



Newsletter

March - April 2013

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Publication of the New EU Regulation on Emissions of Motorcycles

On 2 March 2013, the new EU Regulation on the Type Approval and Market Surveillance of two- and three-wheeled vehicles and quadricycles was published in the Official Journal as Regulation (EU) No.168/2013.

The regulation covers both safety and emissions requirements, setting the framework for approvals. Details such as test procedures will be defined in delegated and implementing acts that are currently being developed by the European Commission, to be adopted by the end of 2014.

The new legislation is in the form of a directly-applicable Regulation, rather than a Directive that has to be transposed by Member States. It replaces (from 1 January 2016) the existing motorcycles Type Approval Directive 2002/24/EC plus the motorcycle emissions Directive 97/24/EC and its various amendments. The provisions also cover approval and market surveillance of parts, systems and components as separate technical units, including replacement pollution control devices.

The scope of the regulation covers a variety of vehicle types as shown in the graphic below. It also applies to enduro and trials motorcycles (L3e sub-categories).

| Category & Category Name | Sub category & Sub category name | Example | |
|-------------------------------|----------------------------------|---|---|
| L1e, light two-wheel vehicle | L1e-A powered cycles |  | |
| | L1e-B moped |  | |
| L2e three-wheel moped | |  | |
| L3e, motorcycle | A1, A2, A3 |  | |
| L4e, motorcycle with side car | |  | |
| L5e, tricycles | L5e-A tricycles |  | |
| | L5e-B Commercial tricycles |  | |
| L6e, light quadricycle | L6e-A Light quad |  | |
| | L6e-B Light mini car |  | |
| L7e, heavy quadricycle | L7e-A Onroad quad | L7e-A1 |  |
| | | L7e-A2 |  |
| | L7e-B Heavy all terrain quad | L7e-B1 all terrain quad |  |
| | | L7e-B2 side by side buggy |  |
| | L7e-C Heavy quadri-mobile |  | |

Categories L2e, L6e-B and L7e-C are further subdivided into passenger carrying and utility vehicles for the carriage of goods, designated by a P or U suffix respectively to the category. The L3-e sub-categories relate to motorcycle performance. A1 is low performance (≤ 125 cc, net power ≤ 11 kW, power-to-weight ratio ≤ 0.1 kW/kg). A2 is medium performance (essentially ≤ 35 kW and power-to-weight ratio ≤ 0.2 kW/kg) and A3 (high performance) is all others.

The Regulation does not apply to vehicles that are subject to the provisions of the tractors and NRMM legislation, or to vehicles primarily intended for off-road use. Vehicles for the exclusive use of physically handicapped persons, Segways and pedestrian controlled vehicles are amongst the exclusions.

The Regulation applies whether the vehicle is propelled by an internal combustion engine, turbine, electric motor, compressed air motor, or a hybrid system. There are also provisions for multi-stage builds, such as those where the bodywork is produced separately. Test requirements are provided for vehicles fuelled by petrol, diesel, LPG, natural gas/biomethane and hydrogen either as single fuels or with bi-fuelling (e.g. able to run on either petrol or LPG). There are also provisions for flex-fuel vehicles running on variable mixtures of either petrol and ethanol, diesel and biodiesel, or natural gas and H2NG (hydrogen/natural gas mixture). For all categories of vehicles, CO₂ emissions, fuel consumption and, where relevant, electric energy consumption and electric range have to be measured.

The Regulation defines two emissions stages. Euro 4 will start from 1 January 2016 for new vehicle types, 1 January 2017 for all types. The exception to this is that for mopeds and light quadricycles (categories L1e, L2e and L6e) these dates are 1 January 2017 and 1 January 2018 respectively. (It is intended that a Euro 3 stage for these classes will be introduced in 2014 through amendment of the existing legislation to a weighted cold-start test, but this will be handled separately from this regulation).

A Euro 5 stage is planned to begin from 1 January 2020 for new types, one year later for all types. This will include enhanced OBD, evaporative emissions and durability in addition to tighter tailpipe limits. The Commission must, by 1 January 2016, carry out a review to confirm the dates, emissions limits, durability distances and OBD applications and thresholds for Euro 5. This will also determine which categories of vehicle will be subject to a SHED or permeation test for evaporative emissions.

National authorities may not refuse approval to the new Euro 4 or 5 requirements after 22 March 2013. Emissions limits and the associated test cycles for both steps are shown in the following tables:

Euro 4

| Vehicle category | Vehicle category name | Propulsion class | Euro level | Mass of carbon monoxide (CO) | Mass of total hydrocarbons (THC) | Mass of oxides of nitrogen (NO _x) | Mass of particulate matter (PM) | Test cycle |
|----------------------------------|---|--|------------|------------------------------|----------------------------------|---|---------------------------------|---------------|
| | | | | L ₁ (mg/km) | L ₂ (mg/km) | L ₃ (mg/km) | L ₄ (mg/km) | |
| L1e-A | Powered cycle | P C Hybrid | Euro 4 | 560 | 100 | 70 | — | ECE R47 |
| L1e-B | Two-wheel moped | P C Hybrid | Euro 4 | 1 000 | 630 | 170 | — | ECE R47 |
| L2e | Three-wheel moped | P C Hybrid | Euro 4 | 1 900 | 730 | 170 | — | ECE R47 |
| L3e L4e (*) L5e-A L7e-A | — Two-wheel motorcycles with and without side-car — Tricycle — Heavy on-road quad | P PI Hybrid, v _{max} < 130 km/h | Euro 4 | 1 140 | 380 | 70 | — | WMTC, stage 2 |
| | | P PI Hybrid, v _{max} ≥ 130 km/h | Euro 4 | 1 140 | 170 | 90 | — | WMTC, stage 2 |
| | | C C Hybrid | Euro 4 | 1 000 | 100 | 300 | 80 (*) | WMTC, stage 2 |
| L5e-B | Commercial tricycle | P PI Hybrid | Euro 4 | 2 000 | 550 | 250 | — | ECE R40 |
| | | C C Hybrid | Euro 4 | 1 000 | 100 | 550 | 80 (*) | ECE R40 |
| L6e-A L6e-B | Light on-road quad Light quadrimobile | P PI Hybrid | Euro 4 | 1 900 | 730 | 170 | — | ECE R47 |
| | | C C Hybrid | Euro 4 | 1 000 | 100 | 550 | 80 (*) | ECE R47 |
| L7e-B L7e-C | Heavy all terrain quad Heavy quadrimobile | P PI Hybrid | Euro 4 | 2 000 | 550 | 250 | — | ECE R40 |
| | | C C Hybrid | Euro 4 | 1 000 | 100 | 550 | 80 (*) | ECE R40 |

Note 1: The emissions limits for enduro and trials bikes are the sum of the THC and NO_x limits for the relevant main bike category.

Note 2: The Euro 5 PM limit applies to CI and GDI engines only (including hybrids).

The Euro 4 evaporative emissions (SHED) limit is 2000 mg/test.

The Euro 5 evaporative emissions limits: 1500 mg/test (SHED), 1500 mg/m²/day fuel tank permeation, 15 000 mg/m²/day fuel tubing permeation.

Euro 5

| Vehicle category | Vehicle category name | Propulsion class | Euro Level (*) | Mass of carbon monoxide (CO) | Mass of total hydrocarbons (THC) | Mass of Non-methane hydrocarbons (NMHC) | Mass of oxides of nitrogen (NO _x) | Mass of particulate matter (PM) | Test cycle |
|------------------|-------------------------------|------------------|----------------|------------------------------|----------------------------------|---|---|---------------------------------|-------------------|
| | | | | L ₁ (mg/km) | L _{2a} (mg/km) | L _{2b} (mg/km) | L ₃ (mg/km) | L ₄ (mg/km) | |
| L1e-A | Powered cycle | P C Hybrid | Euro 5 | 500 | 100 | 68 | 60 | 4.5 (*) | Revised WMTC (16) |
| L1e-B-L7e | All other L-category vehicles | P PI Hybrid | Euro 5 | 1 000 | 100 | 68 | 60 | 4.5 (*) | Revised WMTC |
| | | C C Hybrid | | 500 | 100 | 68 | 90 | 4.5 | Revised WMTC |

The Euro 4 OBD Thresholds for CO, THC and NO_x are defined in the Regulation and depend on vehicle category and pollutant.

The Euro 5 OBD Thresholds are also defined. These are for CO, NMHC, NO_x and PM.

The durability requirements are:

- 5500 km for powered cycles & 2-wheel trials bikes;
- 11 000 km for mopeds, 2-wheel enduro bikes, light on-road quads and heavy all-terrain quads;
- 20 000 km for motorcycles with v_{max}<130 km/h, trikes, and light and heavy quadrimobiles;
- 35 000 km for motorcycles with v_{max}≥130 km/h and heavy on-road quads.

There are options to run the full durability distance, to extrapolate from 50% distance, or to use assigned deterioration factors.

From the Euro 4 step, vehicles of (sub-)categories L3e, L4e, L5e-A, L6e-A and L7e-A have to be equipped with an OBD stage I system that monitors emissions-related electrical and electronic failures resulting in emissions exceeding the OBD Thresholds. From the Euro 5 step the OBD thresholds are adjusted. All vehicles of categories L3e to L7e must then be equipped with an OBD stage I system, but for L3e, L5e-A L6e-A and L7e-A vehicles an OBD stage II system is needed that monitors and reports emissions control system failures and degradation which result in the OBD Thresholds being exceeded.

The Regulation includes provisions for small production series and for end-of-series registrations.

New EU Tractors Regulation published

Also published in the EU's Official Journal on 2 March 2013 was the new Regulation on the approval and market surveillance of agricultural and forestry tractors, (EU) No.167/2013.

This too takes the form of a directly-applicable Regulation and replaces the existing tractors framework Directive 2003/37/EC and the tractors emissions Directives 77/537/EC and 2000/25/EC (as amended) from 1 January 2016. From 22 March 2013 national authorities must grant approvals to the new Regulation. The Regulation covers the Type Approval of new vehicles, systems, components and separate technical units. It also covers multi-stage builds. The scope of the Regulation covers Category T (wheeled tractors) and Category C (track-laying tractors).

For emissions, the specific limit values, test procedures and requirements for pollutant emissions laid down for Non-Road Mobile Machinery in Directive 97/68/EC will apply, as at present.

As with the motorcycles Regulation, there are provisions for small production series and for the placing on the market of end-of-series vehicles.

EU Green Paper on a 2030 Framework for Climate and Energy Policies

On 27 March 2013, the European Commission adopted a Green Paper on "A 2030 framework for climate and energy policies". The document launches a public consultation on the type, nature and level of potential climate and energy targets for 2030, as well as other important aspects of EU energy policy in a 2030 perspective. The consultation will feed into the Commission's preparations for proposals for the 2030 framework, to be released by the end of 2013. Amongst other things, this will establish the EU's 2030 ambition level for greenhouse gas (GHG) reductions.

The 2030 framework will take into account the longer term perspective set out by the Commission in the Roadmap for a Low Carbon Economy in 2050, the Energy Roadmap 2050 and Transport White Paper.

The questions raised in the Green Paper include one on whether the targets for sub-sectors such as transport, agriculture, and industry are appropriate; for example, is a renewables target necessary for transport, given the targets for CO₂ reductions for passenger cars and light commercial vehicles?

The consultation will run until 2 July 2013. Both the Green Paper and the consultation are at http://ec.europa.eu/energy/green_paper_2030_en.htm.

European Commission approves first Eco-innovation for Passenger Cars

The European Commission has approved the first eco-innovation to help reduce CO₂ emissions from passenger cars.

The Commission says that Audi has demonstrated that the use of LEDs in the low and high beam headlamps and the licence plate lamp is innovative within the meaning of the relevant legislation, reduces CO₂ emissions and is not taken into account in the test for determining vehicle CO₂ emissions.

The vehicle-specific CO₂ savings from the eco-innovation will be certified for each version of the car that is equipped with this technology as part of the vehicle type approval procedure. The reduction in CO₂ emissions will be counted towards the achievement of the manufacturer's annual CO₂ emissions target, up to a maximum level of 7 g CO₂/km per year.

Commission Proposal for reducing GHGs from Heavy-duty Vehicles

The European Commission has proposed new rules to allow manufacturers to develop more aerodynamic lorries. The proposals aim to reduce fuel consumption by 7-10%, reduce emissions of greenhouse gases, and also enhance the safety of vulnerable road users.

The proposal will allow cabins with a rounded shape and the use of aerodynamic flaps at the back of the trailer. In addition, the proposal allows for additional weight specifically to accommodate the use of heavier batteries required by alternative propulsion systems (hybrid, electric). However, the loading capacity of lorries will not change.

The proposal must be adopted by the European Parliament and Member States before becoming law. Details are at

http://ec.europa.eu/transport/modes/road/weights-and-dimensions_en.htm.

Helcom Stakeholder Meeting on a NOx Emission Control Area for the Baltic Sea

On 4 March 2013 Helcom, the commission on the protection of the Baltic Sea, held a stakeholder conference on the establishment of a Nitrogen Oxides Emission Control Area (NECA) in the Baltic Sea.

Key topics included the environmental effects of a Baltic NECA together with compliance and technology options. The highlighted technology options with the potential to meet the IMO Tier III NOx limits included Selective Catalytic Reduction (SCR), Exhaust Gas Recirculation (EGR), and alternative fuels, including Liquefied Natural Gas (LNG).

A ministerial meeting of Helcom will be convened in October 2013 to decide on when to apply to the International Maritime Organization (IMO) for the creation of the NECA, Helcom said.

Following this, some of the region's heads of government said that the North Sea should also be designated as a NECA. At the 'Conference of Heads of Government of the Baltic Sea States for Environmental Protection of the Baltic Sea' held in St Petersburg on 5 and 6 April 2013, Poland and Russia said they would like the same regulation to be brought in for the North Sea at the same time for competition reasons. Latvia had previously raised similar economic concern.

Eight EU Member States exceeded Air Quality Limits in 2011

Air pollutant emissions were above legal limits in eight Member States in 2011, preliminary data shows. In 2010, 12 Member States exceeded these limits, according to final official data reported under the EU's National Emission Ceilings (NEC) Directive.

The official final data for 2010 confirm that twelve Member States exceeded their respective NOx ceilings. According to preliminary data, seven of these Member States continued to exceed the NOx ceilings in 2011, some by significant amounts.

The EEA says that NOx emissions from the EU as a whole fell by 4.2% in 2011. Road transport contributes approximately 40% of total EU-27 NOx emissions and is stated to be one of the main factors behind the NOx exceedances. Reductions of NOx from this sector over the last two decades have not been as large as originally anticipated. This is partly because transport demand has been higher than expected, and partly because real-world driving conditions have sometimes led to higher emissions than those anticipated with vehicle emissions standards, says the agency.

The data on European Air Quality is available through the EEA's database at www.eea.europa.eu/data-and-maps/data/airbase-the-european-air-quality-database-7.

EEA Publication on European Air Quality

'Signals 2013 - Every breath we take' is a new publication from the European Environment Agency (EEA) that consists of short articles covering a wide range of aspects related to air quality. They include, amongst others, the state of Europe's air today, main information sources, links between climate change and air, the way different pollutants can form in the atmosphere, and a short overview of the European legislation affecting air quality. The 2013 edition is prepared in the context of the European Year of Air, when the air quality legislation will be reviewed.

Signals 2013 will be available in 26 European languages as e-book and PDF in the coming weeks. It will also be available in print in some languages. It is currently available in English from

www.eea.europa.eu/publications/eea-signals-2013.

EEA Signals 2013 - Every breath we take; European Environment Agency (15 April 2013); ISBN: 978-92-9213-363-4.

UBA President calls for New NRMM Limits and Early Introduction of Euro 6

In an article on the European Commission's rejection of many of Germany's requests for delays to the targets under the Air Quality Directive, *Die Welt's* edition of 26 March 2013 quotes Jochen Flasbarth, the President of the Federal Environment Agency Umweltbundesamt (UBA) as calling for a package of measures to ensure that cities can meet EU Air Quality requirements as soon as possible.

Mr. Flasbarth says that Euro 6 should be introduced early, at the start of 2014, and that the European Commission must finally set emissions limits for construction equipment. He also called on the German federal government to assist towns to reduce air pollution. "The requirements for the green sticker for environmental zones must be expanded as quickly as possible and strict limit values for nitrogen oxides laid down." Flasbarth also proposes programmes to modernise the bus fleets, saying that there is a potential for reductions in NOx of around 20% by such measures, and notes that there are also options for traffic calming and limiting vehicle entry to city centres.

Austria agrees Restrictions on Use of Older NRMM Equipment

Legislation entering into force in Austria later this year will restrict the use of older and more polluting types of Non-Road Mobile Machinery (NRMM).

The regulation will only apply to zones that are having difficulty complying with the EU air quality limits on PM₁₀ or PM_{2.5}. It gradually tightens standards on particulate emissions from diesel-powered machinery. The restrictions will be in place seasonally, between

October and the end of March each year. From October 2013, most machinery used in the zones must comply with EU 'Stage I' emissions standards. Machinery with engines rated from 37 to <75 kW will have one more year to comply with the standards. Stages II and IIIA follow in 2015 and 2018, both with a year's delay for less powerful equipment.

Compliance can also be achieved through fitting particulate filters that remove 97% of solid particles with a diameter of 20 to 300 nm in new condition and after a continuous run of 1000 hours for a typical application. In addition they must remove 90% of the solid particles during the regeneration process. They must not use copper-containing additives or catalytic copper-containing coatings.

The Austrian order is available at

www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2013_II_76/BGBLA_2013_II_76.pdf.

Edinburgh orders LEZ Feasibility Study

Council chiefs in the Scottish capital Edinburgh are to order a full feasibility study on introducing Low Emission Zones (LEZs) for parts of the city centre and sections of key routes into the city.

Transport convener Councillor Lesley Hinds said: "Certain streets and areas in the city are unacceptable in terms of air quality. People are obviously concerned about pollution and from 2015 the European Union is going to introduce substantial fines if air quality targets are not achieved. We want to look at the options - where we might have the zones, how we would manage them, how they could be enforced. And we want to see what lessons we can learn from other cities which already have LEZs."

Umeå, Sweden, to establish Low Emission Zone

The Umeå Municipal Council in north Sweden has voted to establish an environmental zone in line with the Swedish framework, starting on 1 April 2014. The zone will cover central areas of the town, and be applicable to trucks and buses. Euro II vehicles will no longer be allowed to enter the area.

London reduces CO₂ Threshold for Congestion Charge Discounts

Transport for London (TfL) has confirmed that it will replace the existing Greener Vehicle and Electric Vehicle Discounts with a stricter Ultra Low Emission Discount (ULED) from 1 July 2013.

Cars currently qualify for the Greener Vehicle Discount if they emit 100g/km CO₂ or less and meet the Euro 5 emissions standard. But to qualify for the new ULED, vehicles will have to either be pure electric

or emit 75 g/km CO₂ or less and meet the Euro 5 emissions standard.

TfL expects that no diesel car on the market would meet the new criteria for the discount now or in the immediate future. Matthew Pencharz, the Mayor of London's adviser on the environment, said the move was specifically designed to restrict the growing number of diesel vehicles on London's roads. "These changes are in line with the Mayor's aim to improve air quality in London by reducing emissions from private vehicles and promoting the further development of low emission vehicles," said Pencharz in a statement. "We want to encourage the continued development of these technologies, while also protecting the benefits to traffic flow in the centre of London that the charge provides."

Airparif Report on Parisian PM and NO_x in 2012

A report released by Airparif on 27 March 2013 says that in 2012 the air of the streets of the French capital and near major roads of the Ile-de-France region still regularly exceeded European standards on the levels of particulate matter and NO₂.

The report estimates that approximately 3 million people were potentially exposed to pollution levels that did not meet regulations, mainly along the traffic corridors in the heart of the city. The average pollution levels in 2012 were slightly lower than in 2011, but the overall trend of the past years remains stable. Five pollutants are still a problem to varying degrees in the capital region: NO₂, PM₁₀ and PM_{2.5}, ozone and benzene, but the limit values for PM₁₀ and NO₂ in particular are being exceeded repeatedly.

The Airparif report is at www.airparif.asso.fr/_pdf/publications/bilan-2012-synthese-130327.pdf.

French Advisory Committee says Tax Breaks for Diesel should be removed

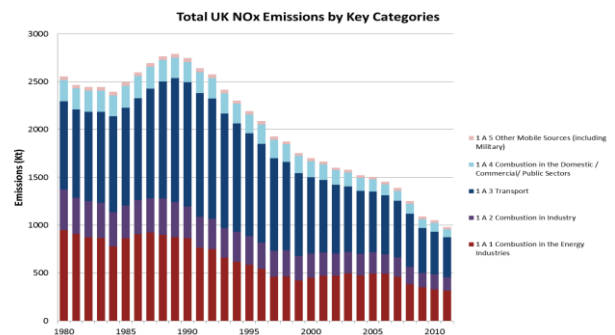
The French government's advisory committee on environmental taxation has supported the call by Environment Minister Delphine Batho to end tax breaks for diesel fuel. France's Court of Auditors had already made a similar recommendation, but the Minister for Industrial Recovery, Arnaud Montebourg, is opposed to the concept on the basis that it would hurt French carmakers.

The committee said that the tax breaks are indefensible in light of the environmental costs associated with a large diesel vehicle fleet, because diesel emits more CO₂, NO_x and particulate matter than petrol. The committee considered diesel vehicles in France would retain some competitive advantage even if tax breaks were eliminated because their fuel consumption is lower than that of petrol vehicles.

UK Emissions Inventory Report

The UK Department for Environment, Food & Rural Affairs (Defra) has issued a report on its national pollutant emissions inventory covering the period from 1980 to 2011.

The charts presented in the report identify the transport contributions to NO_x, NMVOCs, SO₂, and NH₃. The data show an overall 61% reduction in NO_x, 65% reduction in PM₁₀ and 66% reduction in NMVOCs over the period 1980 to 2011. A complete section of the document covers transport emissions, with some 30 pages dedicated to road transport. This section includes data on vehicle km travelled, split by vehicle type and road type (urban, rural, motorway) and a discussion of non-regulated emissions, concentrating on NH₃ and PAHs. Data are also given on benzo(a)pyrene emissions factors for different types of vehicle. A table is included on the mass fraction of NO_x emitted as NO₂.



UK Informative Inventory Report (1980 to 2011), NR Passant, TP Murrells, Y Pang, G Thistlethwaite, HL Venfield, R Whiting, C Walker, J MacCarthy, J Watterson, M Hobson, T Misselbrook; March 2013, http://uk-air.defra.gov.uk/reports/cat07/1303261254_UK_IIR_2013_Final.pdf.

Irish EPA launches new Air Quality Index for Health

On 15 April 2013 the Irish Environmental Protection Agency launched an Air Quality Index for Health allowing the public to view current air quality in their region and assess its impact on their health.

The web-based index, developed in conjunction with the Health Service Executive, Met Éireann and the Department of the Environment, Community and Local Government shows what the current air quality is across Ireland. The Air Quality Index for Health is a coloured scale divided into 4 bands: Good; Fair; Poor and Very poor, with health advice provided for each band. The Index is calculated hourly and is represented on a colour coded map of Ireland that can be viewed on the Irish EPA website.

T&E says that Car Manufacturers manipulate Fuel Efficiency Tests

A new report from environmental group Transport & Environment (T&E) says that the current (NEDC) test procedure for fuel economy and CO₂ emissions is outdated and unrepresentative of real-world driving and current vehicles, and that lax testing procedures are allowing carmakers to manipulate the official tests to produce unrealistically low results.

The report says that much of the technology introduced to improve car efficiency is far more effective in the test than on the road. For example, stop-start technology is very effective during the test when the vehicle is stationary for 20% of the test cycle. In addition cars are also increasingly fitted with accessories such as air-conditioning, but this equipment is not switched on during the test. As a result the official test results are lower than reality.

T&E further says that carmakers routinely manipulate official coastdown tests with a series of tricks including stripping the car down to weigh as little as possible, overinflating the tyres and testing in the thin air at high-altitude tracks. The report suggests that the official fuel consumption cited by car manufacturers is on average almost 25% lower than that achieved in reality, and in some cases 50% lower.

The T&E report "Mind the Gap! Why official car fuel economy figures don't match up to reality" is at www.transportenvironment.org/sites/te/files/publications/Real%20World%20Fuel%20Consumption%20v15_final.pdf.

Turkey planning CO₂-based Car Taxes

The Turkish Finance Ministry has announced plans to develop motor vehicle tax rates linked to CO₂.

Finance Minister Mehmet Şimşek requested the Ministry to work on the scheme, which will determine the rates of motor vehicles tax (MTV) and private consumption tax (ÖTV) of cars. Current vehicle taxes are based on engine capacity and vehicle age. Taxes relating to these two factors might be reduced in order to set the tax on CO₂ emissions higher, according to reports. The new system will apply to cars built after the regulation comes into force.

NORTH AMERICA

US-EPA finalises Tier 3 Emissions Standards

On 29 March 2013, the US Environmental Protection Agency (EPA) announced the final version of their Tier 3 standards for cleaner fuels and cars. Starting in 2017, Tier 3 sets new vehicle emissions standards and lowers the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system.

The proposals apply to passenger cars, light-duty trucks, medium-duty passenger vehicles and some heavy-duty vehicles. Compared to current standards, the proposed combined NMOG+NO_x tailpipe emission standard for light-duty vehicles represents approximately an 80% reduction from today's fleet average and there is 70% reduction in the per-vehicle PM standard. The proposed heavy-duty tailpipe standards represent about a 60% reduction in both fleet-average NMOG+NO_x and per-vehicle PM standards. EPA is also proposing to extend the regulatory useful life period during which the standards apply from 120 000 miles to 150 000 miles.

FTP mg/mile fleet average NMOG+NO_x standards - Light-duty vehicles (LDV), light-duty trucks (LDT) and medium-duty passenger vehicles (MDPV):

| | Model Year | | | | | | | | |
|----------------------|-------------------|------|------|------|------|------|------|------|----------------|
| | 2017 ^a | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 and later |
| LDV/LDT ^b | 86 | 79 | 72 | 65 | 58 | 51 | 44 | 37 | 30 |
| LDT2,3,4 and MDPV | 101 | 92 | 83 | 74 | 65 | 56 | 47 | 38 | 30 |

a) for vehicles above 6000 lbs GVWR, the fleet average standards would apply beginning in model year 2018.

b) The proposed standards would apply for a 150 000 mile useful life. Manufacturers could choose to certify all of their LDVs and LDTs to a useful life of 120 000 miles. If any of these families are certified to the shorter useful life, a proportionally lower numerical fleet-average standard would apply, calculated by multiplying the respective 150 000 mile standard by 0.85 and rounding to the nearest mg.

SFTP mg/mile fleet average NMOG+NO_x standards - Light-duty vehicles (LDV), light-duty trucks (LDT) and medium-duty passenger vehicles (MDPV):

| | Model Year | | | | | | | | |
|------------------------|-------------------|------|------|------|------|------|------|------|----------------|
| | 2017 ^a | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 and later |
| NMOG + NO _x | 103 | 97 | 90 | 83 | 77 | 70 | 63 | 57 | 50 |

a) for vehicles above 6000 lbs GVWR, the fleet average standards would apply beginning in model year 2018.

FTP mg/mile fleet average PM standards - Light-duty vehicles (LDV), light-duty trucks (LDT) and medium-duty passenger vehicles (MDPV):

| | 2017 ^a | 2018 | 2019 | 2020 | 2021 | 2022 and later |
|----------------------------------|-------------------|------|------|------|------|----------------|
| Phase-In (percent of U.S. sales) | 20 | 20 | 40 | 70 | 100 | 100 |
| Certification Standard (mg/mi) | 3 | 3 | 3 | 3 | 3 | 3 |
| In-Use Standard (mg/mi) | 6 | 6 | 6 | 6 | 6 | 3 |

a) for vehicles above 6000 lbs GVWR, the proposed FTP PM standards would apply beginning in model year 2018.

SFTP mg/mile PM standards:

The proposed certification PM standards evaluated over the SFTP (specifically the US06 component of the SFTP procedure) are 10 mg/mile for lighter vehicles and 20 mg/mile for heavier vehicles. There would also be separate in-use US06 PM standards during the percent phase-in only, of 15 and 25 mg/mi for vehicles up to and above 6000 lbs GVWR, respectively.

HDV mg/mile fleet average NMOG+NO_x standards:

| Model Year | Voluntary | | Required Program | | | | |
|------------|-----------|------|------------------|------|------|------|----------------|
| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 and later |
| Class 2b | 333 | 310 | 278 | 253 | 228 | 203 | 178 |
| Class 3 | 548 | 508 | 451 | 400 | 349 | 298 | 247 |

EPA says the proposal will also reduce evaporative emissions to near zero and will reduce vehicle emissions of toxic air pollutants, such as benzene and 1,3-butadiene, by up to 40%. The proposal will also reduce gasoline sulfur levels to 10 ppm in 2017.

A further part of the proposal is to change the emissions test fuel to 15% ethanol (E15) with lower sulfur in line with the Tier 3 market fuel specifications, and lowering the octane rating.

The proposed standards are harmonised with California's clean cars and fuels programme to enable automakers to sell the same vehicles in all 50 States. It is designed to be implemented over the same timeframe as the next phase of EPA's national programme to reduce greenhouse gas (GHG) emissions from cars and light trucks beginning in model year 2017.

Once published in the Federal Register, the proposal will be available for public comment and EPA will hold public hearings to receive further public input.

Information on EPA's notice of proposed rulemaking is at www.epa.gov/otaq/tier3.htm.

Revised California Proposal for Off-Highway Recreational Vehicles

On 18 April 2013, the California Air Resources Board (CARB) released a revised draft regulation and revised test procedures for their proposal on regulating evaporative emissions from Off-Highway Recreational Vehicles (OHRVs).

All off-highway recreational vehicles would be required to meet a Total Organic Gases (TOG) standard of 1 g over either the 72 hour diurnal test or the steady state diurnal test. In addition there must be no visible leakage in a fuel system 'tip-test' in which the fuel tank is filled to 50% capacity and the vehicle is tilted 30 degrees forward and backward, and 30 degrees from the vertical for off-road motorcycles, 15 degrees from vertical for other OHRVs.

These standards must be met by at least 75% of the total projected California sales of gasoline fuelled OHRVs for model years 2018-2021. Following the phase-in period, 2022 and subsequent model year vehicles must all be in compliance.

All-terrain vehicles with fuel tanks >3.5 US gallons (13.25 litres) that are re-designed to be geometrically different from earlier model years must meet ISO 13331:1995(E) regarding filler pipe sealing surface requirements.

Zero emission vehicles and diesel vehicles would be exempt from the evaporative emissions standards and test procedures. A credit system would be available.

Small volume manufacturers would have an option of certifying design-based standards for fuel tank and

fuel hose permeation, carbon canister working capacity, but would still be required to perform the tip-test. Fuel injection would be required.

The full draft Regulation is on the CARB website at www.arb.ca.gov/msprog/offroad/orrec/draft_ohrv_reg_41813.pdf with draft test procedures at www.arb.ca.gov/msprog/offroad/orrec/draft_tp933_41813.pdf.

The provisions are subject to agreement by the US Environmental protection Agency (EPA).

EPA and CARB Actions on Non-complying Recreational Vehicles

On 11 March 2013 the California Air Resources Board (CARB) announced that, following a protracted legal dispute, Yamaha Motor Corp USA and Yamaha Motor Company Ltd. of Japan had agreed to a court-approved settlement of \$2 205 000 (€1.7 million) to resolve allegations of the illegal importation and sale of uncertified off-highway vehicles. The settlement concerns the sales of certain 2007 model off-highway vehicles known as "Rhinos". Yamaha has agreed that future sales will fully comply with California law.

Prior to that announcement, on 7 March 2013, CARB had reported that American Suzuki Motor Corporation and Suzuki Motor Corporation of Japan had agreed to a settlement of \$3 020 000 (€2.35 million) to resolve violations related to off-highway motorcycles equipped with dual calibrated emissions systems. These allowed motorcycle owners to purchase low-cost aftermarket devices that provided access to alternative engine control programming, giving greater vehicle performance but also significantly increasing smog-forming emissions. Such systems are prohibited by California law if they are not disclosed to ARB prior to the vehicles' approval for sale and if they are easily accessible by the vehicle owner. ARB noted that Suzuki officials had reported the issue to CARB and fully cooperated to resolve the matter. As a result, \$1 812 000 of the total penalty is suspended provided Suzuki does not produce vehicles with undisclosed calibrations for a period of 2 years and completes two vehicle emissions reduction programmes to offset the additional pollution.

In a further announcement on 3 April 2013, the US Environmental Protection Agency (EPA) voided certificates approving the import of up to 74 000 on- and off-road motorcycles and all-terrain vehicles from China. The agency believes that it received either incomplete or falsified certification information. EPA issued the vehicle certificates from 2006 to 2012 to two companies which operate as Snyder Technology, Inc. and Snyder Computer Systems, Inc. (trading as Wildfire Motors Corporation). As a result of a lengthy investigation, EPA believes the manufacturers failed to accurately test the emissions from their products.

US-EPA finalises Rule delaying Near-Road NO₂ Monitoring Requirements

In the 14 March 2013 edition of the Federal Register, the US Environmental Protection Agency (EPA) issued a final rule changing the deadline for having near-road NO₂ air quality monitoring requirements operational. A phased approach will give some areas until 1 January 2017 to have the monitors in place.

The requirements were included as part of the Agency's 2010 update to the NO₂ national ambient air quality standard (NAAQS). This established for the first time an hourly emissions limit of 100 ppb while leaving unchanged the existing 24-hour limit of 53 ppb. In order to detect short bursts of pollution violating the new hourly limit, EPA determined that a change in monitoring methods was needed to cover both near-road environments where emissions are highest and to monitor urban areas' ambient NO₂ levels more broadly. This resulted in complaints of insufficient time to implement the new requirements.

US Supreme Court rejects Challenge to Short-term NO₂ Rule

On 1 April 2013, the US Supreme Court rejected a legal challenge to the Environmental Protection Agency's tighter Clean Air Act standard for short-term roadside NO₂ levels. The Supreme Court's decision not to take the case means the rule remains intact.

The challenge had been brought by the American Petroleum Institute (API) and other industry groups. API claimed the EPA justification for the rule was based on a "purely hypothetical threat to the public health." EPA said the new rule was justified due to scientific data that showed the health risks, particularly to those suffering from asthma.

New Website for Retrofit Options

A new website sponsored by the New York State Energy Research and Development Authority (NYSERDA) enables operators of diesel-powered vehicles and equipment to determine the best available emissions reduction technology (BAT) to meet requirements from mandatory and voluntary diesel emissions reduction programmes. The Clean Diesel Clearing House can be used to support retrofit products, clean fuel options and clean fuel vehicle selections that satisfy BAT regulations.

The system can currently search for retrofit technologies available for construction and public works equipment, cargo and materials handling equipment, airport ground support equipment, rail locomotives, marine vessels and stationary engines and industrial equipment. The site is at www.cleandieselclearinghouse.org.

Californian Support Programme for Plug-in Hybrids

The California Energy Commission has voted to provide an additional \$4.5 million (approx. €3.4 million) to expand the State's clean vehicle rebate programme supporting purchases of light-duty, plug-in hybrid electric vehicles. All vehicles have to be certified for at least four passengers and capable of operation on freeways.

For further details see www.energy.ca.gov/releases/2013_releases/2013-02-28_clean_vehicle_rebates_nr.html.

Port of Los Angeles Gateway Proposal includes Emissions Requirements

The Port of Los Angeles, California, has approved a new 'Southern California International Gateway' (SCIG) project that includes emissions requirements for trucks and trains used to transport containers.

At full capacity an average of eight trains and over 5500 trucks would arrive at and depart from the facility each day. The train operating company (BNSF) would maximize the use of ultra-low sulfur diesel fuel in the cleanest available locomotives. The contracts for transfers between the SCIG and the San Pedro Bay Port marine terminals would specify that all trucks would be powered by engines that meet or exceed the 2007 EPA on-road emissions standards. Cargo handling equipment would include 10 Liquefied Natural Gas (LNG)-fuelled 'yard hostlers' (tractor units for container movement) and low-emitting switching locomotive engines (shunters).

Report on Technologies to reduce US Fuel Consumption and GHGs

On 18 March 2013 the US National Research Council released a comprehensive study of the technology potential for cutting oil consumption and Greenhouse Gas (GHG) emissions by 80% across the US light-duty vehicle fleet in 2050, relative to a 2005 baseline.

The study focused on four general technology pathways: highly efficient conventional vehicles (including conventional hybrids), biofuels, plug-in hybrid and battery electric vehicles, and hydrogen fuel cell vehicles. The analysis also includes natural gas, and certain relevant external factors, such as prospects for decarbonising the electric power sector.

The report finds that the goal of reducing oil use by 80% could be met by several combinations of technologies that achieve at least the mid-range level of estimated success. But it will demand continued improvement in vehicle efficiency beyond what is required by the 2025 CAFE standards, as well as increased production and use of biofuels, and/or the successful introduction and large-scale deployment of

compressed natural gas vehicles, Battery Electric Vehicles with greatly improved batteries, or fuel cell vehicles, with all the additional new supporting infrastructure those imply.

Reductions in annual GHG emissions from the light-duty fleet of the order of 60% to 70% are achievable by 2050, but reaching the desired 80% reduction is less certain, and will in any case be more difficult than reducing oil consumption by the same 80%. Petroleum-based fuels would have to be largely eliminated and at least two of four pathways would be required, i.e. highly efficient conventional vehicles combined with vehicles operating on biofuels, electricity, or hydrogen produced with low net GHG emissions. This scenario involves significant uncertainties concerning performance and costs.

The report also says that the potential for enhancing the efficiency of conventional vehicles is far greater than commonly believed. ICCT Senior Fellow John German, who chaired the subcommittee analysing alternative vehicle technologies, said that "When engine and transmission improvements are combined with lightweight materials, reductions in aerodynamic drag and tire rolling resistance, and hybrid electrical systems, average fuel economy of the light-duty fleet is projected to be about 95 mpg (2.48 l/100km) in 2050, and of cars alone about 112 mpg (2.10 l/100km)...Using optimistic assumptions also developed by the committee, fleet-wide fuel economy could be about 125 mpg (1.88 l/100km) in 2050, and cars alone about 145 mpg (1.62 l/100km)."

Transitions to Alternative Vehicles and Fuels, The National Academies Press (2013); ISBN-10: 0-309-26852-4.

Canadian investigation into Emissions Tampering

An investigation by 'Truck News' has found that engine tampering to defeat emissions controls mandated on new trucks over the past decade is widespread and easily attainable in Canada.

Frequently advertised as DPF Delete or EGR Delete kits, service providers offer to remove the emissions-reducing devices and then re-programme the engine for better performance. The procedure, however, essentially restores the vehicle to obsolete 2002 pollution levels. In some cases, the DPF is removed from the truck, but more often, it's hollowed out so the truck appears to be in compliance during visual inspections. Garage owners boasted of their ability to delete the EGR/DPF systems and still pass the opacity tests conducted through Drive Clean.

The magazine comments that in the US, there is enforcement at both the federal and state levels, which imposes massive fines on companies providing EGR/DPF Delete services or on the operators who

have the work done to their trucks. But in Canada the federal authorities and provinces have, until recently, been unable to agree who should be enforcing clean diesel regulations. The recent consensus was that the provinces are responsible, but the magazine says that enforcement to date has been non-existent. The Canadian Trucking Alliance (CTA) is calling on the provinces to begin enforcing anti-tampering laws and the issue is reported to have been discussed during a recent meeting of the Canadian Council of Ministers of Environment.

Vancouver, Canada, plans Clamp-down on Older Diesel Trucks

Vancouver, Canada, is developing a programme to crack down on older diesel trucks, after a roadside testing programme showed that three quarters of all trucks with unacceptable diesel emissions are model years 2007 and older. Metro Vancouver used a remote sensing vehicle to test emissions from nearly 12 000 vehicles over a 55-day period in 2012.

Diesel trucks are currently not subject to the scrutiny other vehicles get through the AirCare programme. Officials say they will develop a programme that will include roadside testing, scrapping programmes, retrofits and fees, with an emphasis on truck owners buying newer vehicles that meet modern emissions standards. The programme is expected to be fully operational in two years.

Transport Canada Funding for Emissions reduction R&D Projects

Transport Canada has issued a request for proposals to fund research and development projects that seek to reduce greenhouse gas or criteria pollutants from the air, marine, or rail sectors as part of the Canadian government's Clean Transportation Initiative.

Up to C\$2.4 million (approx. €1.8 million) in funding is available over three years for these initiatives. The maximum government funding for any one contract is C\$200 000, with each project requiring a minimum 25% cost share from the bidder. Eligible bidders include Canadian private, academic, or public sector organisations. Emissions control technologies for marine and locomotive engines are among the priority research themes that are targeted for funding.

ASIA PACIFIC

Singapore raises Emissions Standards for Diesel Vehicles and Motorcycles

Singapore's Minister for the Environment and Water Resources, Dr Vivian Balakrishnan, has announced that emissions standards for Heavy-duty diesel vehicles and motorcycles will be tightened.

Dr Balakrishnan said that to reduce the ambient level of PM_{2.5} the emissions standard for new Heavy-duty diesel vehicles will be raised to Euro V from 1 January 2014. At the same time, the National Environment Agency announced that test standards for existing diesel vehicles will be tightened from 50 Hartridge Smoke Units (HSU) to 40 HSU to reduce air pollution. Tighter emissions standards will also apply to new motorcycles, which will have to comply with Euro 3 from 1 October 2014.

Singapore starts Incentives Scheme to replace Older Diesels

Singapore's 'Early Turnover Scheme', which provides incentives to encourage owners to replace their old diesel vehicles with newer and more environment-friendly Euro 5 models, started on 24 April 2013. The scheme will run until 23 April 2015.

In March 2013, Minister for the Environment and Water Resources Vivian Balakrishnan said in parliament that existing old diesel vehicles remain a major source of pollution. He said there are about 38 000 old diesel commercial vehicles with pre-Euro or Euro 1 emissions standards.

Under the scheme, owners can deregister old diesel vehicles bought before January 2001 and register a replacement commercial vehicle by paying a discounted fee. They will not need to bid for a certificate of entitlement (COE) for a commercial vehicle. Owners who opt to replace their old vehicles under the scheme will pay a discounted prevailing quota premium (PQP), which is a three-month moving average of the cost of COEs. Owners can also transfer the unused period of COE from their existing vehicle to the replacement one. They will get a bonus COE period for their replacement vehicle. This is derived from a proportion of the remainder of their existing vehicle's 20-year lifespan when it is deregistered. The proportion will be 10% of the remainder of the 20-year lifespan for vehicles with a maximum weight of 3500kg or less, and 30% if its weight limit exceeds 3500kg. The transferred COE and bonus COE periods will be capped at 10 years.

India sets up Expert Committee on Policies to reduce Pollution from Vehicles

India has appointed an expert committee to make recommendations on policies to reduce vehicular pollution and to set emissions standards up to 2025. The committee is expected to frame the policy and also make recommendations on fuels to support the new emissions standards whilst bearing in mind infrastructure, cost and logistics issues.

Presently Bharat Stage IV emissions standards (equivalent to Euro 4/IV) apply in 15 major

metropolitan areas and state capitals while in the rest of the country Bharat Stage III standards apply, with lower quality fuels. In a report in *'The Economic Times'* a member of the expert committee said "There is a need to have common emission norms across the country, a standard practice worldwide. We need to put in place the required infrastructure for fuel supply and the manufacturers to upgrade their technology to enact unified standards across India."

Hong Kong, China, launches 7-year Roadside Air Quality Plan

On 28 March 2013, officials unveiled a seven-year plan to reduce Hong Kong's roadside air pollution. The plan says that if all measures are fully introduced, roadside pollution will begin to drop in the next 2-3 years, and see significant improvement in 4-5 years.

The measures include phasing out old diesel commercial trucks, retrofitting 1400 franchised buses with SCR by 2016, and cleaner fuel for ocean-going ships berthing at Hong Kong. The plan projects that by 2020, the concentration of carcinogenic respirable suspended particles at the roadside will drop by 25% from 60 µg/m³ in 2011 to 45 µg/m³. However, the officials admit that the level of NO₂ will remain almost double the new standards to be introduced next year despite a 40% reduction.

Rise in NO₂ and PM₁₀ Emissions in Beijing in First Quarter of 2013

In the first three months of 2013, levels of NO₂ and PM₁₀ in the Chinese capital Beijing increased by almost 30% compared to the same period in 2012, according to a Chinese news report.

According to the report by *The Economic Observer*, citing the Beijing Municipal Environmental Protection Bureau (EPB), the levels appeared to have had a particularly sharp surge in January, when they increased 47 % over the same month last year.

The report said the EPB had concluded that the increases in the two pollutants had been partly due to topography and weather conditions. Beijing recently had its highest levels of relative humidity in a decade, and surface wind speeds were the lowest in 10 years, which together resulted in a lower-temperature inversion layer that trapped pollutants, the report said.

China sets 2020 Fuel Consumption Standard

The Chinese Government has announced that manufacturers will have to reduce the average fuel consumption of their vehicles to 6.9 litres/100 km by 2015 and to 5 litres/ 100 km by 2020. The most recent data show average consumption as 7.8 litres/100 km for vehicles in China in 2009.

Australian discussion on Particulate Emissions Standards

Australian Medical Association President Steve Hambleton has told a Senate hearing that Australia had waited too long to adopt strict emissions laws and must address the problem of diesel particulates.

The number of diesel vehicles on the road has more than doubled since 2005, led by European diesel passenger cars and the rise in popularity of sports utility vehicles ('utes'), which are predominantly diesels. The European luxury cars normally have particulate filters, but many of the more popular 'utes' and SUVs do not have this technology.

A planned progression from Australia's current Euro 4 standard to the Euro 5 emissions standard will result in particulate limits dropping from 25 mg/km to 5 g/km, but Greens senator Richard Di Natale said emissions should be cut before the current deadlines as "it wasn't acceptable to be waiting around for years".

AFRICA

UNEP to assist East African Countries achieve Low Sulfur Diesel

In the First Universal Session of the Governing Council of the United Nations Environment Programme (UNEP) it was announced that UNEP will assist the five member states of the East African Community (EAC) - Burundi, Kenya, Rwanda, Tanzania, and Uganda - to put in place a model "clean diesel" law by the end of 2013.

The head of the UNEP Transport Division said that all member states have already agreed on a standard of 50 ppm sulfur in diesel as part of measures to conserve the environment. Currently East African nations typically import Euro 2 (500 ppm sulfur) diesel fuel. UNEP will advise the EAC member states on possible ways to upgrade their refineries in order to help cut air pollution.

After EAC approves the model law, national parliaments will be given some time to ratify it.

For more information, go to: www.china.org.cn/environment/2013-02/21/content_28016082.htm.

MIDDLE EAST

Israel plans Stricter Air Quality Standards

Israel's Environmental Protection Minister Amir Peretz has instructed his office to complete the proceedings involved with making air quality standards more stringent, the Ministry has announced. The new standards were to be submitted to the Knesset's Internal Affairs and Environment Committee before the end of April 2013.

For the first time ever, Israel will establish a standard for PM_{2.5}. The new standard is to be set at 25 µg/m³. In addition the Ministry will also be adjusting standards for NOx and SO₂ to be even stricter than those in Europe. All new standards will take effect in two years, enabling factories and other facilities to adjust their operations in order to meet the new standards, the Ministry said. In addition, no new factories, roads, quarries or other sites that are not able to meet the strictest air quality standards will be approved in the future, the office added.

In addition, Peretz ordered that the tightening of standards occur hand-in-hand with the resumption of a national programme to prevent air pollution. According to Israel's Clean Air Law, such a programme was already required to go into effect by 1 January 2012.

Sharjah, UAE, to convert 4800 Taxis to Natural Gas

In the United Arab Emirates, Sharjah Transport has announced that it is soon to start converting its 4800 taxis to compressed natural gas (CNG) instead of petrol. The aim is to help protect the environment and reduce energy consumption in line with the sustainable development agreement of the International Association of Public Transport. 1600 cabs operated by Sharjah Taxi will be switched to CNG within two years. The remaining 3200 cabs of the other franchise companies (Emirates, Union and Citi) will be converted starting from 2015. To support the changeover, one CNG refuelling station is nearing completion and three more will be built.

GENERAL

AECC will participate in EU Green Week

This year's 'Green Week' will be held at the Egg conference centre in Brussels from 4 till 7 June 2013 and its theme is Air quality. 2013 will be the year in which the European Commission's current air policy is reviewed. With this in mind, AECC will have a significant presence at the Green Week conference.

AECC's Executive Director Dirk Bosteels will be speaking in session 1.4 on "Major pollutant sources and source identification", organised on Tuesday 4 June 2013 from 16:30 to 18:00 in partnership with the European Commission's Joint Research Centre. AECC will also have a stand (n°29) in the Green Week exhibition programme.

There will also be a special event involving AECC during the conference – further details of this will be given later.

For details of Green Week see <http://greenweek2013.eu>

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Minimizing the Health and Climate Impacts of Emissions from Heavy-Duty Public Transportation Bus Fleets through Operational Optimization, Brian Gouge, Hadi Dowlatabadi and Francis J. Ries; *Environmental Science & Technology* 47 (8) (2013) pp.3734–3742, [doi: 10.1021/es304079p](https://doi.org/10.1021/es304079p).

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FORTHCOMING CONFERENCES

5th International Conference Selective Catalytic Reduction

13–15 May 2013, Bonn, Germany

Details at www.scr-systems.de

The conference will include news on European regulations, SCR and high sulfur fuels, EGR application strategies, component requirements for SCR: substrates, coating, dosing, and simulation.

Advanced Emission Control Concepts for Gasoline Engines 2013

13–15 May 2013, Bonn, Germany

Details at www.emissioncontrol-gasoline.com

The conference will include an update of regulations and legislation on PM for GDI engines, insights into the newest particulate filter technologies, the progress of new measurement methods on PM, the current and future potential of in-engine emissions control, GPF regeneration and the newest trends in gasoline emissions.

Diesel Emissions Conference & ARLA32 Forum Brazil 2013

14–16 May 2013, São Paulo, Brazil

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

The conference will provide an in-depth insight into the latest emissions reductions legislation and technologies, and develop effective diesel emissions reduction strategies for the on-road, non-road and ARLA 32 markets.

Basic Internal Combustion Engine Fundamentals (Training Course)

14 May 2013, Shoreham-by-Sea, UK and

Advanced Internal Combustion Engine Fundamentals

15–16 May 2013, Shoreham-by-Sea, UK

Details at www.ricardo.com/knowledge

A one day course (14 May) designed for anyone looking to familiarise themselves hands-on with engines found in everyday modern cars. This is followed on 15–16 May by a 2-day course designed for anyone who wants a thorough understanding of Diesel and gasoline internal combustion engines.

4th EFCA International Symposium on Ultrafine Particles

16-17 May 2013, Brussels, Belgium

Details at <http://ufp.efca.net>

The symposium is organised with the Karlsruhe Institute of Technology, GUS and the Confederation of European Environmental Engineering Societies (CEEES). It will reflect the most recent scientific progress in the field and aims to contribute to the dialogue with policymakers in Europe.

Diesel Particulates and NOx Emissions (Short Course)

20-24 May 2013, Leeds, UK

Details at www.engineering.leeds.ac.uk/short-courses

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 the companion short course on Engine Emissions Measurement. It does, however, cover particle size analysis and problems with the US heavy-duty transient test with very low emission diesel engines.

Air Quality and Climate Change Policies – Separate or Joint Challenges?

21 May 2013, Brussels, Belgium

Details at www.russfrei-fuers-klima.de/termine-presse/veranstaltungsdocumentation/workshop-air-quality-and-climate-change-policies-seperate-or-joint-challenges-21-5-2013

Workshop "Partikelfilter an Baumaschinen"

22-23 May 2013, Berlin, Germany

Details at www.stadtentwicklung.berlin.de/umwelt/luftqualitaet/de/luftreinhalteplan_projekte/workshop.shtml

The conference on particulate filter retrofit of construction machinery is organised by the Berlin Senate Department for Urban Development and Environment in collaboration with VERT and FAD, and with technical advice from TÜV Hessen. The workshop is aimed at operators and manufacturers of construction machinery and manufacturers of particle filters, public administrations and policy makers.

7th AVL 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.

2013 JSAE Annual Spring Congress & Exposition

22-24 May 2013, Yokohama, Japan

Details at www.jsae.or.jp/2013haru/index_e.html

The 2013 JSAE Annual Spring Congress brings together world automotive engineers to report their latest research achievements.

14th European Forum on Eco-Innovation: Into clean air... Delivering innovative solutions for mobility, energy and ICT in cities

23-24 May 2013, Prague, Czech Republic

Details at http://ec.europa.eu/environment/ecoinnovation2013/1st_forum/programme.html

The Forum will explore how we overcome barriers to achieving cleaner air in our cities by presenting the latest evidence on urban air quality and why it has assumed a high political priority, with examples of urban strategic planning and innovative solutions.

CEN/CENELEC European Conference 'SMEs and Standardization'

28 May 2013, Brussels Belgium

Details at www.cencenelec.eu/News/Events/Pages/EV-2013-08.aspx

This one day European Conference will mark the conclusion of the SMEST 2 Project, supported by the European Commission and EFTA, which has been preparing an SME Standardization Toolkit. This toolkit has been developed for the standardization community and for business associations to facilitate the involvement of SMEs in standardization activities, and access to the results.

5th BIVEC-GIBET Transport Research Day

30-31 May 2013, Walferdange, Luxembourg

Details at www.bivec.eu

This conference is organised by the Benelux Interuniversity Association of Transport researchers (www.bivec.eu and www.gibet.eu).

Automotive Testing Expo 2013: Open Technology Forum

4-6 June 2013, Stuttgart, Germany

Details at www.testing-expo.com/europe

Topics for the forum include engine testing and emissions reduction.

Green Week Conference

4-7 June 2013, Brussels, Belgium

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

This year's theme is Air quality. 2013 will be a year in which the Commission's current air policy is reviewed, with a focus on finding ways to improve the quality of the air we breathe. AECC will participate in the Green Week conference and exhibition. Dirk Bosteels will be one of the speakers in session 1.4 on "Major pollutant sources and source identification" on Tuesday 4 June. You can also visit AECC at Stand 29 in the exhibition.

CleanER-D Sustainability and Innovation Workshop: Towards greener and cleaner rail diesel vehicles

5 June 2013, Torino, Italy

The International Union of Railways (UIC) and the Association of the European Rail Industry (UNIFE) together with the CleanER-D consortium are jointly organising this public workshop on the recommendations and findings derived from the works of the CleanER-D sub-projects dealing with sustainability and integration, emerging technologies and hybrid technologies.

2nd Annual Biofuels Conference

10-11 June 2013, Amsterdam, the Netherlands

Details at

www.platts.com/ConferenceDetail/2013/pc399/index

The conference largely concerns biofuels production, trade and blending but includes sections on national and EU biofuels policies.

Natural Gas Vehicles (NGV) 2013

11-13 June 2013, Gothenburg, Sweden

Details at www.ngvaeurope.eu

"LNG-CNG, Bio & Natural gas: The fuel alternative for all transport modes" is the main theme for 2013. The event will cover experiences from fleet owners, show the development of CNG/LNG infrastructure along European Corridors and will give a comprehensive overview of the regulations & incentives the European Commission and local authorities are applying to support bio & natural gas.

Diesel Emissions Conference & AdBlue[®] Forum Europe 2013

18-20 June 2013, Düsseldorf, Germany

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

The conference will cover commercial vehicle, non-road mobile machinery, passenger car and marine applications.

17th ETH Conference on Combustion Generated Nanoparticles

23-26 June 2013, Zürich, Switzerland

Details at www.lav.ethz.ch/nanoparticle_conf

The conference provides an interdisciplinary forum for expert discussion in the field of combustion-generated nanoparticles, technical aspects as well as environmental impact, health effects and legislation.

5th International Congress on Combustion Engines

24-26 June 2013, Bielsko-Biala, Poland

Details at www.congress.ptnss.pl

The main topics of the congress will include fuel injection systems and mixture formation, combustion processes in SI and CI engines, combustion process control in engines, alternative fuels, emissions measurements and aftertreatment, and global trends in engine technology.

International Conference Next Generation Off-Highway Engines

26-28 June 2013, Hamburg, Germany

Details at www.off-highway-engines.com

The conference will provide information on post Stage IV/Tier 4 final emissions, the latest developments of efficient and compact engines for various applications in agriculture machinery, advanced integration concepts of the drive train in off-highway machinery, new internal engine modifications to reduce CO₂, and the potential of exhaust aftertreatment for non-road vehicles.

International Conference Emission Control for Seagoing Ships

26-28 June 2013, Hamburg, Germany

Details at www.ships-emission-control-ecss.com

The conference will provide the latest news about IMO MARPOL ANNEX VI Tier III, identify how the latest developments in SCR Systems enable Tier III to be met, explore improvements to scrubber systems and how to apply them, discuss LNG fuel and hybrid technologies for radical emissions reduction, and provide insight into IMO's EEDI scheme for Greenhouse Gases.

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 emerging knowledge of atmospheric aerosol systems, assessment of the usefulness of existing frameworks, and development of robust aerosol system descriptions on scales ranging from the interpretation of laboratory.

International Conference on Remote Sensing, Environment and Transportation Engineering (RSETE2013)

26-28 July 2013, Nanjing, China

Details at www.rsete2013.org

The main topics are remote sensing; energy, environment and sustainable development; environmental pollution and protection; and transportation engineering.

25th International AVL Conference "Engine & Environment" 2013

5-6 September 2013, Graz, Austria

Details at www.avl.com/engine-environment-2013

ECT 2013: Implementation and Challenges of Pan India Emission Norms

6-7 September 2013, New Delhi, India

Organised by ECMA, the Indian sister association of AECC, this International Seminar is all about the Long-term Vision for a Sustainable Environment. The seminar will have world-renowned speakers from Government, OEM's and international experts on emissions related Technologies sharing their vision, knowledge and experiences for the future.

MODEGAT III: 3rd International Symposium on Modelling of Exhaust Gas Aftertreatment

8-10 September 2013, Bad Herrenalb/Karlsruhe, Germany

Details at www.modegat.org

The symposium purpose is to support the exchange of state-of-the-art and novel modelling and simulation techniques, fundamental mechanistic studies, experimental model validation and technical applications of modelling and simulation.

ICE 2013 - 11th International Conference on Engines & Vehicles

15-19 September 2013, Capri, Naples, Italy

Details at www.sae-na.it

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

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

29 September - 2 October 2013, Rhodes, Greece

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

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

22nd Aachen Colloquium

7-9 October 2013, Aachen, Germany

Details at www.aachen-colloquium.com

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

19th Small Engine Technology Conference

8-10 October 2013, Taipei, Taiwan

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

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

2013 ASME Internal Combustion Engine Division Fall Technical Conference

13-16 October 2013, Dearborn, Michigan, USA

Details at www.asmeconferences.org/ICEF2013

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

Busworld 2013

18-23 October 2013, Kortrijk, Belgium

Details at www.busworld.org

SAE/KSAE 2013 International Powertrains, Fuels & Lubricants Meeting

21-23 October 2013, Seoul, South Korea

Details at www.sae.org/events/pfi

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

8th Conference on Gaseous Fuel Powered Vehicles

22-23 October 2013, Stuttgart, Germany

Details at www.fkfs.de/english/company/events/conference-on-gaseous-fuel-powered-vehicles-2013/cfp

The conference is intended to cover new developments in the fields of natural gas/biogas/LPG and hydrogen drivetrains, market development and general political conditions, development trends in the fields of engine management, hybridisation, components, exhaust-gas aftertreatment and safety technology, and the generation and distribution of gaseous fuels.

3rd Aachen Colloquium China

5-6 November 2013

Details will be at www.aachen-colloquium-china.com

Commercial Vehicle Megatrends Europe 2013

12 November 2013, Brussels, Belgium

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

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

Automotive Megatrends Europe 2013

13 November 2013, Brussels, Belgium

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

Topics will be powertrain, safety and connectivity.

Internal Combustion Engines: Performance, Fuel Economy and Emissions

27-28 November 2013, London, UK

Details at www.imeche.org/events/C1370

This conference from the Institution of Mechanical Engineers provides a forum for IC engine experts looking closely at developments for personal transport applications, though many of the drivers of change apply to light- and heavy-duty, on- and off- highway, transport and other sectors.

The Spark Ignition Engine of the Future

4-5 December 2013, Strasbourg, France

Details at www.sia.fr/evenement_detail_spark_ignition_engine_of_1181.htm

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

14th Stuttgart International Symposium "Automotive and Engine Technology"

18-19 March 2014, Stuttgart, Germany

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

Abstracts are due by 1 July 2013.

The conference is organized by the FKFS (Stuttgart Research Institute for Automotive and Automobile Engine Technology)

8th International Exhaust Gas and Particulate Emissions Forum

1-2 April 2014, Ludwigsburg, Germany

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

FISITA 2014 World Automotive Congress

2-6 June 2014, Maastricht, the Netherlands

Details at www.fisita2014.com

Deadline for abstracts: 1 August 2013.

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