (NOAA), to be published in '*Research Atmospheres*', vehicle-related volatile organic compound (VOC) levels in Los Angeles, California, have dropped by 98% since the 1960s.

The drop in VOCs was most significant between 2002 and 2010, when they were cut in half. This was despite the fact that drivers in Los Angeles now use three times as much gasoline and diesel fuel as they did 50 years ago. The study's lead author, Carsten Warneke, said in a prepared release that the reason is simply that cars are getting cleaner through the use of catalytic converters, improved engine efficiency, and reformulated fuels that are less prone to evaporation.

The report, though, also ranked the Los Angeles-Long Beach-Riverside area as having the third highest level of annual particle pollution in the nation and the fourth highest level of short-term particle pollution.

ASIA PACIFIC

Changes to Singapore Emissions Regulations

Singapore's Minister for the Environment and Water Resources Vivian Balakrishnan announced at the Singapore Environmental Achievement Awards on 23 August 2012 that the country plans to implement Euro 4-equivalent emissions standards for petrol vehicles from April 2014. The National Environment Agency (NEA) also says that from January 2014 onwards, new diesel vehicles will have to meet Euro 5 emissions standards.

The NEA has also stipulated that from 1 July 2012, newly imported non-road diesel engines, such as those in cranes, excavators, forklifts and diesel generators, (including those with power >560 kW) must meet EU Stage II, US Tier II or Japan Tier I off-road diesel engine emissions standards.

By July 2013, the supply of 10 ppm sulfur (Euro 5) diesel fuel will be mandatory and petrol vehicles will use 50 ppm sulfur (Euro 5) fuel by 1 October 2013.

Singapore's emissions regulations are available at http://app2.nea.gov.sg/topics_air.aspx.

Singapore Clean City Air Coalition

The Singapore Institute of International Affairs (SIIA) has launched a Clean City Air Coalition to raise awareness of air pollution issues in the region and within Singapore.

Air pollutant levels in Singapore were worse last year than in 2007, according to statistics released by the Ministry of the Environment and Water Resources. Last year, the annual mean $PM_{2.5}$ level was 17 µg/m^3. On 23 August 2012 the Ministry of the Environment and Water Resources said in the statement that by 2020, they aim to achieve the targets of the World Health Organisation (WHO) Air Quality Guidelines for PM_{10}, NO_2, CO and ozone, and the WHO interim targets for $PM_{2.5}$ and sulfur dioxide.

Draft New Zealand Rules on Vehicle Exhaust Emissions

On 29 June 2012, New Zealand issued formal proposals for revisions of the Land Transport Rule on vehicle exhaust emissions (Rule 3301/6).

The proposals incorporate new Australian Design Rules (ADRs) and their equivalent Euro standards for new light vehicles from 1 November 2013 and incorporate implementation dates for the US 2007 and Japan 09 emissions standards for new vehicles. The amendments also update the current definition of the 'Euro 5' standard to include UNECE versions that were published in 2010. In addition, the requirement for diesel vehicles certified to comply with ADR 80/03 (the Australian equivalent of Euro V), or the light vehicle standard ADR 79/03, to also comply with ADR 30/01 - Smoke Emission Control for Diesel Vehicles; is removed. The revised rules are also intended to ensure that used vehicles registered after 31 December 2012 continue to be built to the current, recognised exhaust emissions standards, pending a review of the need for additional emissions standards in 2014.

The proposals are at www.nzta.govt.nz/consultation/vehicle-exhaust-emissions-amendment/overview.html.

New Zealand Report on the Health Effects of Air Pollution

A report into the effects on health of air pollution, prepared for the Health Research Council of New Zealand, Ministry of Transport, Ministry for the Environment and the New Zealand Transport Agency, says the total social costs associated with anthropogenic air pollution in New Zealand are estimated to be NZ$4.28 billion (€2.8 billion) per year or NZ$1061 (€699) per person, with on-road motor vehicles responsible for 22% of this. 56% is attributed to domestic fires, but in the Auckland region, particularly Auckland City, motor vehicle health impacts are nearly twice those of domestic fires.

The study concentrates on PM_{10} because, the authors say, the majority of health effects in New Zealand are associated with this pollutant and it is a good indicator of the sources and effects of other air pollutants. More than 2300 New Zealanders are estimated to die prematurely each year due to exposure to PM_{10} pollution from all sources, with just over half associated with anthropogenic sources. The authors note that international assessments increasingly use $PM_{2.5}$ rather than PM_{10} as the exposure metric, but there is little $PM_{2.5}$ monitoring data available in New Zealand. A broad brush sensitivity analysis was conducted for one health outcome - mortality for all adults aged 30 years and over - using an estimated fraction of $PM_{2.5}$ in the PM_{10} annual average. This suggested that the proportion of air pollution health impacts attributed to anthropogenic sources, in particular motor vehicles and domestic, will be lower when using PM_{10} as these sources make a greater contribution to finer particulate fractions than natural sources. The report notes also that as the authors were not able to robustly assess NO_2 exposure, the results most likely under-estimate the health impacts of motor vehicle-related air pollution.

Following release of the report, the New Zealand Motor Trade Association (MTA) said that they would be asking government to give serious consideration to the idea of introducing in-service emissions testing for all road-going vehicles. Based on this report it seems likely that it could conceivably save lives as well as a considerable amount of money, the association said. New Zealand currently mandates that vehicles registered for the first time (new and first time used imports) meet specified emissions standards, but there is no formal testing thereafter.

Updated Health and Air Pollution in New Zealand Study 2012 (HAPINZ), G. Kuschel, J. Matcalfe, E. Wilton, J. Guria, S. Hales, K. Rolfe, A. Woodward; www.hapinz.org.nz.

Australian Report on Pollution and Children's Health

Pollution is creating asthma-like symptoms in otherwise healthy children, and potentially affecting their lung growth, according to a report commissioned by the National Environment Protection Council to contribute to the review of Australia's National Environment Protection Measures.

The Australian Child Health and Air Pollution Study report suggests that the country's air quality standards should be upgraded and calls for major reductions in particulate matter, NO_2 and ozone, saying there were many pollutants without a safe "threshold". The report suggested this be done by limiting motor vehicle emissions, investing in more public transport and through better urban design.

The study of primary school children showed that NO_2 was present in the lungs of two thirds of the students tested at the 55 sample schools. The schools were chosen to be near to air quality testing stations, so that results could be cross-checked with daily pollutant levels. In the cases where NO_2 was detected in children's lungs, the researchers consistently found those children experienced asthma-like symptoms, including 'wheeze'. Their lung volume was reduced and their airways inflamed. Researchers concluded the NO_2 was not producing typical asthma, but a non-specific lung effect, which did not improve with asthma medication. "Although air pollution levels are relatively low in most regions of Australia, they may not be low enough to prevent adverse health effects," the report warned. The study found that children inhaled and retained more air pollution per unit of body weight than adults, partly because they played outdoors, and that pollution had a greater impact on children because their lungs were still developing. While the impacts measured were small, long-term exposure to NO_2 could affect them into adult life, the report says.

Thailand temporarily eases Gasoline Standards

The Thai government has temporarily slightly relaxed requirements on the benzene and olefin content of gasoline, along with regulations on its Reid Vapour Pressure, following a shortfall in supply due to Bangchak Petroleum's refinery in Bangkok being offline since a fire in July 2012. It is reported that the temporary waiver will last until the end of September 2012 for refineries and until November 2012 for retail stations.

Thailand moved to Euro 4 emissions and gasoline standards at the start of the year, meaning refiners had to meet more stringent standards.

China plans for 5 Million Greener Vehicles by 2020

China's government has set goals of producing and selling 500 000 energy-efficient and alternative energy vehicles a year by 2015 and having five million such vehicles on the road by 2020. Two million of these will be pure electric and hybrid vehicles.

The efforts aim to reduce average fuel consumption of passenger vehicles to 6.9 litres/100 km by 2015, and less than 5.9 litres/100 km for energy-saving cars. The figure will further be lowered to 5 litres/100 km for passenger vehicles in 2020, and 4.5 litres/100 km for energy-conservative cars.

The State Council outlined plans to provide generous subsidies to consumers and producers of new generation and greener vehicles so as to ease the country's heavy dependence on imported oil, cut emissions, and speed up the restructuring of its automobile sector into a more environmentally sustainable model. According to the details, there will be heavy government investment in the core technology needed to build a strong and globally competitive new-energy vehicle industry. The short-term emphasis will be on developing pure electric and plug-in hybrid vehicles, as well as wider usage of hybrid vehicles and energy-saving combustion-engined automobiles. According to the Ministry of Finance's website, the central government will also provide as much as 2 billion yuan in annual subsidies, starting this year, to support the manufacturing of new-energy vehicles, as well as encourage research related to energy-saving vehicles. The Beijing municipal government recently said it plans to purchase 1 000 new energy vehicles, while Shanghai will spend 6 billion yuan into the R&D and manufacture of hybrid and pure electric vehicles.

China releases 12th Five-Year Plan for Energy and Environment

China's State Council has issued the 12th Five-Year Development Plan for the Energy Saving and Environmental Protection Industry (guofa [2012] No. 19). The plan outlines the current status of the energy saving and environmental protection industry in China. It also identifies the key fields within the sector and points out the current problems facing the industry and offers possible solutions.

In 2010, the output value of the energy saving and environmental protection industry reached RMB 2 trillion (approx. €258 billion) and accounted for 28 million employees. It is anticipated that the annual growth rate will be kept at 15% or above until 2015 and, by then, the output value is expected to reach RMB 4.5 trillion.

The plan says that in recent years, China's energy saving and environmental protection industry has grown rapidly, but the scale and strength of the industry has not yet met the needs of the nation's economic and social development. In particular, the industry lacks world-leading, cutting-edge enterprises; most of the companies operating in the industry are SMEs largely dependent on policy support and financial subsidies from the government.

The plan offers a series of policy measures that it is hoped will create a sustainable environment for the rapid growth of the industry during the 12th Five Year Plan period. These include extending more support through fiscal and taxation policies, improving import and export policies and intensifying technical support.

UNITED NATIONS

Updated WLTC Proposal for Vehicles with Low Power-to-Mass Ratio

An updated version of the World Harmonised Light-duty Test Cycle (WLTC) variant for low and medium power-to-mass ratio (pmr) vehicles was made available on 25 July 2012.

There are now driving cycles for the three different vehicle classes (Class 1: power-to-mass ratio < 22 W/kg; Class 2: 22 W/kg < pmr < 34 W/kg; Class 3: pmr > 34 W/kg). The Class 1 and Class 2 driving cycles have been modified according to the agreements taken at the 13th DHC meeting, held on 5 June 2012 in Geneva. The Class 3 driving cycle is unchanged. The gearshift calculation tool has also been updated to match the latest cycles.

GENERAL

9th International Congress on Catalysis and Automotive Pollution Control

The 9th International Congress on Catalysis and Automotive Pollution Control (CAPoC 9) was held at the Université Libre de Bruxelles (ULB) in Belgium from 29 to 31 August 2012.

The introductory presentation for the conference was given by Klaus Steininger from the European Commission's DG-Enterprise, who spoke on "*Towards completing Euro 6 in the lab and in the real world*". After first discussing air quality concerns, he summarised the Commission's current work on procedures for assessment of real driving emissions using Portable Emissions Measurement Systems (PEMS) and Random Cycles and noted that work is also in progress on NO_2 and low temperature NOx requirements. Regarding particulate matter (PM) and particle numbers (PN) Steininger commented that for CI engines, the main outstanding questions are on the formation of very small volatile particles downstream

of the DPF, and on monitoring for OBD. For PI engines, there is a need to work on non-volatile sub-23 nm particles, the chemical composition and physical properties of gasoline particles, the off-cycle PN emissions of PFI engines, and the real driving emissions of GDI engines. There is also a need for a PEMS PN method. He then mentioned the importance of the UNECE work on a regulation for retrofit systems before commenting that the Commission is about to launch an initiative on procedures for accelerated durability ageing.

This presentation was followed by a review of ceramic wall flow filter material to meet Euro 6 standards and low CO_2 targets, and one on the past, present and future of de-NOx catalysis.

A high proportion of the papers and posters concerned NOx reduction, covering both lean NOx trap and SCR systems, as well as systems combining both mechanisms, in some cases as dual-zone or dual-layer coatings. There were a significant number of posters and papers on silver-based LNT systems. The sessions on NOx control started with a presentation from Toyota on their di-Air system which uses a NOx storage-reduction catalyst with high frequency HC injection.

The final session of the conference concentrated on particulate matter, and included a paper examining the potential system architectures for Gasoline Particulate Filters (GPFs) with results from some examples.

GHG Policy should cover 'Upstream' Electric Vehicle Emissions

Regulators should establish a process to consider the full life-cycle greenhouse gas (GHG) emissions of electric vehicles, according to a new US study. This would help ensure that manufacturers continue to improve the efficiency of electric vehicles, and that the full benefit of regulations to limit GHG emissions from vehicles are realised, say the researchers.

Under both the EU and US schemes, electric vehicles are credited with zero GHG emissions. However, unlike petrol vehicles, a significant proportion of the emissions generated by electric vehicles occur 'upstream', when the electricity is generated, so current regulations, which only consider exhaust emissions, do not fully capture their GHG emissions.

The researchers examined alternative regulatory schemes that take account of upstream GHG emissions from electricity generation. They began by looking at the upstream emissions for electric vehicles in the USA and how the 0 g/mile standard would affect current regulations. They then examined the effects of retaining the 0 g/mile rate, requiring manufacturers to buy carbon credits to compensate for the 0 g/mile rate, or switching to a full life-cycle analysis.

Looking at regulatory options, the researchers found that, as the emissions limits are averaged across a manufacturer's entire fleet, the inclusion of 0 g/mile electric vehicles would allow average GHG emissions from the petrol vehicles in the fleet to rise. By 2020, assuming 10% of cars sold are electric, this could result in a loss of 20% of the benefit from regulations designed to reduce vehicle GHG emissions.

By requiring manufacturers to buy additional carbon credits, either in the form of renewable energy credits, low carbon fuel standards or from carbon markets, regulators could retain the simplicity of the 0 g/mile incentive while still accounting for upstream emissions. A voluntary carbon credits scheme would also allow manufacturers to demonstrate their commitment to tackling environmental issues.

The final regulatory option examined by the researchers was full life-cycle analysis. Although more complicated than the 0 g/mile options, life-cycle analysis would ensure GHG regulations were scientifically rigorous and could accommodate future energy technology developments. It would also encourage manufacturers to sell their vehicles in areas with low-emissions electricity grids. However, it would require the collection of more data on GHG emissions from the electricity grid and may make electric vehicles less attractive to manufacturers, reducing their incentive to invest.

Source: **Regulatory adaptation: Accommodating electric vehicles in a petroleum world**, N Lutsey & D Sperling; *Energy Policy* (2012) 42 pp. 308-316, doi: 10.1016/j.enpol.2012.02.038.

ICCT Report assesses Policy Options to improve Vehicle Efficiency

A new report, produced by the ICCT in collaboration with the ClimateWorks Foundation, provides an analytical framework for evaluating policies to curb greenhouse gas emissions from road transportation.

The report is designed to help high-level government officials identify policies that can improve public health, enhance energy security, boost investment in innovation, create jobs, save consumers money and help prevent dangerous climate change.

The report concludes that well-designed vehicle performance standards and fuel fees could reduce the combined annual CO_2 emissions from the US, China, and the EU by more than 1 Gt in 2030. Their cumulative reductions from 2010 to 2030 would total almost 10 Gt at a cumulative net savings of $800 billion to $1.5 trillion over the same time period.

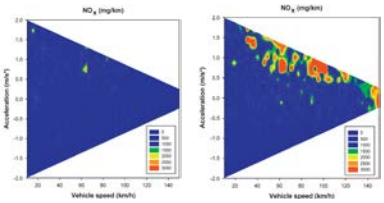
Source: **How Vehicle Standards and Fuel Fees Can Cut CO_2 Emissions and Boost the Economy**, Drew Kodjak, Francisco Posada Sanchez, Laura Segafredo, www.climateworks.org/news/item/policies-that-work-vehicles-and-fuels.

RESEARCH SUMMARY

University of Ghent/AECC Paper examines the Effect of Test Cycles

A new paper from Ghent University and AECC analyses the emissions results of a test programme of seven vehicles on the NEDC and CADC (Common Artemis Driving Cycles). The paper presents the results of the analysis to show the zones of the cycles that cause the highest emissions, using two different approaches. Both approaches show that the zones with the highest emissions of modern vehicles differ from vehicle to vehicle.

Consequently, to be representative any new test cycle needs to contain as many combinations as possible of the vehicle speeds and accelerations that occur in real-world traffic.



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Climate Change and Transport

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Recent Northern Hemisphere tropical expansion primarily driven by black carbon and tropospheric ozone, R.J. Allen, S.C. Sherwood, J.R. Norris, C.S. Zender; *Nature* (17 May 2012) 485 pp.350-354, doi:10.1038/nature11097 or paste into browser: www.nature.com/nature/journal/v485/n7398/full/nature11097.html.

Global Air Quality and Health Co-benefits of Mitigating Near-Term Climate Change through Methane and Black Carbon Emission Controls, S.C. Anenberg et al.; *Environmental Health Perspectives* (2012) 12 pp.831-839, doi:10.1289/ehp.1104301.

FORTHCOMING CONFERENCES

KONES2012 - 38th International Scientific Congress on Powertrain and Transport Means

9-12 September 2012, Castle Ryn, Poland

Details at www.kones2012.eu

The Congress topics include the latest achievements in research, development and design of compression-ignition and spark-ignition as well as other combustion engines (hybrids), including, combustion processes, mixture preparation, exhaust aftertreatment and particulate filters.

5th Environmentally Friendly Vehicle Conference

10-12 September 2012, Baltimore, Maryland, USA

Details at www.efv2012.com

This conference will bring together industry leaders and representatives from around the world to share the latest innovations and experience on how to shape the market for clean and fuel efficient vehicles.

SAE 2012 Heavy Duty Diesel Emissions Control Symposium

11-12 September 2012, Gothenburg, Sweden

Details at www.sae.org/events/hddec

This event provides upcoming regulatory actions, state-of-the-art technical information and first hand experiences relating to heavy-duty diesel emission control strategies, engines and aftertreatment.

Future Internal Combustion Engines and Their Fuels

12 September 2012, Oxford, UK

Organised by the Combustion Institute

Diesel Emissions Conference India 2012

12-14 September 2012, New Delhi, India

Details at www.integer-research.com/conferences/dec-india/2012

24th AVL Conference: Engine & Environment

13-14 September 2012, Graz, Austria

Details at www.avl.com/engine_environment

The topic for the 2012 conference is "95-70-50 g CO_2/km – Evolution or Revolution?"

SAE 2012 Emission Control from Large Ships Symposium

13-14 September 2012, Gothenburg, Sweden

Details at www.sae.org/events/ecls

This symposium will update attendees on the pending marine emissions regulations and in profiling the technologies now available to address them.

Towards Competitive and Resource Efficient Urban Mobility

17 September 2012, Brussels, Belgium

Details at www.civitas.eu/UrbanMobilityConference

This conference will mark the launch of the public consultation on the EU's urban mobility activities in the context of the White Paper 'Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system'.

Sustainable 2-Wheels: What can 2 Wheels do for European Cities

18 September 2012, Brussels, Belgium

Details at www.sustainable2wheels.eu

The objective is to inform visitors on the wide variety of 2Wheel solutions to facilitate urban transport and on their benefits in the field of environment, transport, public health, etc, as well as to show the potential of 2Wheels in making urban transport more sustainable.

SAE 2012 Powertrains, Fuels and Lubricants Meeting

18-20 September 2012, Malmo, Sweden

Details at www.sae.org/events/pfl

Topics will include combustion optimisation, hybrid powertrains, aftertreatment, engine control, fuels and fuel efficiency, and regulated and non-regulated emissions reduction, measurement and modelling.

1st NGVA Europe International LNG Workshop for Trucks and Ships

19-21 September 2012, Amsterdam, Netherlands

The event focuses on LNG/liquefied biomethane used in heavy duty trucks (dedicated and dual fuel), LNG vessels and storage and the L-CNG refuelling station concept, as well as LNG distribution across Europe.

4th International Conference Selective Catalytic Reduction 2012

24-26 September 2012, Stuttgart, Germany

Details at www.scr-systems.de/Event.aspx?id=759542

The conference will focus on the most efficient ways to face the upcoming emission regulation and develop strategies for meeting those challenges, improvements to SCR systems, strategies of combining SCR systems with DPFs, raising fuel efficiency through SCR advancements and identifying alternatives of SCR systems.

Workshop "Ruß, Ozon, Methan: Unterschätzte Klimatreiber und ihre Auswirkungen für Klima, Gesundheit und Wirtschaft"

27 September 2012, Berlin, Germany

Details at www.iass-potsdam.de/research-clusters/sustainable-interactions-atmosphere.

Workshop organised by the Deutsche Umwelthilfe (DUH) and the Institute for Advanced Sustainable Studies (IASS) around the "Rußfrei fürs Klima" Campaign (www.russfrei-fuers-klima.de).

Green Port Congress 2012

3-5 October 2012, Marseille, France

Details at www.greenport.com/congress

Papers are invited on SOx and NOx emissions and their control, Nitrogen Emission Control Areas and Green Terminals and Logistics.

Advanced Diesel Particulate Filtration Systems (SAE seminar)

8-9 October 2012, Birmingham, UK

Details at www.associationhq.com/be-bruga/associationhq/sae/2012/C0502.html

The seminar will discuss particulate transport modes and particulate filtration regimes in the DPF, DPF structure, porosity, geometry, composition, backpressure and performance, as well as applications and optimisation and failure modes.

21st Aachen Colloquium Automobile and Engine Technology

8-10 October 2012, Aachen, Germany

Details at www.aachen-colloquium.com

Trends and developments will be discussed, including electric and hybrid drives, range extenders, powertrains, commercial vehicles, industrial engines, emissions concepts, and aftertreatment.

Our Future Mobility Now Roundtable: 'Innovation for Europe, Skills for the Future'

10 October 2012, Brussels, Belgium

Our Future Mobility Now is a project managed by ACEA to explore the future of personal, economic and social mobility in a changing world.

SAE 2012 Small Engine Technology Conference & Exhibition

16-18 October 2012, Madison, Wisconsin, USA

Details at www.sae.org/events/setc

2012 Directions in Engine-Efficiency and Emissions Research (DEER) Conference

16-19 October 2012, Dearborn, Michigan, USA
Details at www.orau.gov/deer2012

DEER fosters the exchange of information and best practices through presentations and posters from new and on-going engine R&D.

SAE Diesel Engine Technology Engineering Academy

22-26 October 2012, Turin, Italy

Details at www.associationhq.com/be-bruga/associationhq/sae/2012/ACAD03.html

This event will cover basic diesel engine terminology and principles, compare diesel fuel injection systems and components, list the various emissions standards and testing requirements and give details of post-combustion emissions control devices.

Diesel Emissions Conference USA 2012

30 October–1 November 2012, Cincinnati, USA

Details at www.integer-research.com/conferences/dec-usa/2012

Heavy-Duty-, On- und Off-Highway-Motoren (7. Internationale MTZ-Fachtagung)

6-7 November 2012, Nürnberg, Germany

Details at www.atzlive.de

2012 Eucar conference

6-7 November 2012, Brussels, Belgium

2nd Aachen Colloquium China, "Automobile and Engine technology"

6-7 November 2012, Beijing, China

Details at www.aachen-colloquium-china.com

Sensors 2012: Nanosensor Technologies for Monitoring – materials and methods

7 November 2012, London, UK

Details at www.aamg-rsc.org

The conference will address the health effects of nanoparticles; nanoparticle sensor technologies, and early research and commercial sensors.

10th FAD Conference: Challenge Exhaust Aftertreatment for Diesel Engines

7-8 November 2012, Dresden, Germany

Details at www.fad-diesel.de

Topics to be covered include the globalization of markets for technologies for exhaust aftertreatment, new solutions for on-road vehicles, technologies for

non-road applications, innovative components and methods for exhaust aftertreatment, NOx-aftertreatment technologies, emissions measurement and 'new fuels - new challenges'.

Ateliers scientifiques Particules - Santé (Particles and Health)

13-14 November 2012, Paris 7ème, France

Workshop organized by the French Ministries of Health and of Sustainable Development and ADEME. Les objectifs de ces ateliers sont de :
- Faire le point sur les connaissances nouvelles sur les particules dans l'air et sur la règlementation,
- Présenter et débattre sur les enjeux sanitaires, environnementaux et climatiques liés aux particules dans l'air ambient,
- Echanger sur les priorités d'actions et les besoins de recherche.

Details at

http://www2.ademe.fr/servlet/getDoc?id=84168&cid=96&m=3&p1=2&ref=17205

SAE 2012 On-Board Diagnostics Symposium - Europe: Update on Light and Heavy Duty Vehicles

13-15 November, 2012, Stuttgart, Germany

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

This meeting provides an opportunity to meet with other engineers and those responsible for legislation so that clarifications can be obtained, status determined and the overall attitudes to the engineering process can be appreciated.

European Electric Vehicle Congress 2012

19-22 November 2012, Brussels, Belgium

Details at www.eevc.eu

34th FISITA World Automotive Congress

27-30 November 2012, Beijing, China

Details at www.fisita2012.com

The congress will focus on solutions for sustainable mobility in all areas of passenger car, truck and bus transportation. Emphasis will be placed on the development of future powertrain systems, advanced internal combustion engines, energy efficient transmissions & drivelines as well as vehicle design, electronics, safety solutions, NVH and manufacturing.

4th CLEPA Aftermarket Conference

29 November 2012, Brussels, Belgium

Monitoring Ambient Air 2012: Opening opportunities through new technologies and data analysis

12-13 December 2012, London, UK

Details at www.aamg-rsc.org

The conference will provide a broad and up-to-date survey of measurement, regulatory and scientific issues and will provide an update on the European-funded AirMonTech project which aims to harmonize air pollution monitoring techniques.

Symposium on International Automotive Technology (SIAT 2013)

9-11 January 2013, Pune, India

Details at http://siat.araiindia.com

SAE 2013 Emissions Control for Light Duty Automotive Vehicles Symposium

16-17 January 2013, Detroit, Michigan, USA

Details at www.sae.org/events/emissions

This event offers participants the opportunity to share experiences on emissions control in both diesel and gasoline light-duty vehicles in regard to the upcoming combination of tighter CAFE standards, CO_2 and criteria emission regulations.

BAUMA 2013 (International Construction Equipment Exhibition)

15-21 April 2013, Munich, Germany

Details at www.bauma.de/en

SAE 2013 World Congress

16-18 April 2013, Detroit, Michigan, USA

Details at www.sae.org/congress/techprogram/cfp.pdf

International Commercial Powertrain Conference

22-23 May 2013, Graz, Austria

Details at www.avl.com/icpc

The conference covers commercial vehicles, agricultural tractors and non-road vehicles, and industrial machinery.

Tropospheric Aerosol - Formation, Transformation, Fate and Impacts

22-24 July 2013, Leeds, UK

Details at www.rsc.org/ConferencesAndEvents/RSCConferences/FD165

This discussion aims to explore (i) the synthesis of emerging knowledge of the atmospheric aerosol systems, (ii) assessment of the validity and usefulness of existing frameworks and (iii) the development of robust aerosol system descriptions on scales ranging from the interpretation of laboratory data to assessment of global impacts.