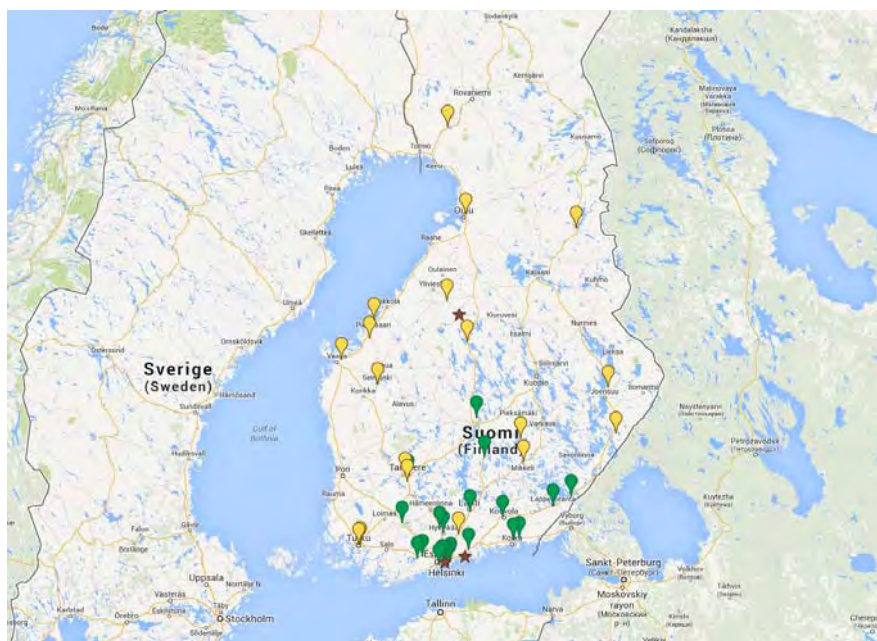


AMFI Newsletter



Biogas filling stations in Finland [more](#)

The AMFI Newsletter is prepared for the members of the Implementing Agreement for Advanced Motor Fuels of the International Energy Agency (IEA/AMF). The AMFI releases four electronic newsletters each year. A group of authors prepares contributions to this newsletter:

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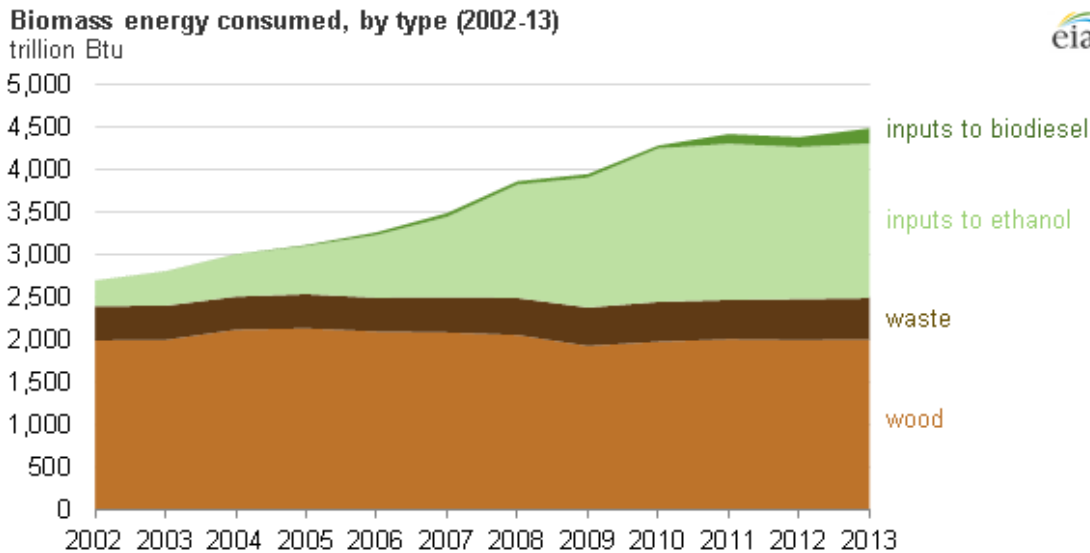
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GENERAL INTEREST

USA: Biofuels production drives growth in biomass energy use

Biomass energy consumption in the United States grew more than 60% from 2002 to 2013. This growth is almost entirely due to increased consumption of biomass for biofuels, mainly ethanol but also a smaller amount of biodiesel and other biomass-based diesel fuels. In 2013, biomass accounted for about half of all renewable energy consumed and 5% of total U.S. energy consumed.



Source: <http://www.eia.gov/todayinenergy/detail.cfm?id=15451&src=email>

Biofuels debate continues, despite EU agreement

EU energy ministers agreed to a 7% cap on the fuels for use in transport, higher than the 5% originally recommended by the EC. The text includes a 0.5% target for advanced biofuels, such as lignocellulosic biomass and agricultural residues, in the EU's 10% target for renewable energy for 2020. The proposal will now go to the Parliament for a second reading, likely to take place in the Autumn, after the institutional renewal.

Poland, France, Spain, Hungary, Czech Republic, Estonia, Romania and Slovakia issued a statement on the day of the energy Council saying that the 7% cap was at its "lowest acceptable level", effectively ruling out negotiations with Parliament over the proposed law.

The cap was greeted as a victory by the biofuels industry. Rob Vierhout, the secretary general of the European renewable ethanol industry association, said, "The agreement reached by member states on the ILUC file is welcome progress and should pave the way towards a stable policy framework that will restore investor confidence in the biofuels market." Raffaello Garofalo, secretary-general of the European Biodiesel Board, said "it is not useless to remind that all the biodiesel produced today in Europe has anyhow to be considered at least as 'low-ILUC-risk-Biofuel' since the EU volumes of production are stable since 2011 and no change or impact on land use has recently occurred."

Source: <http://www.euractiv.com/sections/sustainable-dev/biofuels-debate-continues-despite-eu-agreement-302834>

EU citizens are satisfied with urban public transport

The European Commission has published the results of a Eurobarometer survey on urban public transport. According to the survey 69% of EU citizens are satisfied with public transportation, although the numbers vary widely across the EU, ranging from 88% at the highest to 31% at the lowest. Furthermore, only 32% of Europeans make use of public transportation at least once a week and nearly one fourth never do.

The survey also shows that Europeans have good access to urban public transportation: 77% are less than 10 minutes away from the nearest station or stop. Due to differences in the offer, people in large towns are more likely to use public transportation on a regular basis (51%) than those in small and mid-sized towns (27%) or in villages (20%). Ticket prices seem to be a point of concern as only 39% of EU citizens are satisfied with fares.

Source: http://ec.europa.eu/transport/newsletters/2014/06-13/articles/eb_publictransport_en.htm

Commission publishes first EU Transport Scoreboard

The European Commission has published for the first time a scoreboard on transport in the EU. It compares Member State performance in 22 transport-related categories and highlights for most of these categories the five top and bottom performers.

The aim of this first EU Transport Scoreboard is to give a snapshot of the diversity of Member State performance in transport matters across Europe and to help Member States identify shortcomings and define priorities for investment and policies. It brings together data from a variety of sources (such as Eurostat, the European Environment Agency, the World Bank and the OECD). The Commission's intention is to refine the indicators in the years to come, in dialogue with Member States, industry and other stakeholders, and to track Member State progress over time.

Source: http://ec.europa.eu/transport/newsletters/2014/04-11/articles/scoreboard_en.htm

GASEOUS FUELS

Natural gas trucks and buses worse than diesel-fueled vehicles?

Natural gas is widely hailed as cleaner than other fossil fuels, but new research says using it — instead of diesel — to power trucks and buses could actually exacerbate global warming over a 100-year period.

"There's lots of reasons to shift from diesel," says lead author Adam Brandt of Stanford, adding diesel buses are "stinky" and natural gas ones may help cut oil imports and improve local air quality. But from a climate perspective, "it's not likely to reduce greenhouse gas emissions."

Burning natural gas in vehicles emits less carbon dioxide than burning diesel, but the drilling and production of natural gas leaks methane, a potent greenhouse gas. Those leaks offset some of natural gas' CO2



benefit. "Even running passenger cars on natural gas instead of gasoline is probably on the borderline in terms of climate," he says. His research, a review of 200-plus studies over 20 years, appears in Friday's edition of the journal *Science*.

An industry group disagrees. Richard Kolodziej, president of Natural Gas Vehicles for America, says a 2007 report by the California Energy Commission calculated that on a well-to-wheel basis — which includes extraction and distribution — that natural gas in vehicles emits 22% fewer greenhouse gases than diesel and 29% fewer than conventional gasoline. Burning natural gas in vehicles emits less carbon dioxide than burning diesel, but the drilling and production of natural gas leaks methane, a potent greenhouse gas. Those leaks offset some of natural gas' CO₂ benefit.

Source: <http://www.usatoday.com/story/news/nation/2014/02/13/natural-gas-leaks-methane-beyond-epa-estimates/5452829/>

Mapping of Finland's CBG filling stations

Biogas is the only 100% biofuel available in public filling stations in Finland. To facilitate the use of the CBG100 network (CBG100 = 100% Compressed Biomethane) the Finnish Biogas Association published a map of the stations. It has recently received a major upgrade.

All 21 public biogas filling stations in Finland are CBG100 stations, i.e. they sell 100 % compressed biogas (CBG). All of them are automatic stations that are always open (but for two of them cash option is only available during office hours). They are shown by green markers on the map. Price of CBG100 in public stations varies between 1.205 and 1.505 euros/kg (0.80 - 1.00 euros/gasoline equivalent liter).

The map also includes two public CNG stations, which sell 100 % natural gas (blue markers). Blends of biogas and natural gas, such as CBG20 and CBG50, are not available. Biogas and natural gas are the only types of methane fuels sold in filling stations. In one private station liquefied biogas (LBG) is available.

Source: <https://mapsengine.google.com/map/edit?hl=fi&authuser=0&mid=zDY06uW0-sIE.klgSa9MoWUuY>

Natural gas vehicles will see rapid rise globally through 2023

The number of light-duty vehicles running on natural gas will more than double over the next decade to 39.8 million traveling on roads worldwide, according to a report by research firm Navigant. Despite the rapid growth, natural gas will continue to have a modest market share compared to gasoline and diesel in 2023, fueling just 2.6 % of the cars and light-duty trucks on the road, Navigant projects.

A significant number of natural gas vehicles are already on the road in Brazil, Pakistan, Argentina and India, the report notes. Navigant forecasts that the fueling stations and other infrastructure to support natural gas vehicles in North America will double by 2023.

Source: <http://fuelfix.com/blog/2014/02/27/researchers-natural-gas-vehicles-will-see-rapid-rise-globally-through-2023/>

Food waste destined for bus fuel in Norway

A biogas liquefaction plant has opened in Oslo, which will convert household food waste into biomethane for use as renewable fuel for the city's buses. The facility, which was built by gas handling and liquefaction technology developer Wärtsilä and opened on 12 February, is operated by biowaste treatment company Cambi on behalf of Waste-to-Energy Agency (EGE) and the city of Oslo. EGE produces environmentally friendly energy from waste and is under the supervision of the City of Oslo's Department of Environmental Affairs and Transport.

When fully operable the plant will be able to treat 50,000 tonnes a year of food waste to produce around 14,000 Nm³ per day of biomethane. This is enough to fuel 135 buses. The new facility's liquefaction plant design uses conventional components in a mixed refrigeration process. The technology is scalable up to a capacity of at least 60 tonnes daily.

Source: http://bioenergy-news.com/index.php?/Industry-News?item_id=7411

Liquid natural gas hub in Galicia

The European Union will co-finance with a little over €600,000 from the TEN-T Programme a series of studies to develop a Liquefied Natural Gas (LNG) hub in the Port of Ferrol, located near the city of La Coruña in the northwest of Spain.

The studies, which were selected for funding under the 2012 TEN-T Annual Programme's priority on new technologies for transport infrastructure, focus on the design of the necessary facilities, infrastructure and procedures in order to supply LNG as fuel along the entire port logistics chain: from the port services to ships.

LNG is rapidly emerging as a more environmentally friendly fuel for the shipping sector and its uptake is encouraged by the European Union. The studies contribute to climate change mitigation and to the reduction of the impact of transport on the environment. The results will be disseminated among stakeholders and the project can be used as an example for the promotion and for policy making in the field of sustainable transport.

Source: http://ec.europa.eu/transport/newsletters/2014/03-14/newsletter-print_en.htm

Development of Hydrogen Energy Utilization Technologies

Fuel cell vehicles will be on the Japanese market in 2015, and much attention has been directed towards utilization of hydrogen as an energy source. NEDO has been in the forefront of research and development of hydrogen fuel, and going forward it will place emphasis on development of hydrogen energy production, as well as liquid phase transportation and storage. This will form the basis for a hydrogen energy based society for 2030 and beyond.

Recently initiated research and development projects involve highly efficient and low-cost hydrogen production from renewable energy sources, with the overriding goal that the new energy carriers are competitive with fossil fuel. The annual budget for this effort is 1.2 billion Yen and the total four-year budget (FY2014 - FY2017) is 4.8 billion Yen.

The NEDO Hydrogen Energy Utilization research and development project includes the following tasks:

- Development of Low Cost Hydrogen Production Systems
- Development of Highly Efficient Hydrogen Energy Production Technologies
- Development of Related Technologies; Hydrogen Liquefaction and Storage Systems
- Survey of Energy Carrier Systems
- Research on Total System Scenarios of Hydrogen Energy Introduction

Source:

<http://www.nedo.go.jp/content/100551709.pdf#search='%E6%B0%B4%E7%B4%A0%E5%88%A9%E7%94%A8%E7%AD%89%E5%85%88%E5%B0%8E%E7%A0%94%E7%A9%B6%E9%96%8B%E7%99%BA%E4%BA%8B%E6%A5%AD+NEDO>

ALCOHOLS AND (BIO)GASOLINE

Methanol Burns Cleanly, Making it an ECA Alternative

A methanol pilot project is scheduled to commence in early 2015 on the ferry Stena Germanic following a “minor conversion” of the vessel’s main engines. The vessel will be modified to run one of its four main engines on methanol, according to Per Stefenson from Stena Teknik, part of the Swedish Stena Group. Stefenson called the modifications required relatively simple and said it has been confirmed that the cost to convert a vessel to run on methanol would be just a third of the cost of converting a vessel to run on liquefied natural gas (LNG).



Another advantage is that regulations would allow placing methanol tanks in spaces within the ship’s hull, which can otherwise only be used for ballast water. Methanol and LNG are both produced from natural gas and methanol costs more to make than LNG. However, Stena believes that the relative ease of handling methanol, lending itself to a lower cost of distribution more closely emulating traditional bunker fuels, means the price of methanol delivered to ship can compete with LNG.

Stena has been the driving force behind a Swedish push to recognize methanol as an alternative fuel, motivated by the company’s search for a viable alternative to MGO for operations in emission control areas (ECAs). News that the world’s biggest methanol company, MI member Methanex, has ordered seven methanol tankers that will run on methanol in large two-stroke engines supplied by MAN Diesel & Turbo was a major step forward for methanol as a marine fuel.

Source: <http://www.methanolfuels.org/methanol-burns-cleanly-making-it-an-eca-alternative/>

Patriot Renewable Fuels plans first stage of cellulosic ethanol project

Patriot Renewable Fuels announced plans for co-locating a Biorefinery on the site of Patriot’s 130 million gallon per year grain-ethanol plant in Illinois. At the centerpiece of the technology platform is the Inbicon biomass conversion technology, which Denmark’s DONG Energy began developing in the late 1990s and has demonstrated for over 15,000 hours at its Inbicon Biomass Refinery in Kalundborg, where it typically processes 4.4 tons an hour of wheat straw.

The commercial model in the plans for Annawan will process about 1320 tons per day of corn stover using Inbicon’s patented technology and mixed-sugar (cellulose/hemicellulose) fermentation. Annual production will be 25-30 million gallons per year of cellulosic ethanol and up to 175,000 tons of high-purity lignin, which has BTU value similar to coal and can provide more than enough base-load electric power to run the operation without fossil fuels.

Source: <http://www.patriotrenewablefuels.com/?p=2685>

EPA Tier 3 rule sets E10 as new test fuel

The U.S. EPA final rule for emission standards for cars and gasoline made E10 the new federal emissions test fuel, finalized specifications for E85 test fuel for flex-fuel vehicles (FFV) and left the door open for vehicle manufacturers to request approval for alternative certification fuel, such as E30, for vehicles optimized for that fuel.

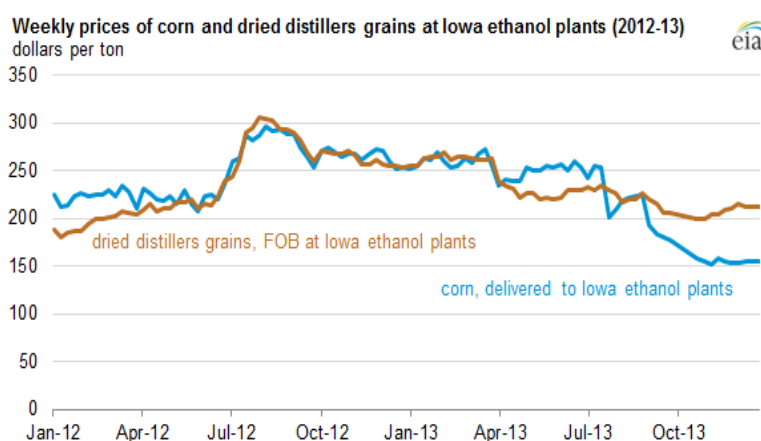
The final rule requires that all Tier 3 light duty and chassis-certified heavy-duty gasoline vehicles be certified on E10. The test fuel will be used for new vehicle certification, assembly lines and in-use testing. The EPA considered a change in the volatility of the fuel, or pounds per square inch (psi) Reid Vapor Pressure, but ultimately concluded that an RVP of 9 psi should be maintained for the E10 test fuel.

In addition, finalizing specifications for an E85 emissions test fuel for FFVs will help resolve uncertainty and confusion, the EPA said. The agency also said that it intended to finalize in-use fuel quality standards for E51 to E83 and possibly E16 to E50 as well but wasn't able to do it in time to include it in this final rule. "As the number of flex-fuel vehicles in the in-use fleet increases, it is becoming increasingly important that all fuels used in FFVs, not just gasoline, meet fuel quality standards," the EPA said. "A lack of clarity regarding the standards that apply to fuels used in FFVs could also act to impede the further expansion of ethanol blended fuels with concentrations greater than 15 volume percent, which is important to satisfying the requirements of the RFS2 program."

Source: <http://www.biomassmagazine.com/articles/10091/epa-tier-3-rule-sets-e10-as-new-test-fuel>

Ethanol: higher margins for distiller's grains

The abundant 2013 corn harvest lowered the price of corn. In addition to lower corn input costs, ethanol producers are also benefiting from improving margins for dried distillers grains, an important supplement for animal feed that is the major co-product of ethanol production from corn. Sales of dried distillers grains provide a significant portion of the total revenue received by ethanol.



When ethanol plants remove most of the water and dry the product, they can add back the vitamins and minerals that are initially drained out with the water at the end of production, creating dried distillers grains with solubles (DDGS). While not suitable for all livestock feeding applications, DDGS have several attributes that make them valuable:

- Farmers can blend DDGS into feed for a variety of livestock
- DDGS is cheaper to transport and has a longer shelf life than grains
- DDGS can be easily mixed into corn or soy meal in varying concentrations
- It is relatively easy to extract the corn oil content of DDGS to make feed for animals that benefit from reduced corn oil diets

Demand for DDGS is growing in the US and in foreign markets. During 2013, total DDGS exports reached 9.7 million metric tons, more than double the 4.5 million metric tons of total exports in 2008. China has played a key role in driving this growth, with total DDGS exports to China rising from 1.4 million metric tons in 2011, to 2.2 million metric tons in 2012, and 4.5 million metric tons in 2013.

Source: <http://www.eia.gov/todayinenergy/detail.cfm?id=14171>

BIODIESEL ESTERS

World Production of Biodiesel Seen Increasing Further in 2014

OIL WORLD ISTA Mielke GmbH tentatively forecast world production of biodiesel at a record 29.1 mio. t in Jan/Dec 2014. This implies an increase of 2.0-2.1 mio. t or roughly 8% from last year, thus still sizably exceeding the growth rates in other usage categories, like the food sector. However, the increase of biodiesel production is seen slowing down from 2.9 mio. t or 12% in 2013. Palm oil already overtook soya oil as the major feedstock for biodiesel production in 2013.

Source:

<http://www.oilworld.biz/app.php?fid=1090&fpar=0&isSSL=0&aps=0&blub=99d5d4612ae78dfcf3f261cddd2f91a5&ista=b66515e1d469b5b27ebc0e86203cd968#8478>

US: Companies Ask Obama to Boost Biodiesel Standard

Expressing urgent concerns about a proposed cut, 52 U.S. representatives from across the country called on President Obama this week to continue growing biodiesel volumes under the Renewable Fuel Standard (RFS).

"During your time in office you have supported the development and growth of the biodiesel industry. Now, biodiesel producers around the nation have the ability to generate nearly two billion gallons a year of the only EPA-approved advanced biofuel, which is commercially available across the United States," the lawmakers wrote in a letter to President Obama. "Therefore, we believe now is not the time for a critical shift in biodiesel policy. We urgently ask that you raise biodiesel's RVO for 2014 above 1.28 billion gallons."

In a draft RFS rule released in November, the EPA proposed holding biodiesel volumes at 1.28 billion gallons – a sharp drop from last year's actual production of nearly 1.8 billion gallons. Biodiesel producers around the country have warned that such a proposal will cause severe contraction in the industry. A nationwide survey of producers conducted by the National Biodiesel Board (NBB) in April found that more than half have already idled a plant this year and 78 percent have reduced production from last year. Nearly two-thirds – 66 percent – have already laid off employees or anticipate doing so.

"Biodiesel is the most successful EPA-designated Advanced Biofuel being produced today," said Anne Steckel, NBB's vice president of federal affairs. "This is an RFS success story that is delivering tremendous benefits to the nation in terms of cleaner air, jobs, and diversity in the fuels markets that is helping consumers. We need consistent federal policy to continue the progress we've made, and we are urging the Administration to finalize a strong RFS volume as quickly as possible."

Source: <http://www.nbb.org/news/nbb-press-releases/press-release-display/2014/06/27/52-lawmakers-ask-white-house-to-boost-biodiesel>

SYNTHETIC AND RENEWABLE DIESEL / JET

European Parliament gives boost to the Single European Sky

The Commission welcomed the vote in the European Parliament to support, strengthen and push forward the Single European Sky 2+ (SES2+) initiative as a key move to accelerate the

implementation of Single European Sky.

The SES2+ initiative looks to head off a capacity crunch as the number of flights is forecast to increase by 50% over the next 20 years. Inefficiencies in Europe's fragmented airspace bring extra costs of close to 5 billion Euros each year to airlines and their customers. They add 42 kilometers to the distance of an average flight forcing aircraft to burn more fuel, generate more emissions, pay more in costly user charges and suffer greater delays. The United States controls the same amount of airspace, with more traffic, at almost half the cost.

With full implementation of the SES potential annual savings are calculated to be in the order of €2.9 billion per year for airlines, with a reduction of emissions by 2.4 million tonnes of CO₂. This will boost competitiveness and growth in the sector.

Source: http://ec.europa.eu/transport/newsletters/2014/03-14/newsletter-print_en.htm

OTHER FUELS AND VEHICLES

Japan: Electric Municipal Bus Operation

In March 2014 the Kitakyushu municipal office announced commencement of regular operation of electrically powered municipal buses. Kitakyushu is a city in Kyushu prefecture, across the Korea (Tsushima) Strait from Busan, South Korea. Operation by solar power will start in October, and a large battery-based electrical storage system will be installed in Wakamatsu Ward the following spring. Kitakyushu city officials plan to use only solar derived electricity for bus operation by supplying the solar generated power stored in the battery device even if it is cloudy, and to ultimately establish a zero emission transportation system. Commercial operation of these electric municipal route buses is a "first" for all of Japan.

Each electric bus can hold 72 passengers and is about 10% lighter than an equivalent conventional bus due to usage of light weight and durable carbon fiber components. The buses have a high-performance lithium-ion battery and can run up to 80 km on a single charge. Mitsubishi Heavy Industries, Ltd. provides the buses and supports the technical side. Toray Engineering Ltd. is in charge of the photovoltaic power generation and operation and maintenance of storage equipment. In October, 7,500 kW solar panels will be installed in about nine hectares in the Hibikinada district of Wakamatsu Ward. A quick-charge station will be installed near there and solar-based power supply will commence. It has been estimated that operating this electric bus system can provide an annual CO₂ reduction of 15 to 25 tons. The total project cost is 2.7 billion yen.

Source: http://www.japanfs.org/en/news/archives/news_id034898.html

Current Trends of EV/PHV Vehicles in Japan

The Ministry of Economy, Trade and Industry (METI) has enacted a newly revised proliferation policy for Japan's next generation electric vehicles and plug-in hybrid vehicles (EV/PHV). METI has been conferring with automotive manufacturers and related parties, and plans to release its new strategies by June 2014.

The government has already subsidized the purchase of electric vehicles and associated charging infrastructure, but sales have not increased at the expected rate. To achieve METI's proliferation goals of next generation electric vehicles, which are at least 20% of new vehicle sales in 2020, and at least 50% in 2030, METI has analyzed the holdbacks for electric vehicle proliferation and devised specific remedies. Stimulation of demand for an "Eco-Car" would be an overall advantage

for Japan and help sustain the country's energy, environmental, and industrial competitiveness. Specific measures METI has decided to consider include efforts to dispel consumer anxiety over running out of battery, and efforts to simplify development of infrastructure related to charging utilities in housing complexes.

Source: News Release: 10 February, 2014, Nikkan Automobile News

Neste Oil and DONG cooperate to develop microbial oil fuel

Neste Oil has joined forces with DONG Energy to develop an integrated process to produce renewable diesel and aviation fuel based on agricultural residues. DONG Energy's Inbicon technology will be to pre-treat biomass and produce cellulosic sugars that can be converted into microbial oil with Neste Oil's technology. Microbial oil can be used as a feedstock for renewable fuels such as renewable diesel and aviation fuel.

Neste Oil and Dong Energy have already passed the laboratory and pilot phase, and the technologies must now be optimized and verified on a larger scale. DONG Energy will use Inbicon's demonstration facility in Kalundborg in Denmark to optimize the yield and performance of the pre-treatment to match Neste Oil's microbial oil process. Neste Oil has been running a microbial oil pilot plant in Porvoo, Finland since 2012.

Both parties will receive funding from the ERA-Net Plus BESTF program in connection with the collaboration.

Source: <http://www.nesteoil.com/default.asp?path=1;41;540;1259;1260;22862;23096>

Biofore Concept Car – innovative use of biomaterials

The Biofore Concept Car showcases the use of UPM's innovative biomaterials in the automotive industry. The majority of parts traditionally made from plastics are replaced with high quality, safe and durable biomaterials, UPM Formi and UPM Grada, which can significantly improve the overall environmental performance of car manufacturing. The Biofore Concept Car is designed and manufactured by students from the Helsinki Metropolia University of Applied Sciences.

The vehicle runs on UPM's wood-based renewable diesel UPM BioVerno, which will significantly reduce greenhouse gas emissions compared to fossil fuels. UPM BioVerno is suitable for all diesel engines, including the 1.2 litre low-emission diesel engine featured in the Biofore Concept Car. Moreover, thanks to UPM's biomaterials, the car is approximately 150 kilograms lighter than its equivalents, resulting in lower fuel consumption.

Source: <http://www.upm.com/EN/MEDIA/All-news/Pages/UPM-and-Metropolia-proudly-present-The-Biofore-Concept-Car-drives-sustainable-ch-001-Tue-04-Mar-2014-09-31.aspx>

Volvo Trucks Spotlights DME Alternative Power at ACT Expo



Volvo Trucks showcased a compressed natural gas (CNG) powered Volvo VNL daycab and a prototype dimethyl ether (DME) powered VNL daycab at the Alternative Clean Transportation (ACT) Expo in Long Beach, CA. Volvo currently offers CNG and liquefied natural gas (LNG) powered versions of its VNM daycab and VNL sleeper as well as daycab models powered by spark-ignited gas engines. The OEM said it is "continuing to work toward commercialization of DME-powered trucks for the North American market. The fuel mirrors the exceptional performance qualities and energy efficiency of diesel and burns clean without producing any soot."

Volvo also stated that, "it is developing North America's first fully integrated natural gas solution, a compression ignition engine that utilizes LNG." "The trucks we're showcasing highlight our comprehensive alternative fuels strategy for North America," said Frank Bio, Volvo Trucks' director of sales development, specialty vehicles & alternative fuels. "Interest in natural gas-powered trucks continues to grow and we're working to address demand from all segments of the market," he added. "We're also enthused about the potential of DME, which has proven to be an excellent fuel for heavy-duty trucks."

Source: <http://www.methanolfuels.org/volvo-trucks-spotlights-dme-alternative-power-at-act-expo/>

MISCELLANEOUS

US Navy turns to biofuels



US Navy photo by Richard Stewart / released.

Currently, two biofuels pathways have been tested and qualified for use in Navy and Marine Corps aircraft, ships, vehicles and equipment and efforts are underway to adopt more pathways.

In Washington, the Department of the Navy announced that at least 37 million gallons (137m liters) of drop-in biofuels are being sought as part of its F-76 marine diesel and JP-5 shipboard jet fuel supply.

The biofuels sought can be blended in a range of 10 to 50 per cent with conventional petroleum products and must meet all military fuel specification properties which make handling requirements and performance indiscernible to the end user.

Among the reasons given for this request is that expanding military energy sources improves the reliability of the USA's overall fuel supply, adds resilience against supply disruptions, and gives the military more fuel options to maintain its readiness and defend the national security interests of the United States.

Source: <http://www.tandlnews.com.au/2014/06/12/article/us-navy-turns-to-biofuels/>

Deal on alternative fuels infrastructure for transport

The Clean Power for Transport Package consists of a Communication on a European alternative fuels strategy, a Directive focusing on infrastructure and standards and an accompanying document describing an action plan for the development of Liquefied Natural Gas (LNG) in shipping.

The main measures agreed are:

- Minimum levels of infrastructure across the EU. A requirement on Member States to submit to the Commission national plans for minimum levels of infrastructure to be in place by 2020 for electric vehicles and for CNG in urban agglomeration, Hydrogen and LNG in maritime ports and for heavy duty vehicles is postponed to 2025 (all dates available in table below). The targets will be published by the Commission. There is a

review clause in the Directive to allow the Commission to assess if national targets are sufficient to deliver a critical mass of infrastructure or if mandatory targets agreed at EU level – as had been originally proposed by the Commission - will be needed.

- EU wide standards for the infrastructure. The agreement requires the development of EU wide standards for clean fuels. This will end the uncertainty that has been holding back business and consumers. It means standardized plugs for electric vehicles and standardized refueling equipment – refueling and recharging equipment - for hydrogen and natural gas as well as future standards for wireless recharging points, battery swapping technology and standardized plugs for buses and motorcycles.
- Clear consumer information to facilitate use - including on the charging and refueling points themselves, as well as comparison of prices for the different alternative and conventional fuels based on a methodology developed by the Commission.

Source: http://ec.europa.eu/transport/newsletters/2014/03-21/articles/alternative_fuel_infrastructure_en.htm

Research Association of Automotive Internal Combustion Engines (AICE)

Eight Japanese automakers and one automobile research institute have jointly established the Research Association of Automotive Internal Combustion Engines (AICE) as of April 1, 2014. In an effort to realize further improvement of the fuel economy of automobiles and reduction in tailpipe emissions, the participating automakers will work together to identify and present research needs that address issues and challenges facing the automakers in the areas of combustion technologies for internal combustion engines and technologies which help to achieve cleaner tailpipe emissions. The AICE members will jointly conduct basic and applied research utilizing knowledge and expertise amassed in academia. The ultimate purpose of AICE is to utilize the research results to help accelerate the development activities of each automaker.

Source: <http://www.autonews.com/article/20140519/OEM04/140519876/japanese-collaborate-on-rd-for-new-fuel-efficient-engines#>

Boeing Reports Improved Environmental Performance

Boeing released its annual Environment Report highlighting the company's commitments and accomplishments in improving environmental performance. The report also features Boeing's progress in sustainable growth and environmental conservation efforts. It provides an update on Boeing's new environmental targets. After achieving its first five-year set of absolute-reduction targets, Boeing has set new 2017 targets for greenhouse gas emissions, water consumption, solid waste to landfill and hazardous waste generation. Highlights of the 2014 report include:

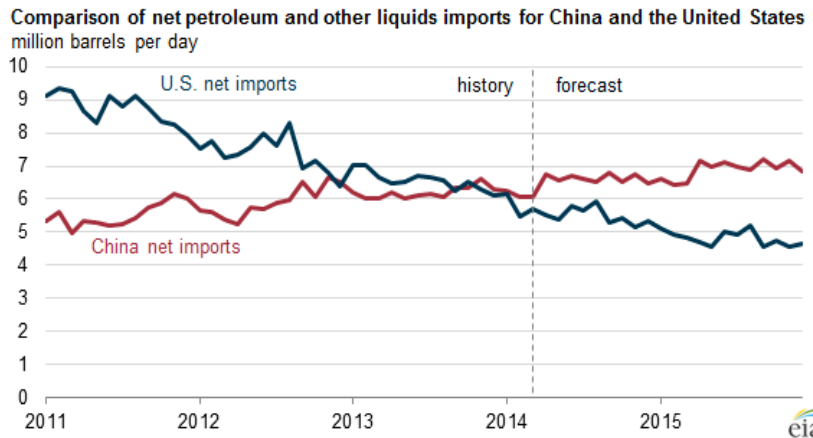
- Cleaner products including the launch of two new fuel-efficient airplanes
- Future flight concepts for improved environment performance such as Boeing's liquid hydrogen-powered Phantom Eye receiving
- Innovations to help achieve zero growth in greenhouse gas emissions
- Efforts to help develop and bring to market commercialize sustainable aviation biofuel, including "green diesel"

Source: <http://www.aviation.ca/2014060418063/news/international/us/boeing-news-releases/18063-boeing-reports-improved-environmental-performance>

China is world's largest net importer of petroleum and other liquid fuels

In September 2013, China's net imports of petroleum and other liquids exceeded those of the United States on a monthly basis, making it the largest net importer of crude oil and other liquids in the world. The rise in China's net imports of petroleum and other liquids is driven by steady economic growth. U.S. total annual petroleum and other liquids production is expected to

rise 31% between 2011 and 2014 to 13.3 million barrels per day. In the meantime, Chinese production will increase at a much lower rate (5% over this period) and is forecast to be only a third of U.S. production in 2014.



On the demand side, China's liquid fuels use is expected to reach more than 11 million barrels per day in 2014, while U.S. demand hovers close to 18.9 million barrels per day, well below the peak U.S. consumption level of 20.8 million barrels per day in 2005. U.S. refined petroleum product exports increased by more than 173% between 2005 and 2013, lowering total net U.S. imports of petroleum and other liquids.

China has been diversifying the sources of its crude oil imports in recent years as a result of robust oil demand growth and recent geopolitical uncertainties. Saudi Arabia continues to be the largest supplier of oil to China and in 2013 provided 19% of China's 5.6 million barrels per day. Because production levels from Iran, Libya, and Sudan and South Sudan dropped since 2011, China replaced the lost shares of imports from these countries with imports from Oman, Iraq, the United Arab Emirates, Angola, Venezuela, and Russia.

Source: <http://www.eia.gov/todayinenergy/detail.cfm?id=15531&src=email>

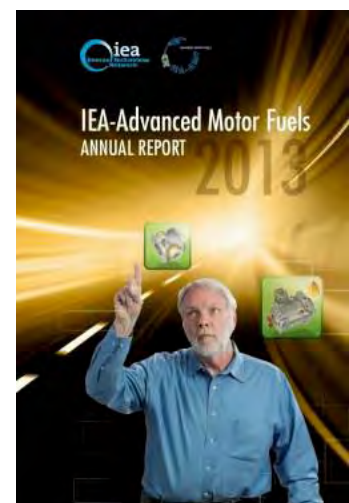
IEA & IEA-AMF NEWS

AMF IA

The Advanced Motor Fuels Implementing Agreement has recently published the 2013 edition of its Annual Report (www.iea-amf.org/annualreport). It includes basic information on AMF, country reports from the AMF contracting parties, annex reports from all current AMF projects ("Annexes"), and the Chairperson's message which summarises the latest developments.

Recent observations include the following:

- Despite an almost sixfold increase in biofuels use over the past decade, the transport sector still remains 93% dependent on fossil oil.
- Transport energy demand is projected to decrease in OECD



countries but largely increase in non-OECD countries.

- Although some 10 million FFVs were on the road in the United States in 2011 and 16.7 million NGVs were operating globally in 2012, these vehicles represent less than 1% of vehicle stock worldwide.

AMF assesses alternative fuels and powertrains for a sustainable transport system, and it provides a forum for sharing best practices and pooling resources, internationally. Members include OECD countries from Europe, North America and Asia as well as several non-OECD countries (China, Israel, Thailand). Work is carried out in projects (see below), the newest additions being Annex 50 on “Fuel and Technology Alternatives in Non-Road Engines” and Annex 51 on “Methane Emission Control”. Another project on sustainable transport systems is under preparation.

In the course of its 47th Executive Committee meeting in Copenhagen, AMF contributed to a joint workshop with the Bioenergy Implementing Agreement: “Infrastructure Compatible Transport Fuels”. The workshop highlighted the role of policies, presented Brazil and Sweden as case studies, provided insight into innovative biofuels production technologies and described the needs of the different transport sectors. Presentations are available on the IEA Bioenergy website (<http://www.ieabioenergy.com/publications/ws18-infrastructure-compatible-transport-fuels/>).

During ExCo 47, AMF furthermore met with the Hybrid and Electric Vehicle Implementing Agreement (HEV) to discuss opportunities for collaboration. Potential common topics include assessing the best fit of fuel/electricity and transport service, alternative infrastructure requirements, and plug-in hybrids.

AMF Annexes / Projects

Annex 28: Information Service & AMF Website

Annex 35 Subtask 2: Particulate Measurements: Ethanol and Butanol in DISI Engines

Annex 38 Phase 2: Environmental Impact of Biodiesel Vehicles - **closed; final report available on website**

Annex 39 Phase 2: Enhanced Emission Performance of HD Methane Engines – **closed; final report available on website**

Annex 42: Toxicity of Exhaust Gases and Particles from IC-Engines

Annex 43: Performance Evaluation of Passenger Car, Fuel, and Powerplant Options

Annex 44: Alcohol fuels including methanol, by CATARC, China

Annex 45: Hydrotreated vegetable oil, by Germany and Denmark

Annex 46: Alcohol Application in CI Engines, by DTU

Annex 47: Reconsideration of DME Fuel Specifications for Vehicles

Annex 48: Value Proposition Study on Natural Gas Pathways for Road Vehicles

Annex 49: COMVEC – Fuel and Technology Alternatives for Commercial Vehicles

Annex 50: Fuel and Technology Alternatives in Non-Road Engines – **new!**

Annex 51: Methane Emission Control – **new!**

Check www.iea-amf.org for more details!

PUBLICATIONS

- **Evaluation of Environmental Impact of Biodiesel Vehicles in Real Traffic Conditions** – A Report from the IEA Advanced Motor Fuels Implementing Agreement Annex 38-2. This report focuses on the comparison of the real-world emissions between the case of using diesel fuel and biodiesel. For this purpose, the on-road driving tests were made, by applying biodiesel, with the latest diesel vehicles complying with the latest emission regulations while avoiding any particular modification to them. For measurement, a PEMS (Portable Emission Measurement System) was used.
Link: http://iea-amf.org/app/webroot/files/file/Annex%20Reports/AMF_Annex_38-2.pdf
- **Enhanced Emission Performance and Fuel Efficiency for HD Methane Engines** – A Report from the IEA Advanced Motor Fuels Implementing Agreement Annex 39-2. The purpose of Annex 39 is to assess methane fuelled engines for heavy duty vehicles regarding energy efficiency, sustainability and emission performance. The second phase of the project includes testing carried out in Sweden, Finland and Canada.
Link: http://iea-amf.org/app/webroot/files/file/Annex%20Reports/AMF_Annex_39-2.pdf
- **Energy Technology Perspectives 2014**– Starting from the premise that electricity will be an increasingly important vector in energy systems of the future, Energy Technology Perspectives 2014 (ETP 2014) takes a deep dive into actions needed to support deployment of sustainable options for generation, distribution and end-use consumption. In addition to modelling the global outlook to 2050 under different scenarios for more than 500 technology options, ETP 2014 explores the possibility of "pushing the limits" in six key areas: Solar Power: Possibly the Dominant Source by 2050; Natural Gas in Low-Carbon Electricity Systems; Electrifying Transport: How E-mobility Replace Oil; Electricity Storage: Costs, Value and Competitiveness; Attracting Finance for Low-Carbon Generation; and Power Generation in India.
Link: http://www.oecd-ilibrary.org/energy/energy-technology-perspectives-2014_energy_tech-2014-en
- **IEA Bioenergy Task 39 Newsletter Issue 36** – This international network on commercializing conventional and advanced liquid biofuels from biomass publishes a quarterly newsletter. This edition highlights areas of progress in biofuels development worldwide and includes a US country report.
Link: <http://task39.org/files/2013/05/IEA-Bioenergy-Task-39-Newsletter-Issue-36-USA-April-2014-FINAL.pdf>
- **IEA Advanced Fuel Cells Implementing Agreement - Key Messages** - This document pulls together all the key messages from each of the technical Annexes within the Implementing Agreement, and from the overarching Executive Committee to provide a summary relevant for experts and policy makers alike. The summary Key Messages are taken from the 2012 Annual Report.
Link: http://www.ieafuelcell.com/documents/AFC_IA-Key_Messages.pdf
- **IEA Bioenergy News** – The newsletter of the Bioenergy Implementing Agreement covers in this issue the May ExCo73 meeting in Copenhagen, Denmark. It also features an editorial 'Bioenergy in Denmark, a focus on Task 33, the Noticeboard, and recent publications and upcoming events.
Link: <http://www.ieabioenergy.com/publications/iea-bioenergy-news-volume-261-june-2014/>

- **A policy framework for climate and energy in the period from 2020 to 2030** - The EU is now on track to meet the 2020 targets for greenhouse gas emissions reduction and renewable energy and significant improvements have been made in the intensity of energy. Based on the lessons of the existing target and on the assessment of how to minimize indirect land-use change emissions, it is clear that first generation biofuels have a limited role in decarbonizing the transport sector. A range of alternative renewable fuels and a mix of targeted policy measures building on the Transport White Paper are thus needed to address the challenges of the transport sector in a 2030 perspective and beyond."

Link: http://ec.europa.eu/energy/doc/2030/com_2014_15_en.pdf

- **Guidelines on State aid for environmental protection and energy 2014-2020** – A number of directives cover biofuels use in the EU. In April 2014, the EC introduced new guidelines on state aid for renewable energy, including biofuels. The aim of this guideline is: "to provide a framework for designing more efficient public support measures that reflect market conditions, in a gradual and pragmatic way, because Europe should meet its ambitious energy and climate targets at the least possible cost for taxpayers and without undue distortions of competition in the Single Market."

Link: http://ec.europa.eu/competition/sectors/energy/eeag_en.pdf

- **Life cycle assessment as a tool to evaluate alternative fuels in turbojet engines** – Biofuel could contribute to the reduction of global greenhouse gas effects. Of great interest are microalgae as a raw material supplier. The aim of this study is to identify the main factors influencing the algal biomass production, because so far, there is no large-scale industrial synthetic fuel production from microalgae. The study leads to the conclusion, that the production of jet fuel from algae biomass is only useful, if the CO₂ balance of the production will be significantly improved.

Link: <http://www.dgfr.de/publikationen/2014/301319.pdf> (German)

- **Energy Efficiency Indicators** – Energy efficiency is high on the political agenda as governments seek to reduce wasteful energy consumption, strengthen energy security and cut greenhouse gas emissions. However, the lack of data for developing proper indicators to measure energy efficiency often prevents countries from transforming declarations into actions. The main objectives of this manual are to identify the main sectoral indicators and the data needed to develop these indicators; and to make surveying, metering and modeling practices existing all around the world available to all. The ultimate goal is to make improved energy efficiency not only a concept but a reality.

Link:

http://www.iea.org/publications/freepublications/publication/IEA_EnergyEfficiencyIndicatorsFundamentalsStatistics.pdf

- **Digest of EEA indicators 2014** – This report provides a comprehensive yet accessible guide to European Environment Agency (EEA) indicators. It acts as a reference document providing an overview of EEA indicators, placing them in the context of the wider landscape of European environmental indicators. The report highlights the insights that indicators can provide on progress against environmental priorities. In summary, this report explains 'what we have, why we have it and how it can be used'.

Link: http://www.eea.europa.eu/publications/digest-of-eea-indicators-2014/at_download/file

- **Why did GHG emissions decrease in the EU between 1990 and 2012?** – This paper briefly analyses the major factors that accounted for decreased greenhouse gas (GHG) emissions excluding land use, land use changes and forestry (LULUCF) in the EU-28 between 1990 and 2012. The paper commences with an overview of EU trends, followed by summaries of the contributions of individual Member States, greenhouse gas types, and main sectors.

Link: http://www.eea.europa.eu/publications/why-are-greenhouse-gases-decreasing/at_download/file
- **The Cost of Air Pollution – Health Impacts of Road Transport**– This study reports on the economic cost of the health impacts of air pollution from road transport – on a global scale but with special reference to China, India and the OECD countries.

Link: http://www.keepeek.com/Digital-Asset-Management/ocd/environment/the-cost-of-air-pollution_9789264210448-en#page1
- **Space for energy crops – An assessment on the potential contribution of Europe’s energy future** – The overall energy potential that can be produced from growing dedicated energy crops on ‘spare’ land in the EU is low. This new report explores the potential for the additional production of energy crops in Europe on land not already used for food production, forestry, or providing other important services, and assesses some of the challenges associated with increasing output.

Link: http://www.ieep.eu/assets/1392/IEEP_2014_Space_for_Energy_Crops.pdf
- **Wasted: Europe's untapped resource** – According to a newly released study conducted by the International Council for Clean Transportation and the National Non-Food Crops Centre, if all sustainably available waste and residuals were converted to biofuels, it could supply up to 16 percent of the European Union’s road fuel by 2030. Furthermore, this could result in greenhouse gas (GHG) savings in excess of 60 percent when taking a full lifecycle approach, up to €15 billion (\$25.1 billion) in additional economic revenue and up to 300,000 additional jobs by 2030.

Link: <http://theicct.org/sites/default/files/publications/WASTED-final.pdf>
- **EU renewable energy targets in 2020: Revised analysis of scenarios for transport fuels** – In this report, the potential for renewable fuels to achieve mandatory targets for renewable energy and GHG intensity reduction in EU transport by 2020 has been assessed. Contributions from the road and non-road transport sectors have been considered as well as taking the broader view on other alternative fuels. Specifically, dedicated model runs have been performed to assess air transport’s contribution to the RED regulatory target. Following a review of the EU regulatory framework in Chapter 2, Chapter 3 describes the Fleet and Fuels Model developed by JEC and includes details of the reference scenario. Chapter 4 discusses the biofuels supply outlook including advanced biofuels assumptions. Chapter 5 outlines the outcomes of the study including the reference case, comparison with JEC Biofuels Study 2011, different market fuel demand scenarios, a comparative impact of legislative proposals and sensitivity runs. Conclusions from the study are presented in Chapter 6.

Link: http://iet.jrc.ec.europa.eu/about-jec/sites/iet.jrc.ec.europa.eu/about-jec/files/documents/JEC_Biofuels_2013_report_FINAL.PDF

EVENTS

11th EUROPEAN SOFC & SOE FORUM, 1-4 July 2014, Lucerne, Switzerland

Conference website: <http://www.efcf.com/index.php?id=1195>

International VDI Conference - Biofuels 2014, 15-16 July 2014, Rotterdam, Netherlands

Conference website: <http://www.vdi-wissensforum.de/en/nc/events/detailseite/event/06KO966014/>

Nordic Biogas Conference, NBC 2014, 27-29 August 2014, Reykjavik, Island

Conference website: <http://nbc.sorpa.is/nbc>

4th International Symposium on Gasification and its Applications, 2-4 September 2014, Vienna, Austria

Conference website: <http://www.i-sga.info/>

TCS2014 - Symposium on Thermal and Catalytic Sciences for Biofuels and Biobased Products, 2-5 September 2014, Denver, USA

Conference website: <http://www.tcs2014.org/>

26th International AVL Conference "Engine & Environment", 11-12 September 2014, Graz, Austria

Conference website: <https://www.avl.com/engine-environment-2014>

The 4th New Energy Forum-2014, 21-23 September 2014, Qingdao, China

Conference website: <http://www.bitcongress.com/nef2014/>

4th International Conference on Lignocellulosic Ethanol, 23-25 September 2014, Landshut-Munich, Germany

Conference website: <http://ec.europa.eu/yourvoice/ipm/forms/dispatch?form=biofuels2014&lang=en>

H2Expo - e-mobility, fuel cells, hydrogen & storage solutions, 23-26 September 2014, Hamburg, Germany

Conference website: <http://www.h2expo.com/en/>

Batteries 2014, 24 September 2014, Nice, France

Conference website: <http://www.batterieevent.com/>

Biofuels International 2014, 24-25 September 2014, Ghent, Belgium

Conference website: http://www.biofuels-news.com/conference/14_programme.php

9th IAV Conference: Gas-Powered Vehicles, 29-30 September 2014, Potsdam, Germany

Conference website: <http://www.iav.com/en/events/iav-tagung/9th-iaav-conference-gas-powered-vehicles>

Conference of the European Biogas Association, 30 September – 2 October 2014, Egmond aan Zee, Netherlands

Conference website: <http://www.biogasconference.eu/>

EBEC European Bioenergy Expo and Conference, 8-9 October 2014, Stoneleigh, United Kingdom

Conference website: <http://ebec.nextgenexpo.co.uk/>

National Advanced Biofuels Conference and Expo, 13-15 October 2014, Minneapolis, Minnesota, USA

Conference website: <http://www.advancedbiofuelsconference.com/ema/DisplayPage.aspx?pageId=Home>

6th Stakeholder Plenary Meeting of the European Biofuels Technology Platform, 14-15 October 2014, Brussels, Belgium

Conference website: <http://www.biofuelstp.eu/>

SGC International Seminar on Gasification, October 15-16, Malmö, Sweden

Conference website: www.gasification.se

SAE 2014 International Powertrain, Fuels & Lubricants Meeting, 20 October 2014, Birmingham, United Kingdom

Conference website: <http://www.sae.org/events/pfl/>

Sustainable Aviation Fuels Forum, 20-22 October 2014, Madrid, Spain

Conference website: <http://www.core-jetfuel.eu/Shared%20Documents/index.html>

Biogas Science 2014, 26-30 October 2014, Vienna, Austria

Conference website: <http://biogas2014.boku.ac.at/>

IEEE Vehicle Power and Propulsion Conference (VPPC), 27-30 October 2014, Coimbra, Portugal

Conference website: <http://www.vppc2014.org/home.html>

EV2014VÉ Conference & Trade Show, 28-30 October 2014, Vancouver, Canada

Conference website: <http://emc-mec.ca/ev2014ve/en/index.html>

5th BioMarine International Business Convention, 30-31 October 2014, Cascais, Portugal

Conference website: <http://www.biomarine.org/>

Small Engines Leaning Towards Enhanced Personal Mobility, 17 November 2014, Pisa, Italy

Conference website: <http://www.sae.org/events/setc/>

European Electric Vehicle Congress, 2-5 December 2014, Brussels, Belgium

Conference website: <http://www.eevc.eu/>

Second Annual Fuel Choices Summit, 3-4 December 2014, Israel

Conference website: <http://www.fuelchoicesinitiative.com/>

Eilat-Eilat Green Energy 6th International Conference & Exhibition, 7-9 December 2014, Eilat, Israel

Conference website: <http://www.eilatenergy.org/>

Fuels of the Future 2015, 19-20 January 2015, Berlin, Germany

Conference website: <http://www.ufop.de/english/news/fuels-of-the-future-2015-invitation-for-sponsors-and-call-for-papers/>

10th International Colloquium Fuels – Conventional and Future Energy for Automobiles, 20-22 January 2015, Stuttgart, Germany

Conference website: www.tae.de/fuels

Clean Car Expo, 16-18 February 2015, San Diego, CA, USA

Conference website: <http://www.cleancarexpo.com/>

21st International Symposium on Alcohol Fuels, 10-14 March 2015, Gwangju, Republic of Korea

Conference website: www.2015isaf.org

5th EUROPEAN PEFC & H2 FORUM, 30 June 2015, Lucerne, Switzerland

Conference website: <http://www.efcf.com/index.php?id=1237>

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