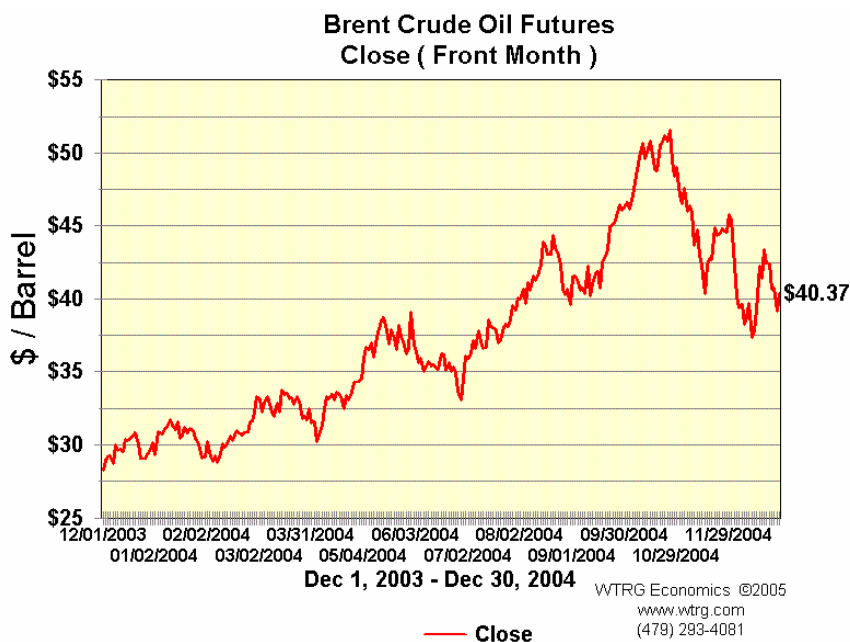




# AMFI Newsletter

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)

Global oil prices seen easing in 2005 <http://money.cnn.com/>  
“What goes up, must come down” says the old song...

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### Biofuels Policy Survey – Europe (edited from [europa.eu.int](http://europa.eu.int))

EC's action plan for alternative fuels targets to a 20% substitution of fossil fuels by alternative fuels in the road transport sector by 2020. Three options are seen as significant alternative transport fuels over the next 20 years: biofuels (short term), natural gas (medium term), hydrogen and fuel cells (long term). The target is to replace an increasing proportion of diesel and gasoline by biofuels, starting with 2% in 2005 increasing to 5.75% by 2010 (energy share, indicative values set in the Biofuels Directive 2003/30/EC). Member States are allowed to reduce excise duties on biofuels when used for heating or transport purposes, on the condition that the lower tax rates will not over-compensate the extra manufacturing costs. The Member States must report on the national targets for biofuel sales in 2005 and each year on the quantities of biogenic fuels used in the transport sector. The first reports are now completed.

Austria: The target for transportation biofuels is at least 2.5% of total fuels in 2005 increasing to 4.3% in 2007 and to 5.75% in 2008. The production capacity of biodiesel is some 100 ktonnes/a, but to substitute 2.5%, ~220 ktonnes is required. In Austria fuels produced from biogenic substances are exempt from mineral oil tax (also blending of up to 2% biodiesel and up to 5% with petrol).

Cyprus: The national indicative targets for biofuels, as well as additional measures, are under study. The potential for the production of biofuels for transportation has not been extensively studied. A grant was initiated regarding investments for renewables for transport. Some interest has been expressed for investments, particularly for biodiesel from used edible oils. Currently production and sales of biofuels are negligible.

Czech Republic: The preliminary indicative targets for the Czech Republic are 2.2% in 2004 (RME), 7.95% in 2006 (RME 2.75%/ethanol 5.2%) and 9.7% in 2010 (RME 3.1%/ethanol 6.6%). The targets for 2006 exceed the target specified by the EC. Support for green fuels (blended fuel/31% RME) is lower excise duty (duty on blended biodiesel CZK 6 866/m<sup>3</sup> vs diesel CZK 9 950/m<sup>3</sup>, support limited to 100 000 tonnes/a of RME). Support for the production of bioethanol for blending in gasoline and to replacement methanol in the production of RME and MTBE is planned.

Denmark: Denmark's indicative target for the use of biofuels in transportation in 2005 will be zero. Report states that it is cheaper and a greater benefit to the climate and the environment to reduce CO<sub>2</sub> emissions in other ways than promoting biofuels for transportation in Denmark. At present, Denmark produces some biofuels for export, but uses very little of them itself. The government plans to abolish the CO<sub>2</sub> tax on biodiesel and introduce similar tax rebates for other biofuels for transport. In the present market, this does not appear to be sufficient to encourage any notable use of biofuels.

Estonia: It is unlikely that biofuel produced in Estonia will come onto the market in 2005 (also imports unlikely). Currently no pure or blended biofuels are sold or consumed for transport purposes. Starting production of biodiesel would require an extension of the area under rape or imports of rapeseed. Interest in the possibility of producing biodiesel has been expressed, but there are no concrete plans for starting production. Biofuels used as motor or heating fuels will be exempt from excise duty.

Finland: Finland's national indicative target for the minimum proportion of biofuels for transportation in 2005 is set at 0.1%. Currently, use of biofuels for transport is practically non-existent (only a couple of demonstration projects). In addition, the production possibilities are limited and the drive is to increase the use of bioenergy for heat and power production. A partial relief from excise duty for biofuels for transportation is granted for two minor research/demonstration projects. Natural gas, LPG, and biogas used as motor fuel can be exempted from tax in Finland. The production costs of arable crops in Finland are among the highest in Europe, and production potential for motor fuel purposes is almost negligible. Reed canary is seen as usable energy material. In Finland, wood and waste-based raw materials would be sufficient to produce biofuels equivalent to the target rate set for 2010, but this potential is likely to be used to meet growing heat and power needs.

France: Indicative target 2% in 2005. Tax reliefs for biofuels in transportation (report available only in French).

Germany is aiming at minimum 2% of biofuels in total fuel consumption. In 2003 the share of biofuels was 1.4%. From 2004 to 2009 a full exemption from duty is given for biofuels and heating oils produced from biomass. RME has been blended with diesel and biodiesel also used as a neat fuel also earlier in Germany. A small amount of ETBE is made from imported bioethanol for blending with gasoline.

Greece: National indicative targets have not been set. In Greece, 47 000 tonnes of biodiesel and 128 000 tonnes of bioethanol will be required for meeting the indicative target of 2% for 2005. Two plants for the production of biodiesel are being built, both with a capacity of 40 000 tonnes/a and potential to double their capacity within one year, and there is also interest in building a plant to produce bioethanol for transportation. In Greece, a large number of crops can be used for the production of biodiesel (sunflower, cottonseed, rape-seed, tobacco and tomato oil). In addition, sweet sorghum has high bioethanol yield per hectare. Bioethanol production is expected to start in 2006 at the earliest.

Hungary: The national indicative biofuels target for 2005 is 0.4-0.6%. ETBE produced on the basis of bioethanol and biodiesel as motor fuel will be given to an excise duty refund from 2005 to 2010. Average crops of rape are low, but used frying oil could play an important role in Hungary. However, there have already been initiatives for the utilization of biomass for purposes other than transport. Two experimental biodiesel plants were built while keeping biodiesel totally tax-free, but due to low-rate excise duty on diesel granted for agricultural producers this was not favored. Production capacity for bioethanol corresponding to the production of 40 ktons/a of ETBE is available. The production of ETBE can be started in 6-12 months, and in 3-4 years the output of ETBE can increase up to 100 kton/year.

Ireland: An initial indicative target is 0.06% by the end of 2005, rising to 0.13% in 2006 (Current market penetration below 0.0003%). Excise relief will be invited for pure plant oil, biodiesel blends, and bioethanol blends. Current maximum production capacity is 8 million litres/a. A study showed that there is an immediate potential for 22,000 tonnes of tallow and 5,000 tonnes of recovered vegetable oil to

be recycled as biofuels. Long term biofuels objectives, in line with the EU Directive, can only be met by Ireland in the presence of direct or indirect imports.

Latvia: Estimated biofuel production for 2005 is 2%, 9 kt as bioethanol and 11 kt as biodiesel. 700 000 EUR financial support in 2005 is planned to create processing enterprises.

Lithuania: The 2004-2010 programme for the promotion of the production and use of biofuels targets at least 2% of all transportation fuels on the market by 31 December 2005, and at least 5.75% by 31 December 2010. Specific action plans include excise duty relief for energy products produced from substances of biological origin.

Malta: No target. Malta is a country with negligible potential in biofuels from agriculture. The limited freshwater resources, high population density and poor soil fertility contribute to these factors. Only a potential of some 0.7% for biofuels in road transport in Malta is seen. Industrial and domestic waste is the only source of biomass. Malta's policy is to reduce the quantity of waste and to encourage higher levels of reuse; to increase recycling and composting; to develop energy recovery technologies; safe disposal of residues that cannot be otherwise managed. Biodiesel use in 2003 was 0.02%.

Portugal: Indicative targets for the first phase in 2005: about 1% of the fuel sold to road transport (50 000 tonnes of biodiesel and 15 000 tonnes of bioethanol). With biodiesel covered by voluntary agreements this figure raises to some 1.15% of fuel sales. Three options are considered: reducing the taxes on biofuels, fixing compulsory usage and establishing voluntary agreements producers and distributors. In 2003 no sales of biofuels or other renewable fuels was recorded.

Slovakia: The target is 2% of biocomponents by 31.12.2005: (47 kt as biodiesel blend and 63.5 kt as bioethanol/ETBE in petrol). It is suggested to add max. 5% esters (by volume) into off-road diesel with reduced excise tax („red colored diesel“). The national indicative targets are conditioned by availability of biofuels and the preparedness to invest by the concerned companies.

Spain: The reference value for the national targets for biofuels in the transport sector is 2%. Special tax rate for biofuels: zero euros per 1 000 litres shall apply to biofuels. In 2003 share of bioethanol was 3.09% (used for ETBE) and biodiesel 0.32%. Accordingly, the average share of all biofuels in the transport sector in 2003 was 1.09%.

Sweden: It is estimated that the 2% reference value could be reached in 2004 and exceeded in 2005. Tax relief is available for pilot projects or in the form of a general exemption from CO<sub>2</sub> tax. The biofuels fairly widely used in Sweden are bioethanol, RME and biogas. In addition, there are e.g. pilot plant for ethanol from forest raw materials and a large fleet of Fuel Flexible Vehicles. Other biofuels, such as synthetic diesel and heavier alcohols, are used in small quantities. Also three fuel cell buses are in service. The biofuel share was 1.3% in 2003.

The Netherlands: No target in 2005, but from 2006 the Netherlands is adopting a biofuel target percentage of 2%. The Dutch Government states that the transition to climate-neutral fuels must be thought of in terms of energy chains. A particular fuel (e.g. hydrogen) or a particular engine technology (e.g. fuel cells) does not automatically give rise to sustainable mobility. The Netherlands will seek to promote final objectives and employ instruments designed to facilitate this aim, but it is not yet clear which energy chains will ultimately prove to be the most efficient. Currently, apart from a number of small-scale demonstration projects, no biofuels are being placed on the market in the Netherlands.

United Kingdom: UK Target for 2005 is expected to be 0.3% biofuels (to be confirmed). A 20 pence per litre duty incentive on biodiesel has been in place since 2002, and a similar duty incentive for bioethanol from January 2005. Incentives will remain in place at least three years. This policy has increased sales of biodiesel (from waste vegetable oil) to around 2 million litres a month. No bioethanol is sold in the UK currently. One possibility to support biofuels is 'Input Taxation'. This new taxation method could enable the direct processing of bio-materials into mainstream conventional refinery processes to handle a range of different input materials. Other promotion methods considered include Capital Grants. The UK is also considering the possibility of introducing a renewable transport fuel obligation for the road fuel sector. In 2003, the sales of biofuels contributed about 0.04% of the total transportation fuel sales in the UK.

	Biofuels 2005 target, minimum
Austria	2.5%
Cyprus	No target, yet
Czech Republic	2.2% (2004)
Denmark	0
Estonia	0
Finland	0.1
France	2 %
Germany	2 %
Greece	No target, yet
Hungary	0.4-0.6%
Ireland	0.06%
Latvia	2 %
Lithuania	2 %
Malta	No target, yet
Portugal	1 %
Slovakia	2 %
Spain	2 %
Sweden	3% proposed, not confirmed
The Netherlands	0% (2% from 2006)
UK	0.3%

## Other biofuel policy issues

First Meeting "Road Transport Biofuels Technology Platform" was held in Bryssel 2<sup>nd</sup> December 2004. European Commission has proposed a new research instrument, called Technology Platforms, which would be followed by Joint Technology Initiatives under the 7<sup>th</sup> Framework Program. Biofuels for Transportation would be one of the potential items for the platform. The discussion forum presented 28 views on the proposed Platform, major of them on favour. It is possible that Biofuels for Transportation Platform would start already in 2005. *Reference: Nils-Olof Nylund informal document.*

US: A tax bill giving producers of biodiesel from virgin oils (like soy bean oil) a \$1/gallon tax credit; biodiesel from waste fats/greases 50 cent/gallon tax credit will start Jan 1, 2005 and expire Dec 31, 2006 (likely extended). *Hart Diesel Fuel News October 25, 2004.*

Leading European automakers argue for BTL rather than biodiesel. "Gas and hydrogen are not the solution for heavy-duty transport due to low energy content", stated Scania Group VP-R&D. *Hart Diesel Fuel News October 25, 2004.*

### Kyoto Protocol in force

On 18 November 2004 Russia ratified Kyoto Protocol, which now will enter into force on 16 February 2005. The protocol is ratified by 128 countries responsible of 61.6% of GHG emissions (requirement: developed countries responsible of at least 55% of world's GHG emissions). On average GHG emissions must be reduced 5% by 2012 compared to 1990 levels. Different countries have different targets, developing countries including Brazil, China, India and Indonesia are Parties but do not have emission reduction targets. Four industrialized countries have not yet ratified Kyoto Protocol: Australia, Lichtenstein, Monaco and the United States. *UN Press release: Kyoto Protocol to enter into force 16 February 2005.*

### CO2 reductions proposed by Japan

The government proposes a massive reduction in CO2 emissions in advanced nations to levels one-fourth of those in 2002 by 2050 in the government's long-term energy policy outlines. According to the outlines, oil consumption in other areas but transportation will be almost zero by 2050. By 2100, natural gas will remain as an energy source for industry and transport, but most energy needs will be met by renewable energy sources such as nuclear power, hydrogen energy and solar energy. [www.fuelcelltoday.com](http://www.fuelcelltoday.com)

Areas in Florida Subject to Inundation with 100 Centimeter Sea Level Rise



## NATURAL GAS AND LPG

### Transient bus emission study

VTT has been running tests on both buses and heavy-duty trucks on its new transient chassis dynamometer. In the period 2002-2004 VTT measured more than 35 different buses, with emission certifications ranging from Euro 1 to EEV. This programme also included a study of natural gas buses. For the CNG comparison, 7 European vehicles, 3 diesel buses and 4 natural gas buses were evaluated for dynamic emission performance. All vehicles were model year 2002...2004 vehicles in prime condition. The diesel buses represented Euro 3 technology with electronically controlled injection. The diesel buses were tested without exhaust after-treatment, with oxidation catalyst and with continuously regenerating trap (CRT, particle filter) installed by the original equipment manufacturer (OEM). All CNG vehicles were equipped with catalysts, and the emission certification ranged from Euro 3 to enhanced environmentally friendly vehicle (EEV).

The results demonstrate that regarding particle mass and number emissions, the CNG vehicles, on average, are equivalent to CRT filter equipped diesel vehicles. The particle matter (PM) emissions of both CRT diesel and CNG vehicles were some two orders of magnitude lower compared with the baseline diesel engine. No abnormality could be found regarding the numbers of nanoparticles emitted from CNG vehicles. The formaldehyde emission of the catalyst equipped CNG vehicles was low, as well as the emission of polyaromatic hydrocarbons (PAH) components. The genotoxicity of CNG emissions was extremely low, determined by the Ames mutagenicity tests and calculated as a reference value per unit of driven distance. As for NOx emissions, CNG vehicles provide similar or superior emission performance, depending on the emission certification class. The results for the unregulated emissions from this study are in conflict with some US studies showing high toxicity for natural gas exhaust. One explanation is that US natural gas vehicles normally are not equipped with catalysts, whereas all European manufacturers use exhaust after-treatment and sophisticated fuel injection on heavy-duty natural gas vehicles. The full report can be freely downloaded at: [www.vtt.fi](http://www.vtt.fi)

### European Gaseous Fuel Training Institute

In response to a number of requests to provide a variety of NGV training courses ENGVA has created its European Gaseous Fuel Training Institute. The training institute will be developed in several phases, offering generic NGV courses initially and expanding into more specific curricula dealing with fuelling station economics and development, vehicle technology, gaseous fuel standards, hydrogen

as a fuel, and government policy making, among others. Specific curricula can be developed on an as-needed basis for individual clients with very focused needs. [www.engva.org](http://www.engva.org)

### **Volvo trusts in Methane**

Volvo's S80 Bi-Fuel - powered by methane, petrol as a back-up. Volvo described in a press release methane (natural gas) as "a fuel for today and tomorrow" as being "highly efficient in environmental terms. CO2 emissions from a Volvo Bi-Fuel model running on CNG are about 25% lower than those from a petrol engine." In particular, a car running on biogas contributes virtually nothing to the global warming problem caused by greenhouse gases. While Volvo sees methane as a fuel for today, it also sees other alternatives as being viable in the future. "Volvo Cars sees a future where several solutions are possible. We are researching bio-fuels and hybrids as alternatives." [www.ngvnetwork.com](http://www.ngvnetwork.com)

### **An Agreement to exchange capture of methane by 14 countries.**

A US led agreement has been signed by 14 countries to work together to capture emissions of methane, and to put it to use as an energy source, including for use in natural gas vehicles. [www.ngvnetwork.com](http://www.ngvnetwork.com)

### **Biogasmax – EU FP6 IP proposal**

28 partners from 8 European countries applied on 8<sup>th</sup> December an Integrated Project "Biogasmax", which is targeted to increased and more effective production, distribution and use of biogas in the transport sector. *ENGVA News October & November 2004.*

### **Shipping of LNG continues to grow, orders for new dual-fuel marine propulsion engines**

Wärtsilä will supply four dual-fuel engines for an LNG (liquefied natural gas) carrier under construction at the Alstom Chantiers de l'Atlantique yard in France. The vessel is being built for a joint venture owned by Japanese Nippon Yusen Kaisha (NYK) and Gaz de France for completion at the end of 2006 (14.12.2004). "Wärtsilä has so far sold twenty-eight Wärtsilä 50DF dual-fuel engines for LNG carriers. Furthermore, the contract with Hyundai Heavy Industries Co. Ltd of Korea earlier this year to supply sixteen dual-fuel engines for four LNG carriers ordered by BP Shipping included an option to supply a similar number of engines in the future.", said Mikael Mäkinen, Group Vice-President, Wärtsilä Ship Power. Besides these orders for LNG carriers, Wärtsilä has also sold dual-fuel engines for offshore applications and onshore power plants. [www.wartsila.com](http://www.wartsila.com)

## **ETHANOL**

### **Saab 9-5 BioPower for Swedish market**

Saab announced that sales of a new Saab 9-5 BioPower model fuelled by ethanol will begin on the Swedish market summer 2005. Its 2.0-liter turbo engine also delivers a significant performance improvement when running on ethanol-based fuel, while still being able to use gasoline if necessary. In Sweden, Saab 9-5 BioPower customers will be able to use E85 fuel (85% ethanol/15% gasoline), which costs about 25 per cent less per litre equivalent at the pumps. They will also be exempt from projected city congestion and parking charges. In addition, company car drivers will qualify for a 20 per cent reduction in car benefit tax. On the road, Saab 9-5 BioPower running on E85 delivers the 180 bhp/ 280 Nm performance. Saab's engine management system has facilitated re-programming and significant modifications were required to the materials for the fuel tank, fuel lines and connectors. During the development of the BioPower engine, Saab engineers liaised with General Motors colleagues in Brazil where 100 percent ethanol (E100), produced locally from sugar cane, is the dominant fuel on the market. "Turbocharged engines are particularly well-suited to exploiting the benefits of ethanol and our work with this engine indicates there is a great deal of development potential for this fuel." The Saab 9-5 BioPower is scheduled to go on sale next summer. Prices will be announced shortly and are expected to show only a very small increase in comparison to standard models. [www.saab.com](http://www.saab.com)

Volvo announced on 9<sup>th</sup> November 2004 about introducing ethanol cars (E85) starting from late 2005. However, Bi-Fuel cars running on methane, preferably biogas, is still Volvo's top priority option for future. *ENGVA News October & November 2004.*

## **BIOESTERS**

15% of 27 pure biodiesel samples collected in US did not fulfill ASTM 6751 requirements for phosphorus, total glycerin, acid number. D6751 lacks oxidation stability test. Only one sample passed oxidation stability test of European biodiesel standard (EN14214). Increased NOx emissions are one problem of biodiesel, and seems to be worse on post-2002 engines. The "low-temperature combustion" of future engine concepts doesn't look good for biodiesel according to ORNL studies. *Diesel Fuels News September 27, 2004.*

## SYN- AND SUNFUELS (GTL, BTL)

### Fortum Oil developed a new BTL fuel

Fortum Oil, the Finnish oil refinery, has developed a Bio-To-Liquids fuel, NExBTL, which can be processed from bio-oils, like vegetable oils, with properties similar to high quality GTL fuel. NExBTL is sulfur-free, aromatic-free, contains no oxygen, has excellent oxidation stability and very high cetane number. Cold properties can be tailored from -5 to -30 °C. The tests with a MAN Euro 4 Common Rail research engine showed significant benefits in regulated emissions (particulates, NO<sub>x</sub>, HC and CO) when compared to sulfur-free EN590 diesel fuel. Reference: *Rothe, D. et al. New BTL Diesel Reduces Effectively Emissions of a Modern Heavy-Duty Engine. 5<sup>th</sup> International Colloquium Fuels Conference, Stuttgart, January 12-13, 2005.*

### Other GTL and BTL issues

- ◇ BTL, CTL and GTL could represent 20% of petroleum-based fuels in Europe by 2020. BTL could replace some 10% of petroleum fuels in Europe and some 40% in developing countries. BTL potency to reduce GHG is about 85% whereas about 53% for FAME. China has vast quantities of waste rice straw that it would allow to replace 100% of petroleum fuels via BTL in China. *Diesel Fuel News October 11, 2004.*
- ◇ High cetane is not beneficial for HCCI at full load, but high cetane is needed for Euro4/5 engines. SwRI found 20% FT + 80% gasoline promising for full time HCCI. *Diesel Fuel News, October 11, 2004.*

## OTHER ADVANCED FUELS (HYDROGEN, DME)

### DME gains higher priority in Sweden

DME fuel-injection systems have not overcome durability etc. problems. However, Volvo sees DME as a potential fuel mainly due to a Eucar study that found biomass based DME (wood waste) is the best fuel/vehicle alternative to avoid GHG emissions. It is stated that DME from pulp-mill byproduct could be produced cheaply in Sweden and it could cover some 30% of auto fuel demand in Sweden. One problem with DME would be high shipping costs if recommended new-design ships would be used instead of replacing LPG shipping capacity. DME is a aggressive solvent requiring special materials, and also safety concerns would be high due to it's flammability.

Within the oil industry the companies most interested in DME are BP and Total. Key players are Japan and Korean DME Forums. A 800,000 tons/year DME plant is built in Iran (Zagros Petrochemicals) to cover internal demand of 20% DME/LPG blend. DME can be produced even from small gas fields cost-effectively. For some power plants DME could be cheaper alternative to LPG or diesel fuel, or an extension. DME to olefins (DTO) is also interesting option due to increasing propylene demand.



In China gasification of coal to DME is an opportunity. A new "controllable premixed combustion" (CPC) DME engine with "low injection pressure" system resulting in low NO<sub>x</sub> and PM is under development in China. *Hart Diesel Fuel News November 8, 2004.*

### Nanomix Receives Two U.S. Patents in Alternative Energy

Hydrogen Storage Advancements for Vehicle and Fuel Cell Power. EmerNanomix Inc. announced that it has been issued two U.S. patents in hydrogen storage technology. Efficient, high-density hydrogen storage promises to be a practical and cost-effective energy storage solution for the emerging fuel cell industry. The newly patented technology largely avoids the current limitations of liquid hydrogen storage. Using novel nano-materials, Nanomix hydrogen storage systems will meet the performance needs of automotive and portable electronic applications. These advancements lower the weight and raise the storage temperature of liquid hydrogen, dramatically reducing costs. Typically hydrogen is stored at 20 K, Nanomix technology makes storage possible at temperatures greater than the liquefaction temperature of nitrogen, 77 K. The system employs a combination of thermal insulation and a cold enclosure for the storage and controlled distribution of hydrogen as a high-energy fuel. This setup largely avoids the storage life limitations, energy penalties, and/or weight penalties associated with other technologies for liquid hydrogen storage as well as high-pressure gas-phase hydrogen storage. [www.nano.com](http://www.nano.com)

## UK chemists seek hydrogen store

Hydrogen as a gas is expensive to compress or liquefy. Now, Newcastle and Liverpool University teams have discovered how to store large quantities of hydrogen in super-porous materials based on carbon and nickel. They describe their work in the journal *Science*. An uncompressed hydrogen gas fuel tank would be more than 3,000 times bigger than petrol tank, if it contained an equivalent store of energy. Some metal alloys that can absorb up to 1,000 times their own volume of hydrogen; and minuscule cylinders of carbon atoms, known as nanotubes, that are more efficient still. Both of these solutions have their drawbacks. A number of synthetic materials including a blue solid containing carbon, nickel, nitrogen and a little oxygen which together form a crystalline "tongue and groove" structure have been studied. There are tiny nano-size gaps and these pores will also close hydrogen inside. The hydrogen is loaded at high pressure but stored in them at a much lower pressure, and it does not release without easily: a change in temperature is needed [news.bbc.co.uk](http://news.bbc.co.uk).

## The cleanest hydrogen internal combustion engine concept by Ford

Ford introduced in Challenge Bibendum in China (October 2004) a new 2.3 liter hydrogen engine with Lean NOx Trap (LNT), meeting the SULEV-Bin 2 emission standards, believed to be world's cleanest engine after coming to production within some 12-24 months. Ford's target is to meet the most stringent emissions requirements, producing virtually no CO<sub>2</sub> and deliver gasoline-like performance. Ford's Escape Hybrid SUV, H2RV, Ford Focus Fuel Cell Vehicle were also shown at the Bibendum. (see also AMFI Oct 2004).

[www.ngvnetwork.com](http://www.ngvnetwork.com)

## Fuel Cell Cars

- "Major Fleet Penetration" by fuel cell cars would take another 40 years, but new diesel and gasoline technology 20-30 years. *Diesel Fuel News September 27, 2004*.
- Ford Hydrogen ICE Shuttle Bus to Florida (Dynetek Storage On Board). Florida's State Government ordered 8 of the V-10 vehicles next year. [www.ngvnetwork.com](http://www.ngvnetwork.com)
- DETROIT, Jan 12, 2005 (Kyodo via COMTEX) -- Honda Motor Co. announced Tuesday that it will start leasing its pollution-free fuel cell vehicles to individual customers in the United States by the end of 2005, becoming the first automaker to do so. [www.fuelcelltoday.com](http://www.fuelcelltoday.com) Honda FCX progress (see AMFI News October 2004): Honda has been leasing the FCX in the US and Japan since December 2002. New Honda FCX fuel cell vehicle is capable of starting in sub-freezing temperatures. The driving range of the new FCX is 430km. The ultra capacitor provides over 10% more energy storage, 20 kW higher power output than the previous model, and improved acceleration performance. The new features include also Traction Control System to ensure ideal torque transmission even on snowy roads and other slippery surfaces and Honda HDD Navigation System with voice recognition and program to indicate the location of hydrogen stations. [www.fuelcelltoday.com](http://www.fuelcelltoday.com)

## MISCELLANEOUS

### General

- Renault/Nissan: Diesels beat hybrids on over-all fuel economy; hybrid is good below 35 km/h, but above that diesel is better for fuel economy and CO<sub>2</sub>. *Hart Diesel Fuel News November 8, 2004*. This was experienced in Seattle where no benefit in fuel economy was obtained with diesel-hybrid buses running on suburban area with a lot of highway running. *DieselNet Mail December 2004*.

### Emissions & fuel properties

- Toxic emissions of air pollutants from road transport are falling, despite a growth in traffic in Europe. However, greenhouse gas emissions from road and air transport increasing due to a rise in transport volumes that outweighs improvements in vehicle efficiency. International aviation emissions are rising especially fast, and are as yet not covered by the Kyoto Protocol. One notice was that engine test do not reflect how engines are used in the real world and it may be part of the reason why air quality in cities is not improving as fast as vehicle fleet data suggest it should. Another important issue is the increasing use of electronic engine modification of diesel engines (chip tuning). A recent report estimates that as many as half of new diesel cars may have been modified, and that the effect on emissions has been a strong growth (up to a factor of three) especially in particle emissions. [Ten key transport and environment issues for policy-makers TERM 2004: Indicators tracking transport and environment integration in the European Union. TERM 2004, EEA ReportNo 3/2004](#). Most of US 1993-1999 HD engines used chip to reduce fuel consumption with penalty on NO<sub>x</sub> during steady-state highway cruising. This was deemed by the EPA. Now CARB approved a mandatory "chip reflash" program to update software to low NO<sub>x</sub> version. *DieselNet Mail December 2004*.
- In Japan the most stringent emission standards in the world will take place from October 2005. Nissan Diesel released a 25-ton GVW truck with urea-SCR catalyst. Urea SCR was featured also by Mitsubishi Fuso Truck & Bus Corporation. 800 fuel stations in Japan have agreed to supply urea. *DieselNet Mail November 2004*.
- 10 ppm sulfur limit in Japan from Jan 1, 2005. *DieselNet Mail December 2005*.
- A new HFRR lubricity limit 520  $\mu\text{m}$  in US from 1 January 2005 (likely to be delayed). Even tougher limits in 2006. *Hart Diesel Fuel News, November 22, 2004*.

## Exhaust aftertreatment

- FBC/DPF (fuel borne catalyst, diesel particulate filter combo cheap and effective. Rhodia, Airmeex and IFP reported encouraging results on "Eolys" FBP/DPF retrofits on busses in France. *Hart Diesel Fuel News October 25, 2004.*
- Active particulate filter from STT Emtec, Sweden. Diesel fuel is injected in to exhaust when regeneration is needed. *DieselNet Mail November 2004.*

## PUBLICATIONS

- ◇ New IEA brochure on Transport. Soon available in the IEA webpage.
- ◇ Transit bus emission study: comparison of emissions from diesel and natural gas buses, October 2004, Nylund et al. <http://www.vtt.fi>
- ◇ Ten key transport and environment issues for policy-makers TERM 2004: Indicators tracking transport and environment integration in the European Union. TERM 2004, [EEA ReportNo 3/2004](#).
- ◇ Ending the energy stalemate: A Bipartisan Strategy to Meet America's Energy Challenges. The national commission on energy policy, December 2004.
- ◇ Arctic Climate Impact Assessment (ACIA): Artic warming nearly twice faster than rest of the globe. [amap.no/acia/](http://amap.no/acia/)
- ◇ The Particle Pollution Report: [Current Understanding of Air Quality and Emissions through 2003](#).
- ◇ US DoE: Annual Energy Outlook 2005. [Early Release](#).
- ◇ Austrian Biofuels Institute (ABI) has published three new Biodiesel studies and 1 DVD-Video: "Professional usage of Biodiesel in City Bus Fleets" DVD-Video. Review of Biodiesel Production reports about Biodiesel initiatives in 34 countries and Biodiesel production activities in 14 countries. "Best Case Studies on Biodiesel Production Plants in Europe", "Review on Biodiesel Standardisation Worldwide".
- ◇ Farm-scale Production of RME and Ethanol for Heavy Diesel Engines. Sven Bernesson, Swedish University of Agricultural Sciences. Agraria 497. Doctoral Thesis. Uppsala 2004. Follow [Link](#)
- ◇ Life cycle assessment of rapeseed oil, rape methyl ester and ethanol as fuels. Sven Bernesson. Swedish University of Agricultural Sciences. Rapport 2004:01. Follow [Link](#)

## IEA & IEA/AMF News

### Update of AMF website

TEC TransEnergy Consulting, with help from Riku Vihavainen at VTT, has now updated the AMF website: General parts, mission & objectives, participants, technical contact info, Annex info, logbook and links on public area are updated. Downloadable documents include all freely available documents, also the End-of-Term Report and the Strategic Plan. The long Publications list no longer exist (reports are under "Annex Info"). Many updates on Members Area were carried out as well (Annex Information/proposals, Contact Information, Country reports, ExCo Documents, Library, Strategy and Miscellaneous). Corrections, feedback and suggestions how to improve the AMF website are welcome.



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