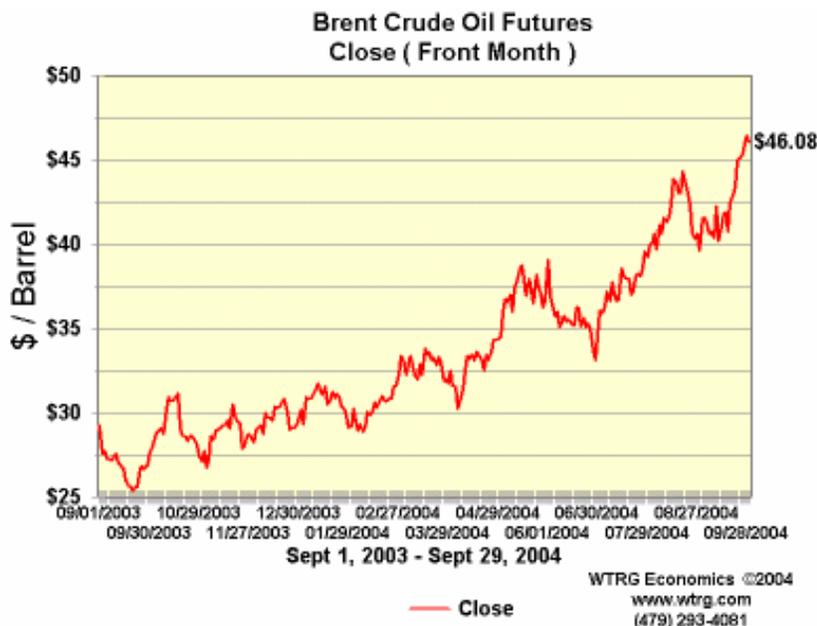




# AMFI Newsletter

Advanced Motor Fuels Information



AMFI Newsletter is prepared for the members of the Implementing Agreement on Advanced Motor Fuels of the International Energy Agency (IEA/AMF). AMFI Newsletter refers to recent news on advanced motor fuels. AMFI Newsletter is available on the AMF website:

[www.iea-amf.vtt.fi](http://www.iea-amf.vtt.fi)

**Oil climbs to a record \$50 as analysts see no ceiling!  
Iraq, Nigeria, hurricanes, strong demand (China, India)...**  
<http://www.iht.com/articles/541023.html>

**Next Issue:**

**Biofuels Policy Survey..**

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## GENERAL INTEREST

### Preparing for heavy-duty Euro 4/5 emission regulations

The Euro 4 emission requirements for heavy-duty vehicles will enter into force October 1st 2005 for new engine models and October 1st 2006 for all new engines to be sold (Directive 1999/96/EC). Euro 4 is called the "first exhaust aftertreatment enforcing regulation for heavy-duty vehicles". Compared to Euro 3, NO<sub>x</sub> is reduced by 30% and PM no less than by 80%, the latter one most probably forcing the vehicle manufacturers to go for aftertreatment. Already now the European heavy-duty vehicle manufacturers have presented their strategies for Euro 4/5 emission levels.

The majority of the HD manufacturers have decided in favour of emission control using Selective Catalytic Reduction (SCR) technology. Included on the list are DAF, Iveco, Mercedes-Benz, Renault and Volvo. In parallel with this introduction, chemical and oil companies are safeguarding the regular supply of the water/urea solution necessary for SCR technology. Demand of AdBlue water/urea solution in Western Europe is estimated to increase strongly, up to some 3.5 Mton in 2012. AdBlue is the most known water/urea solution, but other concepts seem to come in the market, e.g. Kemira's Denoxium™ with a low freezing point of -30 °C (AdBlue -11 °C).

*Cleaner and safer future with SCR, 19 July 2004 ([www.corporate.basf.com/en/press/](http://www.corporate.basf.com/en/press/)), Ad Blue Demand in Western Europe, April 2004 (<http://www.acea.bel/>), Denoxium ([www.kemira.com](http://www.kemira.com))*

MAN and Scania are opting for Exhaust Gas Recirculation (EGR) technology. Scania states that they will comply with Euro 4 regulations using a combination of very high injection pressure, turbo-compounding (some models), EGR and diesel oxidation catalyst; a diesel particle filter is not needed. The most powerful engine versions will be offered with SCR; EGR increases the need for cooling, and higher power output can be obtained using SCR instead of EGR. *MAN D20 Common Rail, press info Feb. 2004 (<http://www.man.ch/aktuelles/pressearchivsonstige.htm>); Scania's strategy for Euro 4, Euro 5 and beyond, Sept. 2004 ([http://www.scania.com/news/press\\_releases/](http://www.scania.com/news/press_releases/))*

It will be very interesting to see how these new technologies perform in real-life conditions, how will emission and fuel consumption values develop. Perhaps worth while for AMF to investigate these issues?

## NATURAL GAS AND LPG

### Natural gas – the only potential alternative fuel by 2020

In Europe natural gas is the only alternative fuel with potential market share well above 5% by 2020. Expansion of the re-fuelling infrastructure and of captive fleets should minimize costs in the transition period. Substitution of gasoline or diesel with natural gas might become economically viable, if done at a sufficiently large scale. Codes and standards for the use of natural gas as motor vehicle fuel should be harmonized to support a broader commercialization of NGVs at European level.

*Alternative Fuels Contact Group ([http://europa.eu.int/comm/energy\\_transport/envir/2003\\_report\\_en.pdf](http://europa.eu.int/comm/energy_transport/envir/2003_report_en.pdf))*

### CNG prices go up - US Natural gas disaster

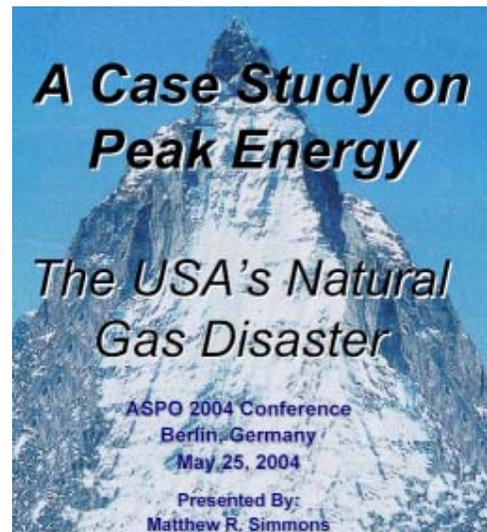
Natural gas is the fastest growing primary energy source in the IEO2004 forecast. Consumption of NG is projected to increase by nearly 70% between 2001 and 2025, with the strongest growth in demand expected among the developing nations. The largest increase in NG production is expected for the Middle East and the smallest increase for the industrialized countries. The disparity between the changes in consumption and production in the industrialized nations indicates that they will rely on other parts of the world for more than 30% of their NG supply in 2025. The production is projected to exceed consumption in the developing world and the former Soviet Union. As a result, those two regions are expected to be the major source of exports to the rest of the world. *International Energy Outlook 2004, April 2004 (<http://www.eia.doe.gov/oi/iefio/>)*

In late 90's US trusted on "endless gas supply", cheap gas by technology/efficiency and "flexible" gas demand. However, natural gas prices continue to be volatile and unpredictable: recent spikes above US\$6 from \$3 per million BTU. Prices respond to known events, but also to projections, forecasts, or expectations. The following reasons can be listed to explain recent increase of NG prices in US:

- Rising prices for other energy products have increased the natural gas prices.
- Natural gas supply/production and natural gas imports are declining, while exports are growing. Natural gas demand continues to grow.
- Anxiety about the future due to e.g. the Middle East situation and active Hurricane Season tends to lead to higher prices.

Heavy users could ship gas from nations, like Algeria, but there are no terminals in Canada to unload LNG, and less than half a dozen in the US. "Access to world natural gas supplies will require a major expansion of LNG terminal import capacity," said the U.S. Federal Reserve Board chairman. LNG imports are estimated to comprise 20% of the North American natural gas market by 2020 - this has sparked plans to build LNG terminals in Canada. Safety risks linked to tankers carrying liquid LNG was also discussed.

*Natural Gas Prices to Make Important Choice, April 2004 ([http://www.we-energies.com/hatgasprice\\_apr2004status.htm](http://www.we-energies.com/hatgasprice_apr2004status.htm)); Simmons, M., R. ASPO 2004 Conference, May 25, 2004 (<http://www.peakoil.net/wood2004/pptBerlin/Proceeding.html>); Sanford, J. July 2004 (<http://www.canadianbusiness.com/features/>)*



## Norwegians to use natural gas

Norway's government proposed allowing natural gas-fired power plants from 2006. Norway, significant oil exporter and gas producer, currently produces gas only for export. Natural gas is a far cleaner energy than coal or oil, but in Norway extremely clean hydro-power generates about 99% of all electricity. However, Norway wants to increase domestic uses of natural gas. Thus the first gas-fired plants may become allowed on condition that "greenhouse gases" like CO<sub>2</sub> would be filtered out and stored (Norway's GHG emissions already 6-8% above 1990 levels). To help offset CO<sub>2</sub> emissions from power plants, Norway would lay cables from the mainland to offshore platforms for hydro-power usage. Oslo would also promote investments in hydrogen as a power source and would encourage use of gas as a fuel in buses and ferries. Oil and Energy Minister in Norway said that the idea of piping gas direct to homes around Norway was rejected, because "from an energy point of view it's a good idea but from a climate point of view it's not". Norwegian energy company Naturkraft, owned by energy group Statoil, industrial group Norsk Hydro and utility Statkraft, has delayed plans to build gas power plants due to fears that they would not be profitable.

*Reuters News Service, Alister Doyle (<http://www.planetark.com/dailynewsstory.cfm>)*

European Commission is supporting the LNG tanker development project in Norway. The ship has been contracted for 10 years to the Norwegian natural gas company Naturgass Vest to take gas from the Bergen area to users on the west coast of Norway. The Pioneer Knutsen is a small vessel just over 68 meters. A polyurethane insulation layer is designed to secure the gas boil-off to fuel two Mitsubishi gas burning/diesel generation sets. If the boil off is insufficient, additional LNG can be pumped from the cargo storage to fuel the ship. Designers indicate that this concept allows optimal control of the vessel but also has the potential to reduce CO<sub>2</sub> emissions. The gas burning generation engines are backed up by two diesel engines so the ship has maximum capability and fuel flexibility for all circumstances. *ENGVA News August 2004.*



The Norwegian Oil and Energy Department (OED) recently allocated funds for projects focusing on developing Pilot & Demonstration Plants with CO<sub>2</sub>-capture. An award of 1 million NOK was given for the ZENG (Zero Emission Norwegian Gas) project that has been proposed in collaboration with Clean Energy Systems Inc., Lyse Energi AS and the Energy Park in Stavanger. (<http://www.co2.no/>)

## Natural Gas vehicles

**Ford ends NGV production in US:** Ford decided to discontinue production of natural gas vehicles (NGV) in US. Until then Ford was the largest NGV producer in US. Thus many cities will have to re-evaluate the future of their alternative fuel programs. Ford Crown Victorias are used by airports, police departments and municipalities. Ford continues to promote NGVs in Europe, which raises questions. The California NGV Education Campaign urged Ford to reconsider decision to discontinue production of NGVs in the United States. The group continues to emphasize today's benefits from NGVs, i.a. in GHG and as energy supply, but also reminding of significant public resources which Ford received to develop, build and market NGVs.

*CNGVEC Again Asks Ford to Explain, Reverse Natural Gas Vehicle Decision, 24 August 2004 ([www.ngvnetwork.com](http://www.ngvnetwork.com))*

**Iran seems to become the Natural Gas Vehicle capital of the world:** Iran has established the world's first truly mass produced OEM CNG vehicles. More than 25,000 CNG vehicles are expected to be produced by Iran Khodro before the end of the current Iranian year (March 23, 2005). *Iran Leads the Way in Mass CNG Vehicle Production, 10 August 2004 ([www.ngvnetwork.com](http://www.ngvnetwork.com))*

## LPG market share by 2010

LPG may compete with CNG for additional market share in some segments, but might take share possibly just up to 5% by 2010. The potential of LPG for improving security of energy supply and reducing greenhouse gas emissions should be assessed on a well-to-wheels analysis under the same conditions as the other recognized alternative fuels, including the perspective of future market and technology developments. *Alternative Fuels Contact Group. [http://europa.eu.int/comm/energy\\_transport/envir/2003\\_report\\_en.pdf](http://europa.eu.int/comm/energy_transport/envir/2003_report_en.pdf)*

## ETHANOL

### New ethanol demonstration plant in Örnsköldvik

Opening of a new ethanol demonstration plant took place in May 2004 in Sweden, Örnsköldvik. The plant produces ethanol from cellulose, using raw materials such as woodchips, forestry residues and reused fibres. The process is based on two-steps diluted acid- and enzyme hydrolysis. The demonstration plant aims to test and study new production technologies. The installation capacity is around 200 cubic metres per year based on continuous production. The estimated production costs are \$0.41 per litre of ethanol. The plant is the result of a collaborative agreement between several universities: Lund, Chalmers, Umea and Central Sweden, and they will collectively carry out the R&D activities. ([http://gave.novem.nl/novem\\_new](http://gave.novem.nl/novem_new); <http://www.etek.se>)

## **Brazil: increased exports of ethanol**

Recent estimate from Brazil says that with oil prices hovering at \$40-50 on the international market, ethanol at \$32-33/bbl becomes attractive. High international oil prices were seen as clear increase in export of ethanol: 764 million litres between May and July compared with 92 million litres over the same period last year. *Brazil: Country's Ethanol Exports Soar, September 2004 (<http://biobased.org/>)*

## **Cruising the Ethanol Highway with Hybrid Cars**

Gov. Arnold Schwarzenegger has declared his support for a "hydrogen highway" to end dependence on foreign oil. However, to achieve that goal transportation system should be rebuilt. It is proposed that the same target would be achieved with lower costs by substituting ethanol (and hybrid vehicles) for hydrogen (and fuel-cell vehicles). Cars using gasoline and ethanol are available for a low additional cost. A better platform for ethanol - to end to reliance on fossil fuels - is the hybrid electric vehicle, which could reduce gasoline consumption by 30% to 50% by using electric motors. It would be possible to further improve technology, and to use ethanol as the engine's primary fuel. It is pointed out that ethanol is cheaper than hydrogen fuel now and should still beat hydrogen a decade from now. An ethanol fueling station can be built for less than 10% of the cost of a hydrogen fueling station.

*David Morris, originally in Los Angeles Times, February 2004 (<http://www.ilsr.org/columns/2004/021504.html>)*

## **O2diesel - progress**

O2Diesel Corporation, a provider of O2Diesel™, ethanol-diesel blend, enters stock market. Several demonstrations are going on with O2diesel. Transit operator, Fresno Area Express (FAX) chose a group of 31 older Gillig buses to use a 7.7vol% ethanol-diesel blend. The U.S. Dept. of Defense announced to begin O2Diesel™ demonstration in June 2004 at Air Force Base in Las Vegas. Fleet includes buses, medium- and heavy-duty trucks, ground support equipment and electrical generators. With a twelve-month run, the program will distribute pre-blended O2Diesel™ fuel to Nellis and other U.S. Air Force bases, where it will be tested and emissions evaluated in several hundred more non-tactical military vehicles. Already in September 2003, CARB confirmed satisfactory emission results from independent testing of O2Diesel, sufficient to accept this product to be the first E-diesel blend verified by California as an alternative diesel fuel. *O2diesel e-mission Newsletter, May 2004 (<http://www.o2diesel.net/emission/3.pdf>)*

## **BIOESTERS**

### **Dutch Government plans to start using biofuels in 2006**

Dutch Cabinet announced the plans for 'greening' the traffic sector by 'using cleaner, more efficient and quieter vehicles, and climate-neutral fuels that lead to sustainability'. With regard to biofuels, the target is to ensure that these fuels become available from 1 January 2006. Principle decisions on subsidies were taken as well. *June, 2004 ([http://gave.novem.nl/novem\\_new/index.asp?id=25&detail=236](http://gave.novem.nl/novem_new/index.asp?id=25&detail=236))*

### **Bio-diesel fueled ships to cruise in Canada**

Partners in Canada's BioMer project have announced of a project to demonstrate that biodiesel is a viable alternative fuel for cruise ships from June 2004 to October 2004. The project will use pure biodiesel, a fuel made from vegetable oil, recycled cooking oil or animal fats, as a fuel supply on a fleet of 12 boats of various types and sizes of cruisers operating in two very tourist-intensive areas. In addition to measuring emissions, the BioMer project will highlight the impact of biodiesel on marine engine performance and river ecology. During the demonstration project, 254,000 litres of biodiesel will be required. *Energy Security, August 2004 (<http://www.iags.org/es.html>)*

### **Volkswagen and ADM in Joint Biodiesel Research**

Volkswagen AG and Archer Daniels Midland Company announced the creation of a joint research agreement on developing and utilizing Biodiesel fuels for the automotive industry. Chairman of the Board of Management of Volkswagen AG said that "Volkswagen has been a leader in the development of advanced clean diesel engines and this Agreement represents Volkswagen's commitment to introducing clean burning and renewable fuels into the automotive industry." Archer Daniels Midland Company (ADM) is a world leader in agricultural processing. VW has earlier announced co-operation with Shell. *Biodiesel Courier (<http://www.biodiesel.at/>)*

### **UK: Europe's biggest Biodiesel Plant**

Europe's biggest Biodiesel Plant is going to be completed early 2005 in Teesside, and a second plant one year later. The £ 21m plant, with the capacity to produce 250,000 tonnes of Biodiesel a year, uses renewable vegetable oils such as oilseed rape, palm and soy as raw materials. The project would use technology licensed from Energea of Austria. This is based on continuous flow Biodiesel production, expected to be significantly more efficient and cheaper than traditional batch processing.

*Financial Times, April 2004. (Biodiesel Courier, <http://www.biodiesel.at/>)*

### **Mitsui biodiesel factory in South Africa**

Mitsui & Co. plan to manufacture about 100,000 tpy of biodiesel in South Africa with Germany's ThyssenKrupp group and others. Mitsui and its partners plan to acquire CO<sub>2</sub> emission rights worth 200,000 tpy for resale through the new operation. The companies will produce biodiesel by refining physic nut oil, which will then be 5 % blended with light diesel fuel. Production will start in 2006 for sale in the local market. Biodiesel can be produced from other vegetable oils such as palm oil, but palm prices are volatile because the plant is edible. This prompted the companies to use the inedible physic nut instead.

*AsiaPulse, May 2004 (<http://www.gasandoil.com/goc/company/cna42091.htm>)*

## Biodiesel Becomes Campaign Issue

Kerry Calls for Biodiesel Plan. Kerry's \$30 billion energy plan includes, among other things, the twin goals of deriving 20 % of motor fuel and 20 % of electricity in the U.S. from renewable resources by 2020. Bush - whose energy plan is based largely on increasing supply by drilling and building nuke plants - warned that Kerry's plan could threaten jobs and hurt the economy. (<http://www.biodiesel.org/>); *Los Angeles Times*, *The Wall Street Journal*, Aug 2004 (<http://www.biodiesel.at>)

## SYN- AND SUNFUELS (GTL, BTL)

### The potential for biomass-derived fuels even about 15%

Biomass-to-liquids (BTL) could enhance the market share of biofuels beyond the EU target of 6% for 2010. The maximum technical potential for biomass-derived fuels is estimated at about 15%. First demonstrations on the pilot plant scale have started, and further development projects could help to improve the economics. Co-production of BTL fuels and hydrogen could provide a cost-efficient pathway to large volume renewable hydrogen production. *Alternative Fuels Contact Group*. [http://europa.eu.int/comm/energy\\_transport/envir/2003\\_report\\_en.pdf](http://europa.eu.int/comm/energy_transport/envir/2003_report_en.pdf)

### GTL demonstrations and plants

- ◇ Shell GTL demonstrations are running in several areas, e.g. with Avensis D-CAT cars in London. Shell GTL from Bintulu, Malaysia is commercially available in Thailand, and will soon be available in Greece and Germany. *DieselNet Update, July and August 2004*.
- ◇ Qatar plans to become the world GTL leader: various projects under negotiations, e.g. SasolChevron, ConocoPhillips, Shell – QP, ExxonMobil – QP, Ivanhoe Energy – QP, Marathon/Syntroleum –QP *Newendorp, March 2004* (<http://www.taylor-dejongh.com/news/downloadFiles/presentSpeech/ICBIParisSummit.pdf>)
- ◇ Sasol plans to build two coal-to-liquid plants in China. *DieselNet Update, July 2004*.
- ◇ Tulsa: Syntroleum awarded to continue research, development and engineering work on GTL synthetic fuels for military diesel, turbine and fuel cell applications. *DieselNet Update, August 2004*.
- ◇ FT (coal-based) plant of 10 kb/d planned in Wyoming, announced by Rentech. *DieselNet Update, June 2004*.

## OTHER ADVANCED FUELS (HYDROGEN, DME)

### Hydrogen is potential in future, but only marginal by 2020

Due to its broad feedstock flexibility hydrogen could broaden the energy supply base of the transport sector. The share of hydrogen in road transport fuels could reach a few percent by 2020. Linking hydrogen and natural gas fuel infrastructures and technologies may support the introduction of hydrogen as fuel. Internal combustion engines could enhance hydrogen vehicles in markets. Fuel cell vehicles offer high energy efficiency potential and could become competitive. Hydrogen production from biomass, but also from co-production in fossil power plants might have the potential. More limited GHG benefits could be achieved with fuel cell vehicles using hydrogen derived from steam reforming of natural gas.

*Alternative Fuels Contact Group*. [http://europa.eu.int/comm/energy\\_transport/envir/2003\\_report\\_en.pdf](http://europa.eu.int/comm/energy_transport/envir/2003_report_en.pdf)

### US DoE says no for on-board hydrogen reformers

Hydrogen for cars can be produced by reforming process on-board, at gasoline stations or in centralized units (in long-term perspective even by hydrolysis process). US DoE decided not to continue support for on-board reforming concept, which was focused on using methanol as fuel. Now the "focus shifted towards the development of the technologies and infrastructure for on-board storage and use of hydrogen in direct hydrogen fuel cell vehicles". Natural gas will be the main source for hydrogen for several decades.

*ENGVA News, August 2004*

### Hydrogen fuelled vehicles

Ford has designed concepts with hydrogen internal combustion engines (H-ICE). Focus C-MAX is based on a 2.3 liter, four cylinder gasoline engine. It uses compressed gaseous hydrogen from three tanks (350 bar). Another concept is Ford F-350 pick-up with a 6.8-liter V-10 engine. These H-ICEs follow the 2.3-liter I-4 H-ICE previously introduced in Ford's Model U and Hydrogen Hybrid Research Vehicle (H2 RV). The lack of a hydrogen infrastructure and on-board storage looms are the largest problems. At 5,000 psi, 12 gallons of volume of hydrogen (1 kg) has the same energy as one gallon of gasoline. Thus two large hydrogen tanks of F-350 hold energy equivalent of only eight gallons of gasoline. Hydrogen has a wide combustion range from 4 to 75%, thus a wide range of air/fuel mixtures is available. Engine can run in the fuel-efficient "lean" regime without "knock" and it can reach an efficiency of 38%. Ford views hydrogen ICE as the second phase in the company's strategy for future automotive propulsion, between gasoline hybrids and hydrogen fuel cell vehicles. *The Clean Fuels and Electric Vehicles Report, Sept. 2004*; *Ford Moves Forward with Hydrogen Engine Research*, September 2004. (<http://media.ford.com/newsroom/>); *Hydrogen Internal Combustion* (<http://www.ford.com/en/innovation/engineFuelTechnology/hydrogenInternalCombustion.htm>)

The US EPA has certified the first Hybrid SUV for sale in the United States. Ford Escape Hybrid, the first vehicle combining SUV capability with the fuel economy and low environmental impact of a gasoline/electric full hybrid. Ford has also produced the first 30 Focus Fuel Cell Vehicles that will be deployed as evaluation fleets in the United States, Germany and Canada later this year.

(<http://www.ngvnetwork.com/>); (<http://www.fordvehicles.com/escapehybrid/>); *Ford Celebrates Job One of Hydrogen-Powered Focus Fuel Cell Vehicle*, 30 Sept. 2004 (<http://www.ngvnetwork.com/>)

Honda has developed a scooter powered by its light, compact fuel cell system, the Honda FC Stack. The new vehicle is based on a 125cc scooter. In December 2002, Honda delivered FCX fuel cell vehicles in Japan and the United States — a world's first. In October 2003, Honda announced the development of the Honda FC Stack, a next-generation fuel cell capable of starting at subfreezing temperatures. Honda plans to deliver the Honda FC Stack-equipped FCX in the second half of 2004 in the United States, and in 2005 to customers in Japan. (<http://world.honda.com/news>)

## MISCELLANEOUS

### Nonroad emission standards: big step in US and Europe

US EPA Tier 4 nonroad emission standards will cut emission levels from construction, agricultural and industrial diesel-powered equipment by more than 90 percent! The new rule will also remove 99 percent of the sulfur in diesel fuel by 2010. Regulations will be effective for the smallest engines in 2008, and continue with others until 2014 (some of the largest engines until 2015). The new emission limits will require emission control systems, particulate filters in 2011-2013, and NO<sub>x</sub> aftertreatment in 2014-2015. HC limits will be also affected to some extent. Nonroad diesel fuel currently contains about 3,000 ppm sulfur (no EPA limit at the moment, industry specification 5,000 ppm). The new rule will limit sulfur content to max. 500 ppm in 2007 and 15 ppm by 2010 for nonroad fuels, in 2012 for locomotive and marine fuels.

EPA estimates that nonroad diesel engines currently account for about 60% PM emissions and about 30% NO<sub>x</sub> emissions from mobile sources nationwide. The new standards will result in emission reductions equivalent to some two million fewer trucks on the road. EPA also started actions on new emission standards for diesel engines used in locomotives and marine vessels, which are estimated to cause some 27-45% of NO<sub>x</sub> and PM coming from mobile sources. *DieselNet Update, May 2004.* (<http://www.epa.gov/nonroad-diesel2004fr.htm>)

US EPA, nonroad limits				Directive 2004/26/EC, nonroad limits			
kW	Year	Tier 4		kW	Year	Stage IIIB	
		NO <sub>x</sub> g/kWh	PM g/kWh			NO <sub>x</sub> g/kWh	PM g/kWh
<19	2008	7.5*	0.4	37-56, P	2012	4.7*	0.025
19-56	2013	4.7*	0.03	56-75, N	2011	3.3	0.025
56-130	2012-14	0.4	0.02	75-130, M	2011	3.3	0.025
130-560	2011-14	0.4	0.02	130-560, L	2010	2.0	0.025
				<b>Stage IV</b>			
				Q & R	2013	0.4	0.025

**\*) Sum of NO<sub>x</sub> and hydrocarbons**  
**All limit-values, e.g CO, HC, US >560 kW or other EC categories are not shown here.**

In Europe, nonroad emissions will be cut similarly to US. The Non-Road Mobile Machineries (NRMM) Directive 2004/26/EC was published in April 2004, and corrected in June 2004. The new Directive introduces stages IIIA, IIIB and IV for NRMM and amends Directive 97/68/EC. Stage IIIA limits will come into force from 2005 onwards, Stage IIIB from 31 Dec 2009 to 31 Dec 2011 and Stage IV from 31 Dec 2012 to 30 Sept. 2013. The Stage IIIB limits are expected to require particulate filters, and Stage IV NO<sub>x</sub> aftertreatment. A new transient test procedure (NRTC, developed with US EPA) will be used in parallel with the old steady-state schedule (ISO 8178 = NRSC). The reference fuel at the Stage IIIA level should contain below 300 ppm sulfur, but the Stage IIIB and IV below 10 ppm. Under Directive 2003/17/EC, sulfur-free (10 ppm) diesel fuel is expected in EU from 2009. *Directive 2004/26/EC, Corrigenda, 25 June 2004.*

### Fuel sulfur issues

In Europe road fuels must meet 50 ppm sulfur limit from 1 January 2005. By 2002 these fuels had already attained a share of 47% for petrol and 43% for diesel, even though current limits are 150 ppm for petrol and 350 ppm for diesel. 'Sulphur-free fuels' (<10 ppm) represented 2% of the market. This share is likely to expand due to a directive that will require all road fuels to be sulphur-free from 2009. Germany already offers tax incentives for the near zero sulphur fuel. In Finland, fuels below 10 ppm sulfur content get a tax incentive of 2.65 cent/liter from 1 September 2004. Australia is lowering the sulfur limits: diesel fuel max. 50 ppm from 1 January 2006, gasoline 150 ppm from 1 January 2005. *AECN Newsletter May - June 2004; Finnish legislation no. 394/2004 (www.eduskunta.fi); DieselNet Update, July 2004.*

Marine emission regulation, MARPOL Annex VI, will enter into force from 17 May 2005. The regulation sets a global limit of 4.5 wt-% on sulfur content of fuel oil, and 1.5 wt-% for special "SO<sub>x</sub> Emission Control Areas". Emission limits are given for, i.a., NO<sub>x</sub> (9.8-17 g/kWh, varying with engine speed) and sulfur oxide emissions. *DieselNet Update, June 2004.*

## PUBLICATIONS

- ◇ Biofuels for Transport - An International Perspective. 2004 ([www.iea.org/dbtw-wpd/bookshop](http://www.iea.org/dbtw-wpd/bookshop))
- ◇ Market development of alternative fuels, Report of the alternative fuels contact group, December 2003. ([http://europa.eu.int/comm/energy\\_transport/envir/2003\\_report\\_en.pdf](http://europa.eu.int/comm/energy_transport/envir/2003_report_en.pdf))
- ◇ World Energy Outlook 2004, October 2004 (<http://www.iea.org/dbtw-wpd/bookshop>)
- ◇ International Energy Outlook 2004, April 2004 (<http://www.eia.doe.gov/oiia/ieo/>)
- ◇ Well-to-wheels analyses of future automotive fuels and powertrains in the European context. January 2004. CONCAWE, EUCAR & JRC. (<http://www.ei.jrc.it/Download>)

- ◇ Comparison of Transport Fuels, Final Report (EV45A/2/F3C) to the Australian Greenhouse Office on the Stage 2 study of Life-cycle Emissions Analysis of Alternative Fuels for Heavy Vehicles. (<http://www.greenhouse.gov.au/transport/comparison/index.html>)
- ◇ Mobility 2030: Meeting the Challenges to Sustainability, July 2004. ([www.wbcsd.org](http://www.wbcsd.org))
- ◇ Facts and trends to 2050: Energy and climate change, September 2004. ([www.wbcsd.org](http://www.wbcsd.org))
- ◇ Energy system aspects of natural gas as an alternative fuel in transport. *Wuppertal, September 2003.*
- ◇ Biofuels for Transport - An International Perspective, 216 pages, ISBN 92-64-01512-4 (2004) (<http://www.iea.org/bookshop/>)
- ◇ Review on Biodiesel Standardization World-wide, IEA Bioenergy Task 39, May 2004 ([gave.novem.nl](http://www.gave.novem.nl))
- ◇ New Biodiesel brochure published by UFOP in Germany ([http://www.biodiesel.at/flowerpower\\_engl.pdf](http://www.biodiesel.at/flowerpower_engl.pdf))
- ◇ Evaluating Exhaust Emission Performance of Urban Buses Using Transient Heavy-Duty Chassis Dynamometer. VTT Finland. DEER conference. August 2004. (<http://www.orau.gov/deer/presentations.htm>)

## IEA & IEA/AMF News

### AMF Strategic Plan and Extended Term approved.

End-of-Term Reporting and the new Strategic Plan were the main topics of the IEA AMF ExCo meeting in Sweden, in January 2004. Since then the Draft Strategic Plan was modified with inputs from many Delegates, and the final version was submitted to Peter Cunz and the IEA Secretariat on June 1<sup>st</sup> 2004. On June 23<sup>rd</sup> a message was received through Peter Finckh that the Strategic Plan for 2005-2009 has been approved. Thus this work to build a cleaner future for the transportation sector can go ahead with full steam!

### Switzerland is a new IEA/AMF Member

Switzerland has now signed the IEA/AMF Agreement. It is a delight to welcome a new member to the IEA/AMF work! The AMF Delegate is Dr. Jan Czerwinski.

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