ALTERNATIVE FUELS IN THE UNITED KINGDOM

Biodiesel

Following the introduction of a duty incentive of 20 pence per litre in July 2002, the market for biodiesel has been expanding in the UK. Consumption is currently approximately 400,000 litres a month, largely split between domestically produced biodiesel from recovered vegetable oil, and imported biodiesel produced from rape seed oil. The majority of the fuel is being used as a 5% blend in ultra low sulphur diesel.

Consumption of biodiesel in the UK is expected to continue to increase. Along with other European states, the recently agreed Biofuels Directive requires the UK to set targets for bio-fuels use for 2005 and 2010. Currently a new plant is being built in Scotland, which will convert recovered vegetable and animal oils into 45,000 tonnes of biodiesel a year.

Output of biodiesel in the UK will also be boosted when the European Animal By-products Regulations come into force, banning the feeding of vegetable oils to livestock, due to come into force in November 2004. An estimated 100,000 tonnes a year of recoverable vegetable oils currently used for animal feed will then become available for biodiesel production.

Bio-ethanol

There is currently no bio-ethanol sector in the UK. However, a 20 pence per litre duty incentive is planned for bio-ethanol effective from 1 January 2005. It is expected that this will drive investment in a bio-ethanol industry. The main use of the fuel is likely to be as an oxygenate added to gasoline at a 5% blend.

Natural gas

In the UK natural gas (NG) tends to be used in heavier commercial vehicles such as trucks and refuse vehicles. There are currently around 800 natural gas vehicles in the UK, and around 24 fast fill NG refuelling sites. The UK Government has taken important steps to encourage and support the move to low carbon transport fuels by introducing a graduated Vehicle Excise Duty for cars based on CO_2 emission levels, company car taxation based on CO_2 and fuel duty differentials. Natural gas is also encouraged as fuel duty on gaseous road fuels is much lower than diesel.

LPG

There are now around 80,000 LPG cars - all dual fuelled, and around 1,200 filling stations in the UK. The PowerShift program provides grants to individuals and companies to convert their vehicles to LPG, as well as grants to buy new vehicles that run on LPG. LPG use is further encouraged by lower taxes and duties.

Hydrogen

The UK is supporting R&D into hydrogen vehicles and fuelling infrastructure. This includes supporting fuel cell research and making hydrogen projects a high priority in the Carbon Trust's Low Carbon Innovation programme. There are two demonstration projects planned for hydrogen buses in the UK. As part of the Clean Urban Transport for Europe (CUTE) initiative, three hydrogen fuel cell buses will be trialed in London from the end of 2003. A further trial of hydrogen buses is planned to take place in Cambridge in 2005 as part of the Urban Integrated Solar Hydrogen Economy Realisation Project (USHER). The UK Government has also announced taxation incentives to encourage the development and take up of hydrogen vehicles.

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IEA AMF/AFIS Fuels Update

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Newsletter on automotive fuels for the members of the Implementing Agreement on Advanced Motor Fuels of the IEA (IEA AMF)

Colophon

Fuels Update is released under the authority of the Implementing Agreement of the Advanced Motor Fuels Agreement of the International Energy Agency. Fuels Update, issued by IEA AMF/AFIS, gives short summaries on recently published articles, reports and books in the field of (advanced) motor fuels, without giving any rating to the information presented.

For your comments, suggestions or when you have news items that you wish to get known among the IEA AMF members and a wide variety of organisations working in the field of automotive fuels please contact:

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This newsletter is distributed by the delegates of the participating countries of IEA AMF, who are listed on page 4.

'The petroleum age is just beginning'

'Oil is by far the cheapest, most abundant, and cleanest source of energy we have. (...) The age of petroleum has only just begun', according to David Fleming, associate professor of geology and geophysics at the University of Oklahoma. He argues that for more than 80 years, 'geological estimates of the world's endowment of oil have risen faster than humanity can pump it out of the ground.' Estimates are still revised upward, because technological advances make it possible to draw upon petroleum resources whose extraction were once unthinkable. For example, tar sands found in Canada and South America contain 600 bn barrels of oil, enough to supply the US with 84 years of oil at the current consumption rate. Worldwide, the amount of oil that can be extracted from oil shales could be as large as 14,000 bn barrels -- enough to supply the world for 500 years.'

Alternative energy sources

Others think there is still enough reason to look into the possibilities of alternative energy sources. At BBC News Online, futurist Peter Schwartz says the need for hydrogen to replace oil cannot be ignored any longer: 'Scientists estimate that the days of cheap oil will end anywhere between 2007 to 2040.The stakes are high and energy independence bears directly on US self-determination. (…) This is the right moment to launch a commitment to hydrogen power.'

Schwartz believes fuels cells will take over from the regular combustion engine: 'By 2013 a third of all new cars sold could be hydrogen-powered, 15% of the national gas stations could pump hydrogen, and the US could get more than half its energy from domestic sources.' To date DaimlerChrysler, Ford and GM have spent roughly $2bn developing fuel cell cars, trucks and buses.

'Poor short term strategy'

'Hydrogen cars are a poor short-term strategy, and it's not even clear that they are a good idea in the long term', believe Alex Farrel and David Keith, energy experts from the Berkeley University of California. They compared the cost of developing fuel cell vehicles to the cost of other strategies for achieving the same environmental and economic goals. When it comes to reducing air polluting, slowing down global warming and reducing dependence on oil imports, there is a better, faster and cheaper way, they argue.

Improvements to current cars and current environmental rules are more than 100 times cheaper than hydrogen cars at reducing air pollution. And for several decades, the most cost-effective method to reduce oil imports and CO_2 emissions from cars will be to increase fuel efficiency, the scientists found. 'You can get a significant reduction pretty inexpensively by raising the fuel economy standards or the fuel prices.'

Cleaner Diesel

Meanwhile, research to into the conventional fuels is still going on.

Like for instance the EUDIESEL programme, supported by the European Commission. In EUDIESEL, DaimlerChrysler and the Centro Richerce Fiat together with automotive parts manufacturer Bosch and partners in universities in Belgium and the UK work together to build a new generation diesel engine that will combine high fuel efficiency and low emissions.
The goal of EUDIESEL is to develop DI diesel passenger cars as clean as gasoline cars in the year 2005, but with lower CO_2emissions than today's DI models.
Development of the cleaner diesel will require the use of a combination of advanced technologies in the fields of fuel injection and combustion, air and exhaust gas recirculation management, and exhaust gas after-treatment for NO_x and particle emission reduction. These technologies include very high-pressure fuel injection, based on piezo-electric actuators, electronic valve control (electro-hydraulic variable valve actuation) and homogeneous charge compression ignition, which can reduce emissions of NO_x and soot.

News World Communications; www.daimlerchrysler.com; http://news.bbc.co.uk; www.gasandoil.com

BIOMASS

Jojoba as motor fuel

Jojoba oil may prove a viable alternative to diesel fuel for cars and trucks. Test results from the United Arab Emirates University in Al-Ain and at the Helwan University in Cairo show that jojoba-fuelled engines emit fewer pollutants, run more quietly and for longer, and perform just as well as diesels.
Jojoba is a desert shrub producing nuts that yield half their volume in oil. It can be grown in hot climates, salty soils and even deserts. Engineers think the non-toxic oil has potential as a motor fuel because it releases a lot of energy when it burns and is chemically stable at the high temperatures and pressures in a working engine.
In tests, jojoba fuel matched diesel for torque and power over the engine speeds they tested, between 1000 and 2000 revolutions per minute. Moreover, the jojoba combustion gases took slightly longer to reach maximum pressure in the cylinder, which the researchers think may explain why the engine ran more quietly on the oil.
Jojoba contains less carbon than fuels like diesel and contains no sulphur. Jojoba also has a higher 'flashpoint' than diesel.

Source: New Scientist

HYDROGEN

EU and US sign hydrogen and FC accord

At the Washington summit in June, US president Bush, European Commission President Prodi and Simitis, currently the President of the European Council, signed an accord pledging closer collaboration in the development of the hydrogen economy.
The joint statement was the result of a number of planning activities that began in March with meetings by Energy Secretary Spencer Abraham and EU Research Commissioner Philippe Busquin in Brussels. More talks came in April in Brussels, continuing at the G-8 Summit in early June in Evian, France, and at a hydrogen economy conference in Brussels June 16-17, where Abraham signed a fuel cell development agreement with Busquin.

www.hfcletter.com

Home refueler

Shell Hydrogen and the Belgian Vandenborre Technologies signed an agreement in June about the marketing of a small electrolyzer developed by Vandenborre which generates hydrogen from tap water. A hydrogen vehicle (with gas tank) can be connected to the device in the evening and has a full tank in the morning.
Shell will conduct market analysis of the potential of home hydrogen refuelling, while Vandenborre will develop and manufacture home refuelling units. The companies expect to introduce a first prototype for field testing within a year.

www.hyweb.de/gazette-e

ETHANOL

Canadian fuel blend

According to the The Ottawa citizen, the Canadian government is considering a law that would force oil companies to mix up to 10% ethanol into gasoline as a way to cut green house gases under the Kyoto protocol.
Also in European countries like the Netherlands an ethanol fuel blend is being considered.

www.greenfuels.org; www.nu.nl

LPG

UK ends LPG subsidy

The UK government is planning to end subsidies on LPG powered vehicles. The current UK financial incentives for the use of LPG as an automotive fuel will end in 2004 *(see also page 4 of this newsletter: alternative fuels in the UK).*
Because of its 'green' value LPG currently enjoys valuable tax breaks, with auto fuel duty a 6.5 pence per litre, against 45.8 pence for petrol and diesel. These incentives are needed as autogas has a 20% lower mileage per litre compared to petrol, and LPG cars tend to be more expensive.
Currently, 100,000 out of 28 million cars in the UK run on LPG.

Datamonitor, Aug. 27, 2003

GASOLINE

UAE goes green

January this year, the United Arab Emirates (UAE) started phasing out leaded gasoline and replacing it with unleaded fuel. The UEA had asked importers of vehicles not to bring in any vehicle that uses leaded fuel from January 2002.By 2007, all vehicles will have to be powered by unleaded gasoline.

www.uaegoesgreen.com

MISCELLANEOUS

Premtech II

Delegates from some 40 GROWTH-funded projects met at the annual review of the Premtech II thematic network in Thessaloniki, Greece, on 12-13 June. Premtech is co-ordinating the work of 40 projects developing clean, efficient and intelligent internal combustion engines running on both conventional and alternative fuels. The overall aim was to improve fuel efficiency and reduce harmful emissions while keeping vehicle performance at acceptable levels for customers.

More details can be found on the network's website: www.networkpremtech.org

Rise of European GHG emissions in 2001

EU greenhouse gas (GHG) emissions for 2001 have risen, according to annual data published by the European Environment Agency (EEA). The 0.1% rise in 2001 -the latest year for which GHG data is available- was also due to a cold winter, leading to increased domestic fuel consumption, and higher emissions from transport. It is the second consecutive year in which emissions have risen, moving the EU further away from its GHG reduction targets by the 2008- 2012 period. Under the Kyoto Protocol the EU must reduce emissions to 8% below 1990 levels. Despite the increase from 2000, EU GHG emissions in 2001 stood 2.3% below 1990 levels.

www.iea.org

NEWS FROM THE AMF

Clean Vehicle Deployment Strategies

The Implementing Agreements Hybrid and Electric Vehicles and Advanced Motor Fuels have released the results of their joint analysis of 92 government incentives in 18 countries on the market introduction of clean vehicles in the report Annex 21 *Deployment Strategies for Hybrid, Electric and Alternative Fuel Vehicles Report*. The report outlines four definitive steps towards a 'clean-vehicle market': creating awareness about clean vehicles, expanding know-how and experience, promoting specific areas or applications, and making the vehicle available like any consumer product. Roadblocks for these steps are defined as well as key lessons learned. The Report is available on CD-Rom from Ms Sigrid Kleindienst Muntwyler: muntwyler @solarcenter.ch. A Synthesis will soon be available in print as well.

www.ieahev.org; Hybrid & Electric Vehicle Newsletter- Volume 4, issue 1.

VTT newsletter

On September 25, the first e-mail newsletter of AMF delegate VTT of Finland was distributed, bringing news updates on the most important R&D projects and results that VTT is involved with. The newsletter, scheduled to appear four times a year, consists of the latest research results, technology-related comments, information on upcoming seminars and conferences, resumes of lectures by VTT research scientists in international seminars, and a list of VTT's latest scientific publications.

For a subscription to the free-of-charge newsletter go to: www.vtt.fi/vtt/newsletter

Closer look at the UK

In May 2003, AMF delegates of Spain, Japan and the United Kingdom as well as HEV participant Switzerland drafted a summary of the current national situation regarding to the use and policy of alternative transportation fuels. In the May issue, we published details regarding the situation in Spain. Hereafter, we will have a closer look at the situation in the UK.