



Newsletter

March - April 2007

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

EC proposes Particle Number Standards and Revised Particulate Mass Limits

On 13 March 2007 the European Commission published the latest draft of the "comitology" (the technical part of the Regulation) for Euro 5 and Euro 6. The new proposal includes limits for particle number emissions and a revised limit for particulate mass, based on revised test procedures.

A limit of $5 \times 10^{11}/\text{km}$ is proposed for diesel (CI engine) particle number emissions for Euro 5 and 6, with a limit for positive ignition engines to be proposed before Euro 6. In addition there is a revised particulate mass (PM) limit (applicable to CI and direct injection PI engines) of $3\text{mg}/\text{km}$ using the PMP methodology. This replaces the current method's $5\text{mg}/\text{km}$ limit.

The particle number requirements for compression ignition (CI) engines are the same for all classes of light-duty vehicle and are to be introduced at the same time as the other elements of Euro 5. The Article which introduces the limit also requires particle numbers to be measured for Type Approval of positive ignition (PI) vehicles and the value measured to be recorded in an addendum to the Type Approval certificate. The new mass limit is also the same for all classes of vehicle and is the same for Euro 5 and Euro 6. The text of the comitology does not specifically define the change as being related to PMP, but the comitology references ECE Regulations for details of the test methods. The UK (leader of the PMP working group) has prepared draft amendments to ECE Regulation 83 to introduce PMP. The amendments are to be submitted to the June 2007 meeting of the UN's emissions experts, GRPE.

The comitology document is still at a draft stage. A formal proposal is expected to be submitted in the next few weeks. The document will then be considered by EU Member States, with oversight by the European Parliament. It should eventually be adopted as a Commission Regulation amending the 'political' part of the Regulation.

EU Consultation on a Green Paper on Urban Transport

The European Commission has launched a public internet consultation on the preparation of a Green Paper on Clean Urban Transport, due to be published in the second half of this year.

The internet consultation is intended to collect views from interested parties on how best the EU may contribute to improving transport and mobility in urban areas. The questionnaire asks for views on the

importance of various measures and tools, including increasing the use of alternative fuels like natural gas or biofuels and of clean and energy efficient vehicles. One section deals with the market development of clean and energy efficient vehicles, saying that this could be strongly supported by appropriate award criteria in public procurement. As a result, it says, cleaner and more efficient vehicles in urban areas could make an important contribution to improvements in air quality. It asks what actions should be taken, at EU level, to promote this market. A follow-up question asks whether preference should be given to an early application of the latest Euro standards before the date of general application.

Future Roadworthiness Enforcement

The European Commission has published a study on the future options for roadworthiness enforcement in the European Union. The AUTOFORE study, proposes a strategy to introduce higher roadworthiness standards, to broaden the scope of the standards to include items that currently are not included and vehicle types currently not controlled, and to improve the level of compliance. The report proposes a package for 2010 which includes amending Directive 96/96/EC to increase the frequency of inspection for older vehicles of categories 5 and 6 and to amend its scope to include two wheelers (international categories L1 and L3).

European Commission requests Impact Study on Marine Craft Engine Emissions

The European Commission has issued a tender for an Impact Assessment on possible emissions reduction measures for recreational marine craft engines. Four scenarios for further emission reducing measures have been identified in an earlier study but an Impact Assessment showed that each of them would have a relatively low potential to reduce the contribution by recreational craft to overall pollution. They would all entail a social cost that would affect, in particular, small and medium sized enterprises manufacturing or marinising engines mainly for the domestic market.

The new study aims to identify the most ambitious - but feasible - scenario to maximise the emission reduction potential of recreational craft engines whilst minimising the social and economic impact. The new study has to identify the most stringent exhaust emissions requirements (either existing or under development) that are applied or are envisaged to be applied in other parts of the world, and to assess the feasibility and impact of applying such requirements to the largest possible range of recreational marine engine types covered by the current Directive.

EC Consultation on Biofuels

The European Commission has initiated a public internet consultation on Biofuels. The Commission's document accompanying the consultation says that if the EU's 10% (energy content) biofuel target is to be met, the current limits of 5% ethanol in gasoline and 5% FAME in diesel will need to be changed. It says that even this will not be enough to meet the target. Other options discussed are increased use of ETBE; use of E85 or E95 ethanol/gasoline blends and 100% biodiesel (B100); biomethane, methanol and dimethyl ether (DME); and second-generation biofuel "BTL" ("Biomass-to-liquid" or Fischer-Tropsch diesel).

If none of these methods can be relied on to ensure that the target will be met, the Commission document suggests that it will be necessary to allow blends of up to 20% ethanol in gasoline and 15% biodiesel blends. For manufacturers to take these requirements into account in designing the vehicles for 2020, a decision should be made soon, the Commission says.

EEA Report on Environmental Indicators

The European Environment Agency (EEA) has issued its report on the TERM (Transport and Environment Reporting Mechanism) indicators for 2006. The report concludes that the environmental performance of the transport sector is still unsatisfactory.

The report says that transport, especially road transport, is becoming less polluting due to increasingly strict emissions standards for the different transport modes. Nevertheless, air quality in cities does not yet meet the limit values set by European regulation, and still has a major negative impact on human health. Application of NOx and particulate abatement devices rapidly improves the environmental performance of new diesel vehicles and offers opportunities for further steps. A fast introduction of tighter emissions standards for cars, vans and trucks (Euro 5/6/VI), the report says, may have great health benefits and help Member States to meet the EU Directives on air quality.

The report also says that environmental zones are an effective means to combat air pollution. The EEA says that one essential element of an environmental zone could be less polluting trucks - this reduces NOx and PM10 emissions and improves air quality. Banning older trucks and private cars "seems to be very effective, as they have a high share in total emissions". To harmonise the introduction of environmental zones in the EU, a working group has proposed actions at the Community level. Issues such as type approval procedures for retrofit systems and equal vehicle identification systems need attention.

High EU Ozone Pollution in 2006

Summer smog in Europe was at its second worst level in a decade in 2006, according to a report issued by the European Environment Agency on 15 March 2007. In the last ten years ozone pollution has only been higher in 2003. As in past years, Mediterranean countries such as Italy, France and Spain experienced highest levels of ozone pollution.

The EU's alert threshold of 240µg/m³ was exceeded 190 times in 2006, compared with 127 in 2005 and 99 in 2004. The information threshold value of 180µg/m³ was exceeded at 56% of the 2000 monitoring stations in 2006, compared to 42% in 2005 and 35% in 2004. The highest recorded one-hour ozone level (370µg/m³) was in Italy. Other high hourly values of between 300 and 360µg/m³ were reported in Austria, France, Italy, Portugal, Romania and Spain. The EU target value for 2010 of 120µg/m³ was breached at most stations.

The report notes that ozone pollution remains a problem despite cuts in emissions of ozone precursors over the past decade. The phenomenon has been "substantially induced" by climatic variability, with hot dry summers causing increased ozone levels, it says. The report is available at:

http://reports.eea.europa.eu/technical_report_2007_5/en

German Environmental Marking Scheme

Germany has introduced a country-wide marking regulation for motor vehicles. The label will divide light-duty and heavy-duty vehicles into four classes. Cities and municipalities will then be able to determine which vehicles are to be allowed to enter environmental zones.

High emitters such as diesel Euro 1 vehicles without particle filters and petrol passenger cars without catalyst will receive no label and thus may not drive into the environmental zone. For diesel-engined vehicles, those meeting Euro 2 will receive a red plaque; Euro 3 will receive a yellow one and Euro 4 a green plaque. The classification can be improved by installation of a particulate filter, however. For petrol-engined vehicles there are only two classifications: group 1 (no plaque) for vehicles before Euro 1 and group 4 (green plaque) for all remaining vehicles, which have a regulated catalyst.

Berlin to introduce Emissions-based Vehicle Restrictions in City Centre

The German capital's Senate has voted to ban vehicles that fail to meet strict emissions standards from entering the city centre starting on 1 January 2008. The move is one of the first to take advantage

of the new national legislation establishing a system of colour-coded stickers indicating a vehicle's pollution level (see above). Starting in 2008, cars will need to display one of the three stickers to drive within an 88-square-kilometer area in central Berlin. Drivers can outfit their vehicles with filters to reduce emissions and earn a better sticker. Driving in the city centre in an unapproved vehicle will result in a €40 fine and a point against the driver's record.

German Parliament approves Tax Relief on Diesel Particulate Filters

The German Parliament has approved a regulation which will provide a one-time tax rebate of €330 for each diesel car equipped with a particulate filter system between 1 January 2006 and the end of 2009. The rebate is reported to be approximately half the cost of installing a particulate filter.

At the same time a tax of €1.20 per 100cc cylinder capacity was introduced for diesel cars without a filter system and registered before 31 December 2006. It will also apply to newly-registered vehicles which do not comply with the Euro 5 particulate standard of 5mg/km. The new tax is to be effective between April 2007 and March 2011.

Air Quality Alert in Belgium

In Belgium on 14-16 March 2007, the Flemish regional government implemented 90km/h speed restrictions on 465km of motorways as part of an air quality alert. In the Walloon region there were no legally-enforced speed restrictions, but in the Brussels Capital Region extra speed controls were carried out and speed had been generally restricted to 50km/h.

Belgium Plan to ban sale of Second Hand Diesel Vehicles without Particulate Filters

The Belgian government has approved a wide-ranging package of environmental fiscal initiatives that will provide incentives for fitting particulate filters and ban the sale of second hand diesel vehicles without filters from July this year. Drivers fitting particle filters to their cars will get a €200 rebate. In other measures, private car buyers will get a 15% rebate for purchases of cars emitting less than 105g/km CO₂ and a 3% rebate for cars emitting less than 115g/km. All fuel stations will have to offer biodiesel by January 2008 and petrol with some biofuel content by 2009.

Draft Emissions Requirements for London Low Emissions Zone

Transport for London (TfL) has issued the final draft of the proposed requirements for vehicles retrofitted with

emissions control equipment to allow them to enter the London Low Emissions Zone (LEZ).

The draft shows a four-stage introduction for the requirements. Only PM limits apply.

| | Stage 1 | Stage 2 | Stage 3 | Stage 4 |
|------------------------|----------------|--------------------------|--------------------------|--------------------------|
| N1 Class II or III; M2 | Not applicable | Not applicable | Not applicable | LD Euro 3 HD Euro III |
| N2; M3 | Not applicable | LD Euro 3 HD Euro III | LD Euro 3 HD Euro III | LD Euro 4 HD Euro IV |
| N3 | Euro III | Euro III | Euro III | Euro IV |

N1 = light commercial vehicles up to 3.75 tonnes

N2 = commercial vehicles over 3.75 tonnes but less than 12 tonnes

N3 = commercial vehicles over 12 tonnes

M2 = buses/minibuses up to 5 tonnes

M3 = buses/minibuses over 5 tonnes

Light-duty (LD) or heavy-duty (HD) standards to be met depending on Type Approval of the base vehicle

The PM test results will be multiplied by a deterioration factor (DF) of 1.2 to establish compliance with the limit values. As an alternative, manufacturers may conduct tests to establish their own DF. Systems must have an effective working life of 100000, 200000 or 500000km or 5, 6 or 7 years respectively, depending on the vehicle type.

UK Consultation on Large Combustion Plant Emissions

The UK Department for Environment, Food and Rural Affairs (DEFRA) has launched a consultation on the UK implementation of the Large Combustion Plant Directive (2001/80/EC). The Directive deals with emissions of SO₂, NO_x and particulates from Large Combustion Plants (LCPs) with a thermal rating equal to or greater than 50 MW. The consultation paper sets out the proposed operation of a scheme to allow existing plants to trade emission allowances while preventing them from emitting an amount greater than that for which they hold emission allowances.

Belgium proposes Emissions Limits for Solid-Fuel Heaters

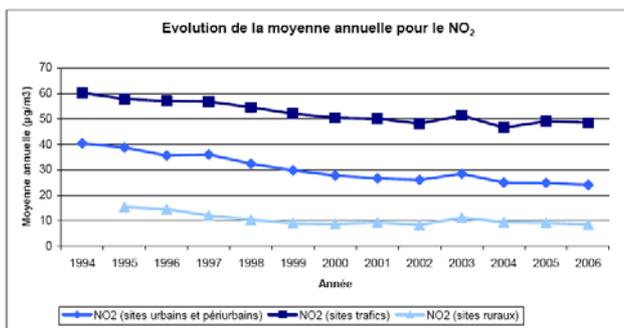
Belgium has notified the European Commission of its intent to introduce two new decrees which will introduce emissions limits for various types of heaters and boilers. The first introduces CO and particle emissions limits and efficiency requirements for new solid-fuel heaters, starting in 2007. The second revises the existing decree regulating CO and NO_x emissions from central-heating boilers and liquid- or gas-fired burners of less than 400kW.

The requirements for solid-fuel appliances would apply in three stages. From 1 July 2007 they would have to meet CO limits and efficiency requirements for continuous and intermittent use. CO limits would be reduced and particle emissions limits introduced at Phase 2, from 1 January 2009. On 1 January 2010,

phase 3 would see the introduction of lower particulate limits. The decree on central-heating boilers and liquid- or gas-fired burners sets two stages of NO_x and CO limits, the first coming into force on 1 July 2007 and the second on 1 January 2009. For liquid fuel burners (but not boilers or hot air generators), soot limits are included in both stages.

Trends in French Air Quality

The French Ministry for Ecology and Sustainable Development has released data on air quality in 2006. Data shows that, overall, emissions of NO₂ and SO₂ continued to fall. However, the annual average limit value of 48µg/m³ at traffic-related sites was exceeded in a number of cities near pollution hot spots.



PM10 levels in 2006 followed the general trend of recent years, where no notable reduction has been seen. Compared to 2005, the annual average concentrations increased very slightly (~3%) in urban sites close to industrial activity and were identical for the stations close to traffic. Ground-level ozone levels, though, remain "worrying" the Ministry says.

Iceland taken to Court for failing to implement NRMM Directive

The European Free Trade Area (EFTA) surveillance authority has announced legal action against Iceland for non-implementation of EU rules on emissions from petrol-engined non-road mobile machinery (Directive 2002/88/EC). Under the EEA Agreement, Iceland is obliged to implement all acts referred to in Annexes to the EEA Agreement. The Directive should have been implemented in national law by 11 August 2004.

UK Oxygen Sensor Problems

Thousands of motorists in the south-east of England reported car breakdowns which have been tracked to a batch of contaminated petrol. In most cases the Malfunction Indicator Light (MIL) came on, triggered by the On-Board Diagnostics (OBD) system. Examination showed that the oxygen sensors were coated with a grey deposit, and this had caused the engine management system to switch to "limp home"

mode. The problem appears to result from contamination of the gasoline with silicon, probably from a diesel anti-foam additive. The silicon content of fuel is not routinely checked.

2-year Study of fine Particles in Rome

Results of a two-year study of fine and ultrafine particles in Rome are reported in a study by the Italian National Institute of Health published in the Journal of Toxicology and Environmental Health¹. Long-term aerosol measurements were conducted at two sites in Rome from April 2001 to March 2003. One site was traffic-oriented, the other an urban background site, close to the city centre.

Particle number (P#) concentrations were measured by a condensation particle counter. Other pollutants (PM₁₀, PM_{2.5}, CO, NO₂, NO, NO_x, O₃) were simultaneously measured at the traffic-oriented site. During the study period, the mean 24-hour P# values measured were 4.69*10⁴/cm³ at the traffic-oriented site and 2.46*10⁴/cm³ at the urban background site. Mean 24-hour PM_{2.5} concentration was 23.1µg/m³, while for PM₁₀ it was 41.3µg/m³. The daily P# measured at the two sites showed a good correlation.

Higher values for all the pollutants, except ozone, were recorded during the winter period in comparison with the summer period, and a higher variability of the results was also observed during cold months. CO, NO, and NO_x were all highly correlated with P#. The researchers concluded that the diurnal and seasonal pattern of P# can be attributed to the combination of vehicle emissions and meteorological conditions.

¹ Marconi et al, Two-years of fine and ultrafine particles measurements in Rome, Italy; Journal of Toxicology and Environmental Health Part A, 2007;70(3-4):213-21.

NORTH AMERICA

New US Rules for Diesel Locomotive and Marine Engines

The US Environmental Protection Agency has proposed new rules on emissions from diesel locomotive and marine engines. The new regulations are intended to cut these engines' annual emissions of NO_x by 80% and fine particulate matter by 90%. EPA estimates that by 2030 the health benefits will outweigh the costs by 20:1. Initially, the regulations call for manufacturers to meet stricter standards on existing engines when overhauling them. By 2009 they must modify newly built diesel train and ship engines. By 2014 marine engine manufacturers must treat their exhaust through technological improvements, and a year later makers of locomotive engines must do the same.

Table I-1 Reductions from Levels of Existing Standards

| Sector | Proposed Standards Tier | PM | NO _x |
|------------------------------------|-------------------------------------|--------|-----------------|
| Locomotives | Remanufactured Tier 0 | 60% | 15-20% |
| | Remanufactured Tier 1 | 50% | -- |
| | Remanufactured Tier 2 | 50% | -- |
| | Tier 3 | 50% | -- |
| | Tier 4 | 90% | 80% |
| Marine Diesel Engines ^a | Remanufactured Engines ^b | 25-60% | up to 20% |
| | Tier 3 | 50% | 20% |
| | Tier 4 | 90% | 80% |

(a) Existing and proposed standards vary by displacement and within power categories. Reductions

indicated are typical.

The locomotive proposal would set new, Tier 3 exhaust emissions standards and idle reduction requirements for all types of locomotives, beginning in 2009. No later than 2010, it would tighten emissions standards for existing locomotives when they are remanufactured. Finally, the proposal would set long-term, Tier 4 standards for newly-built engines based on the application of high-efficiency catalytic aftertreatment technology, beginning in 2015.

The marine proposal would set new, Tier 3 exhaust emissions standards that would begin in 2009 for the smallest marine diesel engines and in 2012 for most engines. The proposal would also set long-term, Tier 4 standards for newly-built large marine diesel engines. These would be based on the application of high-efficiency catalytic aftertreatment technology and begin in 2014. The proposal also explores a remanufacturing programme for existing large marine diesel engines similar to the locomotive programme.

US EPA adopts Guidance Document for using Urea-SCR

The US EPA has now finalised its guidance document for using SCR technology for NO_x control in light- and heavy-duty diesel vehicles and engines (see AECC Newsletter for November-December 2006). The document opens the door for the introduction of SCR technology in Tier 2 light-duty vehicles, 2010 heavy-duty engines, and in other future diesel engine applications in the United States.

In the final document EPA considers urea replenishment to be a scheduled maintenance item, which is allowed to occur at an interval of no less than 100 000 miles in light-duty vehicles and 150 000 miles in heavy-duty vehicles. Since urea in SCR systems would have to be replenished at intervals on the order of 10 000 miles, special permission must be granted by the EPA to allow the increased frequency.

Manufacturers must ensure that the operation of the vehicle with an empty reducing agent tank is impossible. As expected, there are criteria for driver

warning systems, options for "driver inducement" (to prevent vehicle use without urea), identification of incorrect reducing agent, and tamper resistant design. EPA requires that manufacturers prepare plans for urea to be available at dealerships, at truck stops, and through a back-up such as a toll-free number to help customers locate a source of urea.

US proposes new Standards for Small Non-Road Engines

The US Environmental Protection Agency (EPA) has proposed new emissions standards, consistent with California requirements, which are expected to require catalytic converters for most lawn and garden equipment and small recreational watercraft.

EPA is proposing HC+NO_x exhaust emissions standards of 10g/kWh for Class I engines starting in 2012 model year and 8g/kWh for Class II engines starting in 2011 model year. EPA is not proposing new exhaust emissions standards for emissions from handheld equipment. For spark-ignition engines used in marine generators, EPA proposes a more stringent Phase 3 CO emissions standard of 5g/kWh to apply equally to all sizes of small SI engines.

From 2009 model year the proposed standards for outboard and personal watercraft engines above 40 kW are 16g/kWh for HC+NO_x and 200g/kWh for CO. For engines below 40kW, the standards increase gradually based on the engine's maximum power. The proposed new standards for sterndrive and inboard marine engines are 5g/kWh for HC+NO_x and 75g/kWh for CO starting with the 2009 model year. EPA is also proposing the introduction of diagnostics systems to detect failure of the emissions system for these engines. For sterndrive and inboard marine engines above 373kW with high-performance characteristics (generally referred to as "SD/I high-performance engines"), EPA proposes a CO standard of 350g/kWh. EPA is also proposing "not-to-exceed" standards that require manufacturers to maintain a certain level of emission control when engines operate under normal speed-load combinations that are not included in the certification duty cycle.

EPA says that currently, a lawn mower emits as much hourly pollution as 11 cars and a ride-on mower emits as much as 34 cars; recreational watercraft can emit as much pollution as 348 cars in an hour. EPA estimates the public health benefits of the new rule to be about \$3.4 billion by 2030. The estimated costs of the new standards range from \$9.5 million in 2008 to \$620 million in 2037 but are partially offset by estimated annual fuel savings. As a result, the net cost of the programme in each year ranges from \$6.4 million in 2008 to \$260 million in 2037.

California issues proposed Regulations for In-Use Off-Road Diesel Vehicles

Final proposals for the regulation of off-road diesel vehicles that are already in use have been issued by the California Air Resources Board (ARB). The proposals include fleet average PM and NOx emission limits for equipment used in construction, mining and industrial applications, together with airport ground support equipment. Limits would apply to engines with a maximum power of 25 horsepower (hp) or greater. Recreational off-road vehicles and agricultural and forestry vehicles are excluded, as are certain low-use vehicles including those used for snow removal and emergency vehicles. The proposed regulation will not cover stationary or portable engines.

From 2010 large fleets would have to meet separate NOx and PM requirements based on g/bhp-hr targets for 8 different engine size classes. From 2013, medium fleets would have to meet similar requirements. In each case the target limits reduce annually to 2020. Small fleets must meet a PM fleet average beginning in 2015, reducing annually to 2025. Small fleets would not be required to meet a NOx fleet average. In addition, there will be restrictions on the idling of such vehicles, which will be limited to 5 minutes except for certain specified conditions and operations.

There are requirements to replace, retrofit, repower or retire older engines if fleets do not meet the average targets for NOx. From 1 March 2020 for large and medium fleets, and 1 March 2025 for small fleets, all vehicles added to fleets must be equipped with an engine meeting the Tier 3, Tier 4 interim, or Tier 4 final emissions standards. If the engine did not come with an original equipment particulate filter, it must be equipped with the highest level Verified Diesel Emissions Control System within 3 months of acquisition.

Canada and US cooperate to reduce Air Pollutants

Canada's Minister of the Environment, John Baird, and the US Environmental Protection Agency Administrator, Stephen L. Johnson, have announced that their two countries are cooperating to reduce the cross-border flow of particulate matter (PM) originating on either side of the border. The two organisations are negotiating an annex to the 1991 US-Canada Air Quality Agreement. The PM Annex would complement the Annex negotiated in 2000 addressing ground-level ozone, as well as the original Annexes on acid rain and scientific cooperation.

US Science Advisers urge Tightening of Health Standards for Ozone

The US Environmental Protection Agency's top science advisers have unanimously agreed that the agency should adopt a more exacting health standard for ground-level ozone. They cite concerns that the air pollutant is posing inordinate risks to children, the elderly and others vulnerable groups. Specifically, the Clean Air Science Advisory Committee will press the EPA Administrator to revise the ozone health standard from the current 0.084 parts per million (ppm) to between 0.070ppm and 0.060ppm. In January, EPA staff had recommended tightening the standard but had proposed a range of "somewhat below 0.080ppm to 0.060ppm." The air science advisers found the staff recommendation insufficient and recommend it be set no higher than 0.070ppm.

Report on Ultra-fine Particles

The association of air quality agencies in the northeast states of the US, known as NESCAUM, has published a new report on Ultrafine Particles: Issues Surrounding Diesel Retrofit Technologies for Particulate Matter Control.

The report summarises the health concerns over both ultrafines and PM2.5 and describes the effect of particulate filters. High efficiency diesel particulate filters have been shown to uniformly decrease particulate matter (PM) by 90% or more down to a size range of around 0.03microns. Below this ultrafine size range, the report suggests that the emission levels may be somewhat dependant on the use of ultra-low sulfur diesel fuel, low sulfur lubricating oils (15 ppm S or less), and the presence of catalyst on the filter substrate.

Although the document does not consider the possibility of emissions standards for particle number, as is being proposed in Europe, the report notes that there are on-road measurements indicating that a continuously-regenerating trap with a catalyst-coated filter (in addition to the catalyst before the filter) coupled with ultralow sulfur fuel and low sulfur lubricating oil can reduce PM emissions across all sizes of particle to levels virtually indistinguishable from ambient background levels. Furthermore, there are significant reductions in other pollutants with adverse health impacts, such as polycyclic aromatic hydrocarbons and the carbonaceous component of ultrafine particles resulting from the use of ultralow sulfur fuel with continuously regenerating traps.

Maryland to adopt California Emissions Standards

Maryland is to become the eleventh US State to adopt California's passenger car emissions standards. The legislation, which is to go into effect in 2010, includes California's plan to cut global warming gases, requiring car makers to cut fleet emissions of greenhouse gases by 30% by 2016. This would mean that about 1/3 of new vehicles sold in the US would have to meet California's emissions standards.

US Supreme Court tells EPA to rethink Policy on Greenhouse Gas Emissions

The US Supreme Court has ruled that 'greenhouse gases' such as CO₂ are pollutants and ordered federal environmental officials to reconsider their refusal to limit CO₂ emissions from new cars and trucks.

The decision did not go so far as to require the US Environmental Protection Agency to regulate the emissions of gases such as carbon dioxide from motor vehicles. Rather, the court directed the agency to take a new look at the gases. If officials determine the gases contribute to global warming and therefore harm human health, the agency should regulate them under the federal Clean Air Act or provide some reasonable explanation why it will not, the court said. The EPA had argued that the Clean Air Act did not give it authority to regulate greenhouse gases and that there was "scientific uncertainty" about the effect of climate change on human health. The agency had also said that even if it did have that authority, it would not regulate the gases because that would interfere with the Bush administration's voluntary efforts to reduce global warming.

The ruling is expected to strengthen efforts by California and other states - including most New England states - to enact their own greenhouse gas rules for motor vehicles. Automakers have sued California, Vermont, Rhode Island, and other states over those plans, arguing in part that the EPA does not qualify greenhouse gases as pollutants under the federal Clean Air Act.

Canada promotes Fuel-Efficient Vehicles

As part of the 2007 budget plan, the Canadian government announced a number of measures to encourage the purchase of fuel-efficient vehicles and get older vehicles off the road.

The measures include rebates of up to C\$2000 for the purchase or long-term lease of a fuel-efficient vehicle (over 36 mpg US for cars or 28.3 mpg US for light trucks); a gas-guzzler tax of up to C\$4000 payable by manufacturers or importers for new passenger

vehicles (excluding trucks) with fuel consumption of 18 mpg US or more; funding of C\$6 million over two years for a seven-fold increase for vehicle scrappage programmes; and C\$30 million over two years to remove older vehicles from Canadian roads.

In addition, the Canadian government will invest C\$33 billion in transport infrastructure, including public transport, and C\$2 billion over the next seven years for the production of renewable fuels.

Increased Dieselisation for Mexico?

In talks with Mexico's Ministers of Environment and of Energy, Pemex, the Mexican state oil company, has proposed increasing the proportion of diesel vehicles in the country once conversion to ultra-low sulfur diesel is complete in 2010. The date would also match with the increasing availability of low emissions diesel passenger cars. Pemex sees this as a route to reduce the country's dependence on foreign oil (Mexico currently imports about 30% of its gasoline).

EPA proposes Changes to Emissions Test for Power Plants

The US Environmental Protection Agency (EPA) is proposing changes to the emissions test used when an existing power plant makes a physical or operational change. In 2005, EPA proposed replacing the 'annual emissions increase' test with an 'hourly emissions' test to determine whether planned changes at an existing power plant would be subject to emissions control requirements. This latest action proposes refining the original test options, proposing a new test option, and analysing the impacts on control device installation, emissions, and air quality that would result if either proposed option were finalised.

SOUTH AMERICA

Brazil considers mandatory Biodiesel Requirement

Brazil is considering making a 5% mixture of biofuel in diesel oil mandatory in 2010, rather than 2013 as earlier planned. The government in 2005 passed a law that requires a 2% mixture of biofuel to diesel oil (B-2 biodiesel) by 2008, but eleven biodiesel plants are already in operation with another 13 plants under construction. The volume available from 2008 would allow the plans to be brought forward.

Peruvian Government Report urges improving Air Quality in Lima

A Peruvian government report, 'Air Quality in Lima and its Impact on the Health and Life of Residents'

(Ombudsman Report 116), calls for a review of the air quality standards, an overhaul of the transportation sector, and more coordination among state agencies to address air quality in the capital city.

According to the report, 86% of dangerous contaminants in Lima's air are caused by vehicle emissions. This is driven in part by the fact that more than 65% of vehicles used for public transportation in Lima are more than 15 years old, and in some of the city's zones the average age is 28 years. Diesel fuel, the most common vehicle fuel in Lima, continues to contain between 4000 and 6000 parts per million (ppm) of sulfur. Legislation to lower sulfur levels in diesel to 50ppm will not take effect until 2009. As evidence of the problem, the report states that the incidence of respiratory illnesses among children in the city increased from 437 000 cases in 1995 to more than 1 million last year.

ASIA-PACIFIC

Beijing plans China IV Emissions Standard in 2008

Starting in 2008, new vehicles on sale in the Beijing market must meet the China IV emissions standard, according to Ji Lin, vice-mayor of the capital city. The Beijing Environmental Protection Bureau also confirmed the implementation of the China IV emissions standard ahead of schedule. According to the bureau, the plans for the implementation of the China IV emissions standard have been submitted to related departments for examination and approval.

Study on Particle exposure in Taiwan highlights Effect of Motorcycles

A new study on particle exposure in Taiwan, conducted by a number of Taiwanese research centres together with the University of Basel, Switzerland, is shortly to be published in the magazine 'Science of the Total Environment'².

The study assessed PM10 exposure (based on personal samplers) in urban residents and evaluated PM10 indoor/outdoor levels in communities with different characteristics. The geometric means of PM10 in personal, indoor and outdoor samples were 76.3µg/m³, 73.4 µg/m³, and 85.8µg/m³ respectively. The important exposure factors include the time spent outdoors and on transportation, riding a motorcycle, passing by factories, cooking and incense burning at home. Motorcyclists experienced an average of 27.7µg/m³ higher PM10 than others, while subjects passing by a factory were exposed to an average of 38.4 µg/m³ higher PM10 than others.

² Lunga et al, Residents' particle exposures in six different communities in Taiwan; doi:10.1016/j.scitotenv.2007.01.092.

Japan plans to boost Biofuels

The Japanese government has adopted a report outlining plans to increase domestic production of bioethanol to roughly 10 percent of its annual gasoline consumption by 2030. The report recommends using rice stalks, wood chips, and other under-used resources instead of corn and sugar cane. It also calls for legislation to allow the blending of bioethanol in gasoline, currently limited to 3%, to be increased to 10%, as well as to differentiate and reduce tax rates on bioethanol for use as fuel.

China plans for Alternative Fuel Vehicles

China's National Development and Reform Commission (NDRC) has published on its website a draft regulation on managing the production of alternative energy vehicles. Firms will need to obtain permission from the NDRC before beginning alternative fuel vehicle production, and the NDRC will have a say in determining the level of sophistication of the alternative energy technologies used, according to the draft. Prototypes will only be allowed to operate in approved areas, and series production of 'more sophisticated' products will be allowed for sale in approved areas. Only the most 'sophisticated' products will enjoy the same production, sale, and use status as conventional vehicles.

Lower-Sulfur Fuel in Malaysia

The Director-General of the Malaysian Department of Environment has announced the implementation and use of Euro 2 'low-sulfur' (500ppm) fuel from April this year. The current sulfur level in petrol is 0.15% (1500ppm) and in diesel is 0.3% (3000ppm). The new standards were enforced from the end of March under the Environment Quality Act. The Director-General reported that all refineries in Malaysia already have the capacity to produce these fuels. He also said that Malaysia is aiming to adopt Euro 4 fuel standards in four years' time and that producing better-quality fuel is a step towards making catalytic converters in vehicles mandatory.

New Chinese Gasoline Standard Released

The key part of the new Chinese standard for motor gasoline (GB 17930-2006) is now available in English. The standard covers 90, 93 and 97 RON 'Euro 2' gasoline with a sulfur content of 500ppm and 'Euro 3' gasoline with a sulfur content of 150ppm.

For the Euro 2 fuel, the maximum benzene content is 2.5% by volume. Aromatics are limited to 40% and olefins to 35%, although for the 97 RON grade aromatics can rise to 42% provided the total of aromatics and olefins remains the same. The oxygen

content is limited to 2.7% by mass, with no more than 0.3% (mass) methanol permitted. Use of MMT is permitted up to 0.018g/litre Mn, but other additives containing lead, manganese or iron are forbidden.

For the Euro 3 fuel, the benzene content reduces to a 1.0% max. and the olefins content to a maximum of 30% by volume. The maximum manganese content reduces to 0.016g/litre. There is also a small reduction in maximum summer vapour pressure.

Indonesian Environment Minister proposes New-Car Ban

Indonesia's Environment Minister has caused concern from car manufacturers by proposing a ban on sales of new cars as a way to reduce pollution levels. Environment Minister Rachmat Witoelar said the plan could be introduced if new emissions standards based on international guidelines did not improve air quality. The Minister said he would seek support from government colleagues for the proposal if the new measures proved unsuccessful. He said that "We need to stop the sale of new cars, at least we need to have a pause of new car production, unless they (carmakers) produce friendly new cars that use gas, biofuels or electricity".

The auto industry warned the move would impact heavily on production and jobs, and said the Minister seemed unaware the industry was already complying with international environmental standards.

Obituary

Dr Kong Ha, Chairperson of the Clean Air Initiative for Asian Cities (CAI-Asia) suddenly passed away on 3 April 2007. Kong Ha became the Chairperson of CAI-Asia in December 2004. During his time as the CAI-Asia Chair he inspired its members by his vision, knowledge and kindness. He will be sorely missed.

GENERAL

ICCT Report on Ship Emissions

The ICCT, the International Council on Clean Transportation, has published a new report on "Air Pollution and Greenhouse Gas Emissions from Ocean-going Ships: Impacts, Mitigation Options and Opportunities for Managing Growth". The report notes that since emissions from ocean-going vessels have only been moderately controlled, the growth in shipping has been accompanied by an increase in the sector's contribution to local and global air pollution. It is estimated that by 2020, ship emissions contributions to the EU NOx and SOx inventories will surpass total emissions generated by all land-based mobile, stationary and other sources in the EU25.

The recommendations in the report identify implementation milestones in each of several distinct categories: (1) marine fuels, (2) new engines, (3) new vessels, (4) existing engines and vessels, (5) greenhouse gas emissions, and (6) in-port emissions. In the near-term, these recommendations generally call for widespread adoption of proven best available technologies in the 2010 timeframe. The ICCT's medium-term recommendations propose intermediary steps to be taken between 2012 and 2017. Finally, technology-forcing, long-term recommendations are proposed beyond 2020. ICCT recommends NOx standards 40% below the current IMO standards (2000 level) in the short term, reducing to 95% below current IMO standards in the medium term.

IMO Progress on Reduction of Emissions from Ships

The International Maritime Organisation (IMO) sub-committee concerned with air pollution met in London from 16-20 April 2007 to consider their working group's progress on amendments to the 'MARPOL' Annex VI, which covers emissions.

They reviewed a proposed three-tier approach for NOx emissions limits applicable to new engines, under which Tier I would be the current limits in MARPOL Annex VI, Tier II would represent the best available in-engine technology, with potential reductions of NOx emissions of 15 to 25% depending on engine type, and Tier III would impose more stringent limits requiring further development or the use of after-treatment techniques. The Working Group have agreed an implementation date of 1 January 2011 for Tier II, with a possible reduction of 2 to 3.5 grams of NOx per kilowatt/hour across the current NOx curve attainable through in-engine design. The group generally agreed that 2015/2016 was an appropriate timeframe for implementation of the Tier III NOx regulations for new engines. Three proposals are under consideration for Tier III; an 80% reduction from Tier I, using Selective Catalytic Reduction (SCR) or Humid Air Motor (HAM) technology, to be applicable to all marine diesel engines within 50 nautical miles from shore (worldwide); an 83-85% reduction from Tier I levels when in use, using SCR or HAM, to be applicable to large vessels only, in specific near-shore areas; or a 40-50% reduction from Tier I, using engine modifications or Exhaust Gas Recirculation (EGR), to be applied globally to all marine diesel engines basis.

For existing engines (pre-2000), the Working Group reached a preliminary conclusion that emissions modifications are technically feasible for many pre-2000 large-displacement engines - but some pre-2000 engines would not be appropriate for modification.

Integrated Air Pollution and Climate Change Policies could reduce Costs

Academic Markus Amann of the Austria-based International Institute for Applied Systems Analysis (IIASA) told an intergovernmental meeting of the UN Convention on Long-Range Transboundary Air Pollution (CLRTAP) that integrating air pollution and climate policies could bring the cost of complying with an EU thematic strategy on air quality down from the estimated €7.1bn annually to zero. The parties to the Convention are reported to be increasingly keen to harness potential synergies between air quality and global warming policies.

Mutagenic Effects of Urban Particulate

Italian researchers³ have evaluated the genotoxic activity of PM2.5 in order to identify the mutagenic properties of this pollutant. They sampled airborne particles in Turin for 3 years. The sampling site was chosen for its short distance from high traffic areas, including roads and streets as well as bus stops and railway stations. The PM2.5 content in these samples was quantified and they were then used in standard mutagenicity tests using salmonella typhimurium bacteria, which are sensitive to mutagens and carcinogens.

The main results of their measurements were:

- The 3-year monthly mean concentration of PM2.5 was 48.76µg/m³. Winter concentrations were up to 3 times higher than summer.
- The tests showed mutagenic activity in the airborne samples. In winter, mutagenic activity is up to 8 times higher than in summer.
- PM2.5 concentrations are correlated with the mutagenic activity.

The authors conclude that the correlation between the concentration of PM2.5 and mutagenic activity indicates that PM2.5 has a high mutagenic potency. They also observed a month by month and year by year variation in the results of the mutagenic activity test and suggest that the composition of mutagen compounds in airborne particles may vary depending on the atmospheric conditions (e.g. quantity of pollutants emitted, weather, etc.).

³ Gilli et al, The mutagenic hazards of environmental PM2.5 in Turin; Environmental Research 103:168-175 (2007).

Study shows young Children more vulnerable to Air Pollution

A study of more than 4000 Dutch infants to be published in the forthcoming issue of the European Respiratory Journal has concluded that young

children who live close to busy roads are more at risk of developing respiratory diseases such as asthma.

The study was conducted by an international team of researchers and traces the health of 4146 youngsters from 40 different areas in the Netherlands, from before birth to the age of four. Data for the study was compiled from blood tests and from health questionnaires completed by parents. Researchers measured varying levels of exposure to NO₂, PM2.5 and soot from diesel emissions.

For those children living close to busy roads, the study shows an average of 20% to 30% increased likelihood of asthma, wheezing, ear, nose and throat infections, colds and flu. Researchers also found that children with the highest levels of pollutant exposure demonstrated hypersensitivity to food allergens, although a connection with food allergies at a later age remains inconclusive. A separate study on the issue is to be conducted when the children reach the age of eight.

AECC's new '.eu' Domain Name

AECC is one of the first associations to get the new '.eu' domain name, which can be used for access to AECC's website and for e-mail addresses.

The new domain name will run in parallel with the existing '.be' domain, so the website can now be viewed by typing in either www.aecc.be or www.aecc.eu. Similarly, AECC e-mail addresses will work with either '.be' or '.eu' extensions.

FORTHCOMING CONFERENCES

Hart's Transport, Energy & Fuels Conference: Working Together Towards Sustainability

8-10 May 2007, Brussels, Belgium

The conference will bring together key international players in the area of energy and oil, and serve as a platform for dialogue with EU policy makers and industry representatives on the proposed Euro 5 & 6 emissions requirement, the fuel quality directive proposal, the EU Energy Package and the soon to be released revised biofuels directive.

4th AVL International Commercial Powertrain Conference

9-10 May 2007, Graz, Austria

The conference will discuss the synergy effects and distinctive characteristics of the three areas of automotive, agricultural and industrial powertrains from a global viewpoint, with a focus on strategic topics at management level.

SCR-System

9-10 May 2007, Karlsruhe, Germany

Details at www.car-training-institute.com/scr-systems

Topics to be covered include current nitrogen oxide limits and regulations; dosing strategy and system approaches of current SCR concepts; possibilities of a solid urea SCR systems; AdBlue® infrastructure; and dosing components.

Development trends of motorcycles

10-11 May 2007, Bologna, Italy

The conference includes papers on global challenges, engine optimisation, small capacity EU III motorcycles, development trends of catalytic converters for small two-wheelers, and concept design of a low-cost diesel motorcycle engine.

Short course on Diesel Particulates and NOx Emissions

21-25 May 2007, Leeds, UK

Details at <http://www.engineering.leeds.ac.uk/cpd/AutoDieselParticulatesUK.shtml>

EAEC 2007: 11th European Automotive Congress

30 May - 1 June 2007, Budapest, Hungary

Details at <http://www.diamond-congress.hu/eaec2007/>

Themes will include powertrain technology, vehicle and laboratory procedures, homologation, regulation and harmonisation in Europe.

Spark Ignition Engine Combustion Short Course

4-8 June 2007, Leeds, UK

Details at <http://www.engineering.leeds.ac.uk/cpd/CPDAutomotiveEngineering.shtml>

AEGPL 2007 International Liquefied Gas Congress and Exhibition

6-8 June 2007, Nice, France

Green Week 2007

12 - 15 June 2007, Brussels, Belgium

The EU's Green Week will review past actions and identify successes and failures, as well as looking at the challenges we will face in the future. Green Week will provide a unique opportunity for debate, exchange of experience and best practice among non-governmental organisations, businesses, various levels of government and the public.

9th VDI International Forum Trucks and Buses:

Solutions of Transport Efficiency, Reliability and Sustainable Environment

14-15 June 2007, Munich, Germany

Details at: www.vdi.de/trucks-buses

GPC 2007 World Powertrain Expo and Congress

17-19 June 2007, Berlin, Germany

Details at <http://www.gpc-icpem.org>

6th Symposium "Towards Clean Diesel Engines"

20-22 June 2007, Ischia (Naples), Italy

Details at www.combustioninstitute.it/tcde.htm

Topics of the 6th symposium will be on in-cylinder processes, i.e. fuel-air mixing, combustion and emissions formation; with a special interest in advanced concepts of combustion. Also papers on nanoparticles formation and emissions are welcome. The scientific programme will consist of oral presentations and poster contributions.

Diesel Emissions Conference 07

26-27 June 2007, Frankfurt, Germany

Details at <http://www.integer-research.com/Products/Services/?ServiceID=139&ckIndustryID=3>

The key topic will be global business strategies; how will emissions standards harmonisation lead to new market opportunities for European suppliers?

4th International CTI Forum Diesel Particulate Filter

11-12 July 2007, Frankfurt, Germany

JSAE / SAE Fuels and Lubricants meeting

23-27 July 2007, Kyoto, Japan

Details at <http://www.jsae.or.jp/2007fl/>

Sessions are planned on combustion, emissions, fuels, lubricants, and measurements and testing.

14th Asia Pacific Automotive Engineering Conference

5-8 August 2007, Hollywood, California, USA

Offers of paper are being solicited in areas including powertrain technology, vehicle design, and transportation challenges in emerging markets.

11th ETH Particles Conference

12-15 August 2007, Zurich, Switzerland

2007 Diesel Engine-Efficiency and Emissions Research Conference (DEER)

12-16 August 2007, Detroit, Michigan, USA

Europacat VIII

26-31 August 2007, Turku/Åbo, Finland

Details at <http://www.europacat.org/>

Sessions at the symposium include catalysis for pollution control (stationary), catalysis for pollution control (mobile), catalyst deactivation, regeneration and recycling, surface science, nanotechnology and "Towards 100% Selectivity in Catalytic Oxidation over Nanostructured Metal Oxides".

19th International AVL Conference "Engine & Environment"

6-7 September 2007, Graz, Austria

Engine & Environment 2007 will focus on the concept definition, development and release of production of hybrid vehicles.

KONES 2007: International Scientific Congress on Powertrain and Transport Means

9-12 September 2007, Warsaw, Poland

Details at www.ilot.edu.pl/STRANG/kones2007.html

The latest achievements in research, development and design of CI, SI and other combustion engines with special attention to bio-fuels, ecology, injection and spray, fuel economy, combustion processes, mixture preparation, exhaust aftertreatment, particulates filters, durability and reliability.

11th EuCheMS International Conference on Chemistry and the Environment

9-12 September 2007, Toruń, Poland

Details at www.50zjazd.ptchem.pl

The lectures and poster sessions deal with topics including adsorption and catalysis, analytical and environmental chemistry, material & nanomaterials chemistry, and chemical technology & engineering.

SAE Heavy-Duty Diesel Emissions Control Symposium

10-12 September 2007, Gothenburg, Sweden

Details at:

<http://www.sae.org/events/training/symposia/hddec/>

Presentations from leading global technology and policy experts will highlight routes to emissions compliance and outline technologies that are under development, being demonstrated, and set to be applied on current and future generations of diesel engines for trucks, buses and mobile machinery.

Euromat 2007: European Congress and Exhibition on Advanced Materials and Processes

10-13 September 2007, Nürnberg, Germany

Details at <http://www.euromat2007.fems.org/>

Themes in the conference include advanced structural ceramics, nanostructures, ceramic composite concepts, the reliability of ceramic components, modelling ceramic processing, microstructure, and properties, coatings and surface engineering, microstructural characterisation techniques and automotive applications.

"8th International Conference on Engines for Automobile" ICE2007

16-20 September 2007, Capri, Italy

Details at <http://www.sae-na.it/ice2007.html>

The session on emissions of diesel, spark ignition and advanced power sources will include the topics of aftertreatment technologies, catalyst and converter technologies, emissions modelling and control, emissions testing and measurements, and sensors.

Particles and Photo-oxidants in Europe

25-26 September 2007, Prague, Czech Republic

The conference includes presentations from UBA on Clean Air for Europe (CAFE) and the Thematic Strategy on Air Pollution, from DG Environment on the new Air Quality Directive, from WHO on the Health Effects of Air Pollution, and from Leeds University on the Importance of Primary NO₂.

16. Aachener Kolloquium "Fahrzeug- und Motorentechnik" / 16th Aachen Colloquium "Automobile and Engine Technology"

8-10 October 2007, Aachen, Germany

SAE 2007 Commercial Vehicle Engineering Congress and Exhibition

29 October - 1 November 2007, Chicago, USA

Details at <http://www.sae.org/events/cve/>

Hart's World Refining & Fuels Conference

6-8 November 2007, Beijing, China

Key topics include: renewable and fuel technology developments and challenges, marine fuels in Greater Asia, global octane outlook, clean fuels programmes - lessons learned from the EU, Japan and the USA, light- and heavy-duty vehicles trends and challenges and opportunities for the region's refinery sector.

3rd International Environmentally-Friendly Vehicles Conference

19-20 November 2007, Dresden, Germany

The conference basis will be targets for CO₂ reduction, fuel efficiency and reduction of pollutant emissions, EF vehicles (including biofuels, CNG/LPG and developments of existing technologies) and measures, including tax incentives and regulations.

The Spark Ignition Engine of the Future: Technologies To Meet The CO₂ Challenge

28-29 November 2007, Strasbourg, France

Details at <http://www.sia.fr>

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This new SIA international Congress is intended to provide the opportunity for experts from the automotive industry, the oil industry, research laboratories and universities to exchange opinions and information on the potential of the future spark ignition engine to meet the low CO₂ challenge.

Internal Combustion Engines: Performance, Fuel Economy and Emissions

11-12 December 2007, London, UK

Details at www.imeche.org.uk/events/ICE

This conference will cover large and small engines for on and off highway applications. The four main themes will be performance, fuel economy, fuels and emissions, with keynote speakers on each day. The conference will address challenges posed by climate change, regulations and market fragmentation. It will promote the dissemination and discussion of research on the latest developments in technology and the responses to market, regulatory and operational pressures.

6. International CTI Forum Exhaust Systems

18-20 January 2008, Nürtingen, Germany

Developments on aftertreatment for diesel and spark ignition engines, SCR, DPF, catalyst systems, sensors, in-engine measures and emissions legislation.

2008 SAE World Congress

14-17 April 2008, Detroit, Michigan, USA

Deadline for abstracts: 1 June 2007

FISITA 2008 World Automotive Congress

14-19 September 2008, Munich Germany

Details at www.fisita2008.com

The topic area on future powertrain solutions includes strategies for future ultra-low exhaust emissions limits and strategies and engines for future fuels. The simulation and testing topic includes harmonisation of international legislation.

Deadline for abstracts: 26 October 2007

5th International Conference on Environmental Catalysis

31 August - 3 September 2008, Belfast, N.Ireland

Details at www.centacat.qub.ac.uk/5icec

Sessions cover automotive emissions control, catalysis for the production of clean fuels, catalysis for sustainable energy conversion and greener process intensification.