

competitive. Especially when in Europe the tax for biodiesel will be reduced.

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## HYDROGEN

### Hydrogen Buses

The European commission has awarded EUR 18.5 million (US\$16,2) under the ENERGIE program, to the CUTE (Clean Urban Transport for Europe) demonstration project to support nine European cities (Amsterdam, Barcelona, Hamburg, London, Luxemburg, Madrid, Porto, Stockholm and Stuttgart) in introducing hydrogen into their public transportation systems. 27 Fuel-cell powered buses will be delivered in 2003. The fleet will run on hydrogen produced and refueled locally. 40% Of the hydrogen will originate from renewable energy sources. Bus operators in each city will build a filling station for gaseous hydrogen. Nine different hydrogen production and refilling possibilities will be tested to provide each city with the best possible solution. The performance of the buses, which will accommodate up to 70 passengers, will be comparable to conventional diesel buses.

Source: CADDET Renewable Energy, Issue 1/02. Co-ordinator CUTE project: Evobus GmbH, Manfred.Schuckert@evobus.com.

## NEWS FROM THE IEA

### Clean Energy vehicles in developing countries

Cities in developing countries, such as New Delhi or Beijing are giving high priority to clean air. Operating agent ENEN AB of Sweden, announced in the Newsletter for IEA's IA on Hybrid & Electric Vehicle a workshop in Paris on September 24 and 25, 2002, to come to an Annex on Clean Energy Vehicles. IEA is supporting this initiative, and the Swedish International Development Agency (SIDA) has agreed to finance the participation of delegates from developing countries, as well as sharing their own knowledge and experience in this area at the workshop.

#### participants

ENEN is planning on 40 to 60 participants from IEA Implementing Agreements, industry, environmental organizations and aid organizations. Topics to be discussed are:

- What is the potential for cleaning the air and reducing oil imports by new transport technology?
- What lessons can be learned from successes and failures?
- What is the role of developing countries, the donor community, and multi-nationals?
- An action program for clean city 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.*

*End of the U.S. PNGV Partnership for a New Generation of Vehicles*

## U.S. Department Of Energy starts Freedom Car program

At the North American International Auto Show, US Energy Secretary Spencer Abraham announced the new government-industry research program to bring fuel cell technology from the laboratory to the road. The long term goal of the new Freedom CAR (Cooperative Automotive Research) is to develop technologies for hydrogen-powered fuel cell vehicles that will require no foreign oil and emit no harmful pollutants or greenhouse gases. Freedom CAR will focus on technologies to enable mass production of affordable hydrogen-powered fuel cell vehicles and the hydrogen-supply infrastructure to support them. The question what will be the basis for the hydrogen production however remains unanswered in the new program.

#### replacing PNGV

The Freedom CAR program replaces the PNGV (the Partnership for a New Generation of Vehicles), initiated in 1993. The original objective of the program was to develop an affordable, 80 mpg (2.94 l/100 km) family sedan by 2004. The program still wedded to gasoline as an essential source of power. The National Research Council concluded in a recent PNGV review that the program was not likely to succeed. The government funding amounted to US\$ 814 million, while the industry –General Motors, Ford, and DaimlerChrysler, also the industrial partners of the new Freedom CAR program- spent over US\$ 980 million.

If successful, fuel cell vehicles are likely to require at least 10-20 years of development before reaching the market. While environmentalists are excited about the use of fuel cells, many think the transition could take too long. They also believe that it does nothing to address the need for improved fuel efficiency in the short term.

#### „pointed in the right direction“

David Hawkins of the Natural Resources Defense Council said the program „is pointed in the right direction, but by itself it's going nowhere.“ Noting that it takes at least 10 years to bring fuel cell powered cars to the market, during which time Americans will buy about 150 million vehicles, Hawkins warned that the U.S. „can't afford another research program that gives just billions of dollars in subsidies to the automobile industry with no commitment from them to actually produce advanced vehicles for consumers to buy.“ „We have the technology to raise fuel economy standards now for the cars that Americans will buy on the next decade“, Hawkins added. „Doing that will save billions of barrels of oil while fuel cell vehicles are being developed.“

## barriers

The Environmental Defense Council released a study highlighting some of the barriers facing the automotive industry's commercialization of fuel cell vehicles in *Fuel Cell Vehicles: Technology, Market, and Policy Issues*. The study calls on the automotive industry to take a proactive approach in addressing these barriers. A gap of an additional 10 - 15 years is identified before it is economically feasible to mass market fuel cell vehicles. The absence of higher fuel economy requirements for the industry will inevitably slow the development of fuel cell technology and the quickest way to close this "deployability gap" is for the automotive industry to address the fuel economy issue, according to the report.

Sources: *Automotive Engineering International*, Feb. 2002; [www.dieselnet.com](http://www.dieselnet.com); [www.energy.gov](http://www.energy.gov); [www.carttech.doe.gov](http://www.carttech.doe.gov); [www.techtv.com](http://www.techtv.com); *Environment news Service*, Jan. 9, 2002.

More information on the report *Fuel Cell Vehicles: Technology, Market, and Policy Issues* (by John DeCicco) can be found on: <http://www.ott.doe.gov>.

## NATURAL GAS

### GTL industry in Middle East

The huge Middle East natural gas reserves, specifically in Iran and Qatar, have encouraged international companies to develop GTL (gas to liquid) factories in this region. The managing director of an international company, Narges Qorban, on the second day of the Seminar on Middle East Energy Strategy up to 2014, said: "It seems that the first

half of the 21st century will be the natural gas era."

The rapid rise in the global demand for natural gas has continued in the last decade. Based on the latest estimates of the International Energy Agency, demand for natural gas will double by 2020. The demand for oil and coal will increase by 60 and 38% respectively in this period, the agency said.

### high investment

Qorban noted that the production of valuable oil products from natural gas is one of the suitable alternatives for earning revenue from natural gas resources. She said that high investment costs and low crude oil prices have been the main obstacles in the way of developing GTL technology in the past.

Source: [www.gasandoil.com/goc/frame\\_nite\\_news.htm](http://www.gasandoil.com/goc/frame_nite_news.htm); volume 7, issue #5 - Wednesday, March 06, 2002; *Tehran Times*, Feb. 19, 2002.

## BIOGAS

### Sweden finances alternative vehicles

The Swedish National Energy Administration has allocated funding for 2 technology procurement projects focused on vehicles.

Stockholm Maskin och Fordon AB will receive a total of SEK 325,000 (about 36,000 EUR) to finance Stage 1 and Stage 2 respectively of two technical procurement projects. The funding will be provided in accordance with the authority's commitment to support the procurement of energy efficient technology and new energy technology.

Part of the funding will be for Stage 1 of the "Techno-

logy procurement - biogas vehicles" project, which involves managing and coordinating the procurement of normal-sized biogas cars, and heavier vehicles such as dustcarts, lorries and buses. Biogas is considered to be one of the best alternative fuels, particularly for diesel vehicles in local use.

### completed

Stage 1 is a preliminary study aimed at investigating the interest and needs of the purchasing groups, as well as finding suitable vehicles, which have moved beyond the prototype stage. This study is to be completed by spring 2002. The next stage of the project will focus on increasing the use of biogas and, to a lesser extent, natural gas at the 10 locations in Sweden that currently have operational production and filling facilities for biogas. The procurement is also expected to lead to technical and product development.

### hybrid vehicles

The other part is allocated to Stage 2 of the "Technology procurement - hybrid vehicles" project. The aim of Stage 2 is to procure around 50 electric scooters, 400 hybrid vehicles, around 30 tool carriers for municipalities and approximately 5 hybrid lorries. The procurement is expected to provide attractive purchasing terms for the buyers, as well as facilitating the introduction of these vehicles onto the Swedish market.

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## DIESEL

### NOx reduction

PSA Peugeot Citroën recently presented a Peugeot 206 demonstration car equipped with a plasma-assisted NOx reduction catalyst and particulate filter, developed with Delphi Automotive Systems. Potential advantages of the technology include sulphur tolerance and a wide operating temperature.

Source: *Infineum Insight*, no. 13, March 2002.

### Sulphur free fuel

Edinburgh is the first city in the world to offer both sulphur free unleaded gasoline and sulphur free diesel. These new, cleaner fuels have been available at 18 BP service stations in the Edinburgh area since 18 February 2002. BP's service stations in Scotland will be the first in its worldwide network to sell both fuels.

BP Press Release Feb.18, 2002; <http://www.bp.com/centres/press>

### New diesel filter

Japanese researchers have developed a purifier that filters nearly 90% of toxic diesel exhaust particles (DEPs) from engine emissions by using an extract of the Japanese cypress tree. The advent of the new purifier is attracting interest because, in addition to its effectiveness, it costs a fraction of a conventional diesel emission filter. The system was developed by researchers from the Kochi University of Technology in Southern Japan and a Tokyo-based start-up firm Juon Medical System. Juon developed a filter that contains volatile extracts from the Japanese cypress tree.

### cypress oil

The filter uses a mixture of 99% water and 1% cypress oil to produce a vapor, which is mixed with diesel emissions causing the DEPs to attach to the cypress oil particles and be collected. Conventional filters for diesel emissions usually use ceramic to collect and burn toxic particles. They are prone to blocking and emit nitrogen oxides, a source of smog. The conventional devices also are expensive, usually priced around 800,000 to 2 million yen (US\$ 6,031 to US\$ 15,077). The newly developed purifier, on the other hand, would only cost 120,000 to 180,000 yen (US\$ 912 to US\$ 1,368). Researchers plan to put the new system to practical use as early as April 2002.

Source: *AFP Alexander's Gas & Oil Connections*, vol. 7, issue #5, March 6, 2002.

## MISCELLANEOUS

### UK aims for clean transport

The British government aims for world leadership within 10 years when it comes to clean road transport. During this period, 12% of all new cars should be equipped with clean engines, including fuel cells and hybrid engines. At this moment, road traffic is for 22% responsible for all greenhouse gas emissions in the UK.

The plan, in which four ministries are involved, consists of the adaption of road taxes, promotion of research, development and demonstration of new vehicles and advanced motor fuels like LPG, natural gas, hydrogen, methanol and sulphur free gasoline.

### infrastructure

Emphasised will be the cleanest way to produce these fuels. The development of an infrastructure for the production and distribution of new fuels will also be facilitated. (Financial) barriers will be settled to encourage the consumers. For the longer term (2020), a similar ambitious goal for the introduction of fuel cells is under consideration. Last year, the United Kingdom decided to reduce the emissions of the 6 main greenhouse gases with 23%. Based on the Kyoto agreements, the UK would only have to reduce the emissions with 12.5% compared to the emission values of the year 1990.

Source: *Stromen*, Feb. 8, 2002.

## BIODIESEL

### Diesel from biogas

Dutch energy research Centre ECN and Shell Global Solutions International for the first time demonstrated the production of biodiesel from biogas. Willow wood chips were gasified and after purification converted to a wax-like mixture of hydrocarbons, by means of Fischer-Tropsch synthesis. This mixture is cracked to diesel, which can be used directly in passenger cars or trucks. In December 2001, a life test was executed for 150 hours, during which a reactor produced the first 'green' diesel. The next step will be to optimise the purification of the gas.

At this moment, the price of the resulting biodiesel is 2-3 times higher than regular diesel. At the long term, when conversion processes are optimised, ECN expects the biodiesel to be