



The THINK city (electric vehicle) will be for sale in Norway from November 2008. Photo with courtesy of Think ([www.think.no](http://www.think.no)).

*AMFI Newsletter is prepared for the members of the Implementing Agreement on Advanced Motor Fuels of the International Energy Agency (IEA/AMF).*

*AMFI provides four electronic Newsletters yearly describing recent news on advanced motor fuels, vehicles, energy and environmental issues in general. AMFI Newsletter is available on the website:*

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

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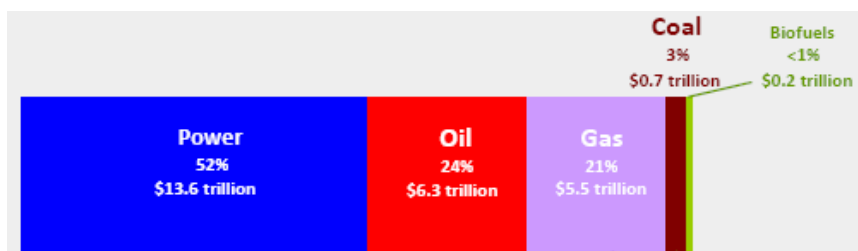
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### PUBLICATIONS

Urgent actions vital to secure energy and climate – WEO 2008

“We cannot let the financial and economic crisis delay the policy action that is urgently needed to ensure secure energy supplies and to curtail rising emissions of greenhouse gases.” said Nobuo Tanaka, Executive Director of the International Energy Agency (IEA) at the launch of the World Energy Outlook (WEO) 2008. WEO 2008 gives projections to 2030 on energy related issues. The trends call for energy-supply investment of \$26.3 trillion to 2030, or over \$1 trillion/year. “Current trends in energy supply and consumption are patently unsustainable – environmentally, economically and socially – they can and must be altered”, said Nobuo Tanaka. “At the same time, greenhouse-gas emissions would be driven up inexorably, putting the world on track for an eventual global temperature increase of up to 6°C.” “One thing is certain”, stated Mr. Tanaka, “while market imbalances will feed volatility, the era of cheap oil is over”.

“National companies are projected to account for about 80% of the increase of both oil and gas production to 2030”, said Mr. Tanaka. Expanding production in the lowest-cost countries will be central to meeting the world’s oil needs at reasonable cost. “Despite all the attention that is given to demand growth, decline rates are actually a far more important determinant of investment needs. Even if oil demand was to remain flat to 2030, 45 mb/d of gross capacity – roughly four times the current capacity of Saudi Arabia – would need to be built by 2030 just to offset the effect of oilfield decline”, Mr. Tanaka added.



Projection of cumulative energy supply investment between 2007 and 2030 in the reference scenario. Source: World Energy Outlook 2008 ([www.iea.org](http://www.iea.org)). © 2008 OECD/IEA.

WEO 2008 also analyses policy options for tackling climate change after 2012. Following current trends, energy-related CO<sub>2</sub> emissions are set to increase by 45% between 2006 and 2030, reaching 41 Gt. 97% of the increase arises in non-OECD countries as a whole. Stabilising greenhouse gas concentration at 550

ppm of CO<sub>2</sub>-equivalent, which would limit the temperature increase to about 3°C, would require emissions to rise to no more than 33 Gt in 2030. Limiting GHG concentration to 450 ppm of CO<sub>2</sub>-eq, involving a temperature rise of about 2°C, is much greater challenge. “Our analysis shows that OECD countries alone cannot put the world onto a 450-ppm trajectory, even if they were to reduce their emissions to zero”, Mr. Tanaka warned. The share of low-carbon energy in the world primary energy mix would need to expand from 19% in 2006 to 36% of global primary energy mix by 2030. In this case, global energy investment needs are \$9.3 trillion (0.6% of annual world GDP) higher; fuel savings total \$5.8 trillion.

Measures to curb CO<sub>2</sub> emissions will also improve energy security by reducing global fossil-fuel energy use. “Even in the 450 Policy Scenario, OPEC production will need to be 12 mb/d higher in 2030 than today.” Mr. Tanaka noted. “It is clear that the energy sector will have to play the central role in tackling climate change.”

Source: IEA Press Release, 12 November 2008, World Energy Outlook 2008 ([www.iea.org](http://www.iea.org)). © 2008 OECD/IEA.

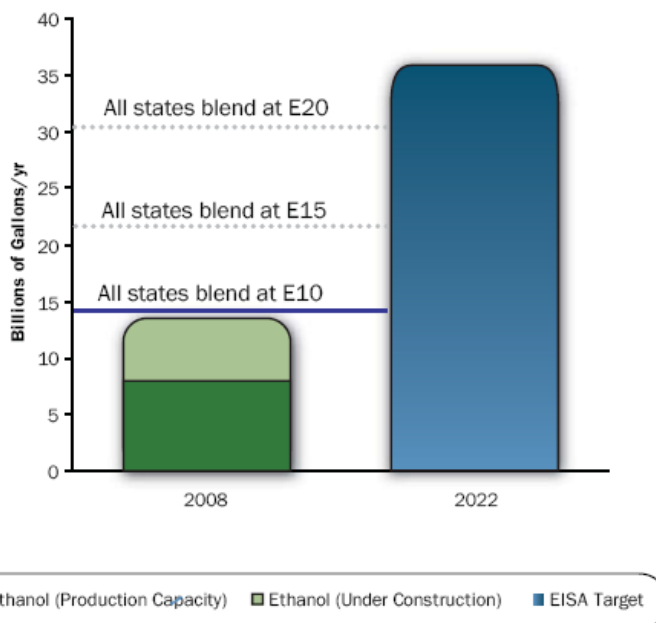
Biofuel target cut in Europe

The January 2008 proposal for a European Directive on renewable energy called for a binding target of a 20% share of renewable energy by 2020 in the EU, with minimum 10% of biofuels in transport (AMFI 1/2008). Since January, increasing concern regarding effects on the food sector and biodiversity loss has raised opposition to the proposed target. In July, the European Parliament’s Environment Committee voted to cut the proposed biofuel target and to expand the definition from biofuels to renewables in general. (AMFI 3/2008). In September 2008, the European Parliament’s Industry and Energy Committee went in a similar direction by backing a report by Claude Turmes. The 10% target by 2020 was confirmed, and an interim 5% target was set for 2015, (lower than the current indicative goal of 5.75% by 2010). A new requirement is that at least 20% of the 2015 target and 40% of the 2020 goal must be met from "non-food and feed-competing" second-generation biofuels or from cars running on green electricity and hydrogen. Also a "major review" of the whole EU biofuel promotion policy and of its social and environmental impacts before 2015 was supported. For biofuels, strict sustainability criteria, including social criteria, would be required as well as an obligation for biofuels to offer minimum CO<sub>2</sub> savings. The current consensus is that to start with, at least 35% CO<sub>2</sub> reduction will be required, and this will increase to at least 50% in 2017, subject to a review in 2014 (Turmes report: 45% and 60%, respectively). As an example, European neat rape seed oil would meet the 50% criteria, but rapeseed methyl ester would not. By 2020, energy efficiency in transport must improve by

at least 20% compared to 2005. European biofuel producers were disappointed of the vote, which shifts the focus away from agro-fuels. *Source: European Parliament, Press release, 11 September 2008 ([www.europarl.europa.eu](http://www.europarl.europa.eu)), EurActiv, 12 September 2008 ([www.euractiv.com](http://www.euractiv.com)).*

## USDA & DOE Release National Biofuels Action Plan

The Department of Agriculture (USDA) and Department of Energy (DOE) released the National Biofuels Action Plan (NBAP) detailing the efforts to accelerate the development of a sustainable biofuels industry. The NBAP was developed in response to the 2007 State of the Union Address. The "Twenty In Ten" goal calls for cutting U.S. gasoline consumption by 20% over the next 10 years by investing in renewable and alternative fuel sources, increasing vehicle efficiency and developing alternative fuel vehicles. The ambitious alternative fuels production target was later followed by the Energy Independence and Security Act of 2007 (EISA) and the Food, Conservation, and Energy Act (FCEA) of 2008. To enhance the impact of federal biofuels investments and enable attainment of the Renewable Fuel Standard (RFS), the NBAP outlines interagency actions and accelerated federally supported research efforts in seven areas:



*Ethanol in different US blending scenarios and RFS target (National Biofuels Action Plan, [www1.eere.energy.gov](http://www1.eere.energy.gov)).*

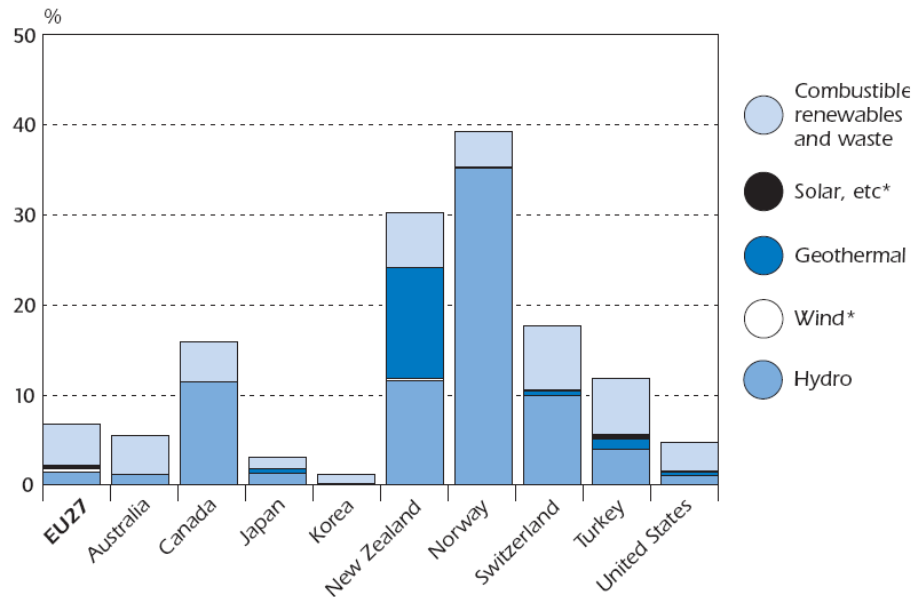
- **Sustainability.** Defining national criteria and indicators to assess sustainable production of biofuels. Establishing a Sustainability Interagency Working Group. Planning a series of workshops with internal and external stakeholders.
- **Feedstock Production.** Environmental implications and balance need to be considered regarding 1<sup>st</sup> generation feedstock (e.g., oilseeds and grain). Utilization of 2<sup>nd</sup> generation feedstock should sustain and enhance water and air quality and other ecosystem services. 3<sup>rd</sup> generation feedstock should be developed to increase drought and stress tolerance; increase fertilizer and water use efficiencies; and provide for efficient conversion. Improvements in the yields of all feedstock will be necessary.
- **Feedstock Logistics.** The Board will facilitate collaboration to develop and deploy logistics systems that can supply cellulosic feedstock to demonstration facilities currently planned for construction.
- **Conversion Science and Technology.** Basic research and applied R&D is necessary to develop cost-effective, commercially viable conversion technologies to support a major move to cellulosic biofuels. The potential also exists to produce other fuels than ethanol, including higher alcohols, renewable gasoline and diesel, and aviation fuels produced via enzymatic and microbial and/or chemical catalytic processing of biomass.
- **Distribution Infrastructure.** A future biofuels infrastructure must address each of the following areas: capital; corrosion; and capacity.
- **Blending.** The US E10 (10% ethanol blend) market will be saturated in the next few years and the number of E85 fuelling stations and flex-fuel vehicles (FFVs) will likely not grow fast enough to accommodate the higher volumes of ethanol required by the RFS, according to the NBAP. One option for increasing biofuel consumption is to use intermediate blends such as E15 or E20.
- **Environment, Health and Safety.** The Board will establish an interagency working group to benchmark agricultural and biofuels industry successes and practices.

The DOE has allocated more than \$1 billion to research, development, and demonstration of cellulosic biofuel technology through 2009. *Source: US DOE Press release, 7 October 2008 ([www.energy.gov](http://www.energy.gov)).*

## IEA Review on the European Union policies

The IEA has reviewed the energy policies of the European Union, which concern almost 500 million citizens in 27 EU member countries. The EU represents a 16% share of world energy demand. The EU has taken "leadership" in addressing climate change. Strong policy drives are underway in the EU to achieve the completion of the internal energy market, increase renewable energy supply, reduce CO<sub>2</sub> emissions and make the EU more energy-efficient. Concerns about security of supply have also led to a greater focus on improved energy relations with supplier countries, and new institutional structures are being put in place. The IEA Energy Policy Review addresses questions like "how much progress has been made in energy policies" and "in which of these areas has the EU already implemented a fully integrated policy". The Review also analyses the impact of the most recent major EU policy measures, in particular the Energy & Climate Package of January 2008 and the 3<sup>rd</sup> Liberalisation Package of September 2007. The Review finds that both of these proposals are highly ambitious. But implementing them and reviewing both volume and allocation of energy R&D will be necessary to achieve a sustainable energy future in a fully competitive integrated EU energy market. *Source: IEA Press Release, 04 September 2008 ([www.iea.org](http://www.iea.org)).*

Renewable Energy as a Percentage of Total Primary Energy Supply in IEA Countries and in the European Community, 2005



\* negligible.

*Renewable energy in IEA Countries and in the EU .IEA Press Release, © 2008 OECD/IEA ([www.iea.org](http://www.iea.org)).*

## CO<sub>2</sub> emissions from cars

In December 2007, the European Commission proposed legislation to cut CO<sub>2</sub> emissions from cars (AMFI 1/2008). The legislation needs to be approved by the European Parliament, but many details are still highly disputed. In September 2008, the Parliament's Industry and Energy Committee first voted for a release of requirements, but later the Parliament's Environment Committee, which has the lead on the issue, rejected these amendments, voting in favour of the Commission's original plans and introducing a long term target for CO<sub>2</sub> of 95g/km by 2020. *Source: Euractiv, 8 October 2008 ([www.euractiv.com](http://www.euractiv.com)).*

The Commission's proposal contains detailed measures for reaching the CO<sub>2</sub> target of 120g/km by 2012 (AMFI 1/2008):

- Automobile manufacturers should reduce average CO<sub>2</sub> emissions to 130g/km through vehicle-technology improvements. The remaining cut (10g/km) is to be achieved by complementary measures such as biofuels, fuel-efficient tyres, air conditioning and eco-driving.
- Financial penalties for exceeding limits will be phased in over four years, starting at €20 per gram of CO<sub>2</sub> in 2012, €35 in 2013, €60 in 2014 and, finally, €95 in 2015.
- Allowed gaps: heavy cars, SUVs and luxury models are allowed if balanced with small models.
- A "pooling" system allowing manufacturing groups to team up to share the burden. Special purpose vehicles are excluded.
- Additional measures, e.g.: promotion of fuel-efficient vehicles via car taxation, labelling rules, possible vehicle CO<sub>2</sub> tax, more research, shift in manufacturers marketing from performance towards more sustainable consumption patterns.
- CO<sub>2</sub> limits for light-duty vans: 175 g/km in 2012 and 160 g/km in 2015.

*Source: Miljöbil 9/2008.*

The car industry average CO<sub>2</sub> emission in 2007 was 158 g/km: ACEA157 g/km, JAMA 159 g/km and KAMA 161 g/km (2008 voluntary target 140 g/km). *Source: DieselNet News, September 2008.*

## EU: clean criteria for public transport

The European Parliament has endorsed a Commission proposal (COM(2007) 817) to make public authorities use 'green' criteria, including energy consumption and CO<sub>2</sub> and pollutant emissions, when procuring vehicles for public transport fleets. The directive will require all public and private authorities, which contract for public transport, to consider the environmental impact of the vehicles they purchase in addition to their price. The operational lifetime costs will be monetised and calculated according to a uniform methodology, which should provide for transparent comparison.

MEPs decided to make the criteria mandatory to all member states, but offered them some flexibility as to the details of implementation. The vote strengthens the Commission's original proposals, advancing implementation by two years to 2010. MEPs also obtained an increase in the costs related to CO<sub>2</sub> emissions, which are to be factored in at a price of at least €30 per tonne, while the EU executive proposed €20 per tonne. The industry has expressed concerns about green procurement measures driving up the purchase, maintenance and operating costs of the whole system. *Source: EurActiv, 23 October 2008 ([www.euractiv.com](http://www.euractiv.com)).*

*Editorial:* The energy cost is more than 80% of the total lifetime costs, using the calculation method in the proposal. As natural gas buses consume more energy than diesel buses, although very clean regarding regulated exhaust emissions, natural gas buses will not be competitive with diesel vehicles using the proposed calculation methodology.

## GASEOUS FUELS (NG, LPG, biogas, DME)

### Biogas potential in Sweden

Avfall Sverige, Gasföreningen and Svenskt vatten, have evaluated the potential of biogas in Sweden. From waste alone, 10.6 TWh of biogas could be collected. This represents 12% of the fossil fuels used in Sweden. If forest residue is taken into account, the total potential would be 74 TWh. There are many advantages with locally produced and distributed biogas. *Source: Rapporten om biogasens potential bifogas! Avfall Sverige, Press release, 3 June 2008. ([www.avfallsverige.se](http://www.avfallsverige.se), [www.newsdesk.se](http://www.newsdesk.se)).*

### Investments needed in NG sector

Over the last 18 months, natural gas prices have continued to rise steadily in all IEA markets as demand of gas has increased together with tight supplies and delayed investments. The IEA Natural Gas Market Review 2008 assesses these trends and looks into projected changes over the next 5-7 years. Past gas market reviews expressed concern about insufficient investment, and these concerns remain. In common with oil markets, the report sees insufficient investment, particularly in the years beyond 2010, together with project delays threatening security of supply.

The report addresses that governments need to streamline regulation, improve market functioning and increase domestic production. LNG trade continues to grow. LNG is increasingly linking different regional markets, providing flexibility and adding security. *Source: Press release, 18 September 2008. Natural Gas Market Review 2008 - Optimising investments and ensuring security in a high-priced environment, © 2008 OECD/IEA.*

## ALCOHOLS, (BIO)GASOLINE

### Bioethanol from waste in Germany, Austria and Switzerland

The Finnish energy company St1 and Marquard & Bahls have signed a letter of intent to establish a joint venture in Germany. The parties are planning to establish a company to use St1's Etanolix®-technology to produce bioethanol from waste in Germany, Austria and Switzerland. This is an opening for St1's waste-based bioethanol business in the Central European market. St1's Etanolix®-technology utilizes waste as feedstock and does not have an impact on food availability or price. This year St1 has already signed a letter of intent to establish a joint venture to create Etanolix® bioethanol production capacity in Japan. *Source: St1 Biofuel News Release, 11 August 2008 ([www.st1.fi](http://www.st1.fi)).*

St1 began blending ethanol into gasoline in Finland in 2006, and a 44 million litre per year dehydration plant was opened in June 2008. Ethanol is produced using Etanolix®-technology, invented by a VTT researcher in Finland. (see AMFI 2/2008).

### Sweden is re-considering support for Environmental cars

In Stockholm, the government is considering to terminate the congestion tax relief for environmental cars despite the earlier

decision to continue it until 1<sup>st</sup> of August 2012. According to the proposal, new cars sold after 1<sup>st</sup> of January 2009 would not be eligible for the congestion tax relief, which would save 30-40 million SEK of government money. However, it is stated that it is even more expensive for the government to subsidise purchasing of environmental cars: 10.000 SEK (~1000 EUR) for each car. For this purpose, 50 MSEK for 2007, 100 MSEK for 2008 and 100 MSEK for 2009 has been reserved. This is not sufficient, and it is estimated that some 400 MSEK might be needed in 2009. This support scheme is in force until 1<sup>st</sup> of January 2010. Today, gasoline cars and diesel cars equipped with particulate filters with CO<sub>2</sub> emissions below 120 g/km are defined as Environmental cars, as well as E85 and methane fuelled cars with fuel consumption below 9.2 litres of gasoline equivalent per 100 km. New limits under discussion are 110 g CO<sub>2</sub>/km and 7.3 l/100 km, respectively. This might halve the funding needed for support. No Saab models and only one Volvo model, the C30 1.8F, would meet the new Environmental car definition. Today, ethanol cars represent 65–70% of the sales of Environmental cars in Sweden. *Source: Miljöbil. September 2008.*

## Sugar Palm - Sustainable Energy

In Indonesia, the Eco Integration project aims to produce bioenergy from 1 million hectares of mixed sugar palm forests managed by local communities. The amount of energy obtained equals about half of Netherlands's need for gas and electricity. "Sugar palm trees have been planted with other shrubs and trees on totally degraded soils" according to forestry researcher Willie Smits, who is collecting funds to finance sugar palm forests also in other countries, such as Colombia and Tanzania. Sugar palm trees produce sugar, which is derived from its flowering branches. By tapping the sugar via a special procedure, a fermentation process turns it into ethanol. Together with local Indonesian enterprises, the Eco Integration project will set up export- and transport systems, with among other destinations the port of Rotterdam. Smits has set up a satellite-based monitoring system that controls the forests and its local users for European biofuel sustainability standards. "The trees grow best on eroded hills and in combination with crops such as bamboo, vanilla, bananas and figs. The sugar palm requires less water, needs no artificial manure and is six times as productive as sugar cane." *Source: WorldConnectors News, 8 October 2008 ([www.worldconnectors.nl](http://www.worldconnectors.nl)).*

## BIODIESEL ESTERS

### Germany: biofuel quota lowered, palm, soy and B99 excluded

On 24th of October the German Government decided to lower the quota for biofuels by 1% to 5.25% by 2009 and 6,25% for the period 2010 to 2015. In 2011 the quota will be revised to guarantee the sustainability of biofuel production. For the first time, upgraded biogas will be eligible to count for the petrol quota while biofuels based on palm- or soy oil will be excluded until sound sustainability criteria including ecological and social requirements for the biofuel production are legally effective. Further on, imported biofuels having already enjoyed public support in their origin (e.g. B99) are not eligible to count on the quota any more.

Associations organised in the German BioEnergy Association (BBE) criticised the lowering of the quota. On the other side the German Farmer's Union (DBV) welcomed the exclusion of palm- and soy oils and the exclusion of already supported imports as this would contribute to strengthen competitiveness of domestic biofuel producers. *Source: German BioEnergy Association (BBE), 28.10.2008.*

## SYNTHETIC AND RENEWABLE DIESEL

### Comparison of coal and natural gas

In the U.S. neither coal-to-liquids (CTL) nor gas-to-liquids (GTL) seems reasonable in regard to greenhouse gas emissions. On a life cycle basis, CTL and GTL fuels would likely lead to considerable GHG emissions increases compared to petroleum-based fuels. CTL could emit about double the GHG emissions of petroleum-based gasoline and diesel. If CCS and low-carbon electricity is used on the CTL plant, life cycle GHGs of CTL is about equal to today's gasoline and diesel. GTL from domestic or imported natural gas would increase GHG emissions by 20–25%. If LNG is used to make GTL, an increase of around 50% could be observed. In addition, the economic advantages of GTL fuels are not obvious. If oil costs \$120/bbl, then GTL fuels are not economical when natural gas is above \$15/MCF. In addition, energy security is not enhanced with GTL fuels if shares of imported LNG (or GTL) are increased. CTL fuels are generally cheaper than petroleum-based fuels, and CTL is more economical than petroleum when oil costs \$120/bbl. There is some uncertainty about the availability of economically viable coal resources in the U.S. if consumption rates significantly increase. *Source: Jaramillo, P. et al. (2008). Comparative Analysis of the Production Costs and Life Cycle GHG Emissions of FT Fuels Produced By Coal and Natural Gas. Environ. Sci. Technol. Online 18 September 2008. DOI: 10.1021/es8002074.*

## Optimising engine settings for HVO

A study on NO<sub>x</sub> – particulate emission – fuel consumption trade-off using different fuel injection timings in a turbocharged charge air cooled common-rail heavy-duty diesel engine was recently reported. The test fuels were sulphur free diesel fuel, neat hydrotreated vegetable oil (HVO), and a 30% HVO + 70% diesel fuel blend. The study showed that there is potential for optimizing engine performance on neat HVO, either for reduced emissions or for reduced fuel consumption. With constant NO<sub>x</sub>-emissions, mass based fuel consumption can be reduced by as much as 10%. Hydrotreating of vegetable oils or animal fats is an alternative process to esterification for producing biobased diesel fuels, which are straight chain paraffinic hydrocarbons, free of aromatics, oxygen and sulphur plus have high cetane numbers. *Source: Aaltola et al. Hydrotreated Vegetable Oil (HVO) as a Renewable Diesel Fuel: Trade-off between NO<sub>x</sub>, Particulate Emission, and Fuel Consumption of a Heavy Duty Engine. SAE Technical Paper 2008-01-2500. October 2008 ([www.sae.org](http://www.sae.org)).*

## OTHER FUELS AND VEHICLES

### EV breakthrough?

High expectations are laid on Electric Vehicles today. However, there might be a few bumps on the road to success. Joachim Fetzer, responsible for developing batteries within German Bosch, says in the VDI Nachrichten magazine that IC engines will maintain the lead position in vehicle propulsion for at least the next 20 years to come. There are many problems with batteries, life-time is one: it is impossible to find e.g. Li-ion batteries with even 10 years life-time. Today batteries require a 25°C operation temperature, otherwise ageing is fast. Batteries should operate from -30°C to +70°C. One problem is linked to high costs. Today each kWh costs some 1100 EUR, but it needs to be at least halved. Of 73 million cars manufactured this year about 5 million use alternative fuels, ethanol dominating. Only a few thousand EVs are manufactured. 50 million cars are running on gasoline, 18 million on diesel. In 2015 the total production is estimated to be 91 million cars, of which 12 million running on alternative fuels, 3 million being hybrids and 350 000 EVs. Even then 55 million cars use gasoline and 24 million diesel. In this perspective, the breakthrough of EVs it is still long away. *Source: Framtidens elbilar på väg ut ur kylan, Av Håkan Abrahamson, 03 September 2008.*

Editorial: Key questions for EVs are battery technology (cost, efficiency, lifetime, safety) and recharging infrastructure. Progress in lithium-ion batteries with improved efficiency and safety characteristics is impressive. In principle, both EVs and Plug-in Hybrids (PHEV) need improved batteries, but thanks to a backup internal combustion engine, energy storage requirements for PHEVs are much lower than for EVs. Anyway, market introduction of PHEVs pave the way for full EVs.

### Electric car activities

Norway is a leading country for EVs with around two thousands EVs. In Oslo, there are around 100 recharging outlets in parking areas. EVs are also manufactured in Norway. The THINK city car will be available in November 2008 in Norway. The THINK city car was developed already in 1991, and has been in serial production from 1999. The project was supported by Ford, who decided to leave the EV sector in 2003. In 2006, Norwegian investors bought THINK back, and prepared the 5th generation of the THINK city car for serial production. The THINK city car can cope with a variety of battery systems. Currently, the THINK city features three battery options, two different lithium-based (Li) systems and one sodium battery system. The Zebra Sodium batteries are "hot" (270 - 350 °C) with a high energy density and a long operation range independent of ambient temperature. The lithium-based systems are manufactured by A123 (Nanophosphate<sup>TM</sup>) and Enerdel (lithium manganese). Both lithium options operate at ambient temperatures. This means that the car does not have to be plugged in when not in use. *Source: [www.think.no](http://www.think.no).* Recently Indian Tata Motors bought the Norwegian EV car factory Miljøbil Grenland, and will manufacture the Indica EV model in Norway.

- Lead Acid battery: low cost, toxic, short life cycle, heavy -> not relevant.
- Nickel Hydride battery: low power weight density, decays faster under high temperature, bad in memory effect, not suitable for high output usage.
- Lithium ion cobalt oxide battery (LiCoO<sub>2</sub>) is efficient and commonly used in e.g. laptops, but carries safety risks (tendency to overheat and catch on fire).
- Lithium iron phosphate battery (LiFePO<sub>4</sub>): Suitable for high output usage, good storage battery usage, safe. Used by A123Systems.
- Lithium manganese spinel batteries (LiMn<sub>2</sub>O<sub>4</sub>): efficient, durable, safe. CPI uses a proprietary

*Sources: i.a. [www.azom.com](http://www.azom.com), [www.meta-efficient.com](http://www.meta-efficient.com).*

In Denmark a Consortium called "Edison" lead by Dansk Energi and including i.a. Siemens, Dong Energy and DTU is developing infrastructure for recharging EVs, aiming at 100 000 EVs in 5 years. Siemens and DTU plan to study how one million EVs could act as an energy storage for stabilising production of wind electricity when the cars are not used. In Denmark there will be no tax on EVs until 2012. Also Sweden is working on technology to recharge EVs, i.a. how to utilise

the existing infrastructure for engine heaters. In Stockholm, Fortum and the City of Stockholm are co-operating on EVs. *Source: Nyteknik. 8 October 2008, Lars Anders Karlberg, Danmark vill också bli testland för laddbilar ([www.nyteknik.se](http://www.nyteknik.se)).* Fortum and the City of Espoo in Finland also launched cooperation on electric cars. *Source: Fortum Press release, 21 October 2008. ([www.fortum.com](http://www.fortum.com)).*

There are a number of other activities as well. In France, Renault and EDF will build a network of places where empty batteries can be changed to fully charged batteries. Renault will begin selling EVs in 2011. EDF and Peugeot-Citroën are developing infrastructure for recharging of EVs. German RWE is in cooperation with Mercedes building 500 recharging places in Berlin for Smart EVs. 1 000 Smart EVs have already been built, and production is estimated to be some 15 000 per year from 2012 onwards. Mini builds 500 "E" EVs equipped with 260 kg lithium-ion batteries (35 kWh, range 240 km, 4 hours recharging time). Rolls-Royce is also planning an EV. Mitsubishi's i-Miev EV will be launched in 2010 (lithium-ion batteries 16 kWh, range 160 km, home recharge 7 hours, recharge station 30 minutes). Nissan will sell EVs in 2010. Toyota is testing rechargeable Prius hybrids in UK and France with built-in debiting. German Ruf has built an EV version of the Porsche 911 (150 kW, top speed 225 km/h, range 300 km with lithium-ion batteries). Tesla has built a factory in California for production of the EV "S" with a capacity of 15 000 cars per year. Portugal allows up to €796 in tax exemption for EVs. Australia plans to build 250 000 recharging stations for EVs and 150 places to change empty batteries for charged ones within four years. *Source: Miljöbil, 11/2008.*

## MISCELLANEOUS

### Japan to offer incentives for clean diesel cars

Starting from April 2009, in a bid to reduce CO<sub>2</sub> emissions, Japan will introduce incentives for consumers buying clean diesel cars. Subject to the incentives would be diesel cars that meet the new Japanese emission standards, which come into force in October 2009 (NO<sub>x</sub> = 0.08 g/km; PM = 0.005 g/km). Mercedes-Benz is currently the only brand selling diesel passenger cars in Japan. The E-Class diesel meets the 2005 emission standards. The diesel X-Trail, which is to be launched next month by Nissan Motor, will be the first car to meet the 2009 standards. Honda Motor is planning to introduce a clean diesel car next year, while Mitsubishi Motors and Subaru-maker Fuji Heavy Industries also have promised a diesel car for Japan. Diesel cars are expected to carry a price premium of 300,000 - 400,000 yen (\$2,700-\$3,600) over gasoline cars, part of which will be subsidized. *Source: Reuters ([www.reuters.com](http://www.reuters.com)).*

## IEA & IEA/AMF News

### EUWP and related issues

IEA, together with the Russian Federal Agency of Science and Innovation (FASI) arranged a NEET (Networks of Expertise in Energy Technology) workshop in Moscow, 30 September – 1 October, 2008. In addition to general presentations of IEA and Russian activities in the energy sector, close to 20 Implementing Agreements were on site informing about their activities. Nils-Olof Nylund presented on behalf of AMF as well as the IA on Hybrid and Electric Vehicles. Each presentation of the activities of an IA was followed by a presentation of corresponding Russian activities.

### From Executive Committee

The 36th ExCo meeting of the IEA Executive Committee on Advanced Motor Fuels will be held in Osaka, Japan, 2-4 December 2008. Information of the ExCo meeting is available in the Member Area of the AMF website (<http://proxnet.vtt.fi/ieaamf/excometings/36osaka/36osaka.html>).

### Progress of ongoing Annexes

Annex XXVIII Information Service & AMF Website (AMFI). In September 2008 renewal of the public website and Member Area took place.

Within Annex XXVIII, as an independent sub-task, outlook report on standardisation was prepared. This outlook report reviews the current situation on standardization of alternative vehicle fuels. It concentrates on the regional and national level but, when existing, it also addresses the global level. The report

#### 36<sup>th</sup> ExCo Meeting

36<sup>th</sup> ExCo Meeting will be held in Osaka, Japan, 2-4 December 2008.

#### Country Report – Denmark

Report on Advanced Motor Fuels in Denmark is now available in the Member Area of the website.

#### Report on Standardisation

Public report on standardisation is now available in the website.

#### Website renewal

In September 2008, the public website and the Member Area were renewed. Welcome to new website!



predominantly describes existing standards. Additionally, it addresses standards that are currently under development and it briefly mentions discussions on future standards. Source: Rehnlund, B. Outlook on standardisation of Alternative vehicles fuels. Annex XXVIII Subtask report. 2008. ([www.iea-amf.vtt.fi](http://www.iea-amf.vtt.fi)).

A country report for Denmark is now available at the Member Area of the website.

## PUBLICATIONS

- *IEA World Energy Outlook – WEO 2008. November 2008. © 2008 OECD/IEA* ([www.iea.org](http://www.iea.org)).
- *Review of International Policies for Vehicle Fuel Efficiency. August 2008 © 2008 OECD/IEA.* ([www.iea.org](http://www.iea.org)).
- *Gaps in the Research of 2nd Generation Transportation Biofuels. 2008.* (<http://www.ieabioenergy.com/MediaItem.aspx?id=5957>).
- *Rehnlund, B. Outlook on standardisation of Alternative vehicles fuels. Annex XXVIII Subtask report. 2008.* ([www.iea-amf.vtt.fi](http://www.iea-amf.vtt.fi))
- *Natural Gas Market Review 2008 - Optimising investments and ensuring security in a high-priced environment, September 2008. © 2008 OECD/IEA.* ([www.iea.org](http://www.iea.org)).
- *Aaltola et al. Hydrotreated Vegetable Oil (HVO) as a Renewable Diesel Fuel: Trade-off between NO<sub>x</sub>, Particulate Emission, and Fuel Consumption of a Heavy Duty Engine. SAE Technical Paper 2008-01-2500. October 2008* ([www.sae.org](http://www.sae.org)).



## IEA/AMF Delegates

<b>Austria</b> – Austrian Federal Ministry for Transport, <i>Andreas Dorda</i>	<b>Finland</b> – VTT <i>Nils-Olof Nylund</i>	<b>Japan</b> – LEVO <i>Nobuichi Ueda</i>	<b>Thailand</b> – NSTDA <i>Paritud Bhandhubanyong</i>
<b>Canada</b> – Natural Resources Canada, <i>Jean-Francois Gagné</i>	<b>France</b> – ADEME <i>Patrick Coroller</i>	<b>Spain</b> – IDAE <i>Juan Luis Plá de la Rosa</i>	<b>United Kingdom</b> – Department for Transport, <i>Chris Parkin</i>
<b>China</b> – CATARC <i>Jiaqiang Guo</i>	<b>Italy</b> – Eni SpA <i>Fausto Alberici</i>	<b>Sweden</b> – Swedish Road Administration, <i>Petter Åsman</i>	<b>USA</b> – DOE <i>Stephen Goguen</i>
<b>Denmark</b> – Technical University of Denmark (DTU), <i>Jesper Schramm</i>	<b>Japan</b> – NEDO <i>Kazunori Nagai</i>	<b>Switzerland</b> – University of Applied Sciences, <i>Jan Czerwinski</i>	

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