December 2013, issue no. 4/2013

AMFI Newsletter

AMF ExCo members visiting the 3CV test lab in Santiago, Chile
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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:

- Ralph MCGILL, FEEC
- Werner TOBER and Robert ROSENITSCH, TU Vienna
- Manfred WÖRGETTER, BIOENERGY 2020+

Editing by Dina Bacovsky and Andrea Sonnleitner, BIOENERGY 2020+.
Checking by *Ralph McGill, FEEC and Päivi Aakko-Saksa, VTT.*
The AMFI Newsletter is available online at: *www.iea-amf.org*

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GENERAL INTEREST

EU: Biofuel reform delayed indefinitely

The European Parliament's Environment Committee (ENVI) has voted to again deny a negotiating mandate to Corinne LePage, the French Liberal Member of European Parliament (MEP) in charge of a proposal to limit the use of biofuels produced from food crops in the EU.

In September, MEPs backed the cap proposed by the Commission, but did not give LePage a mandate to begin negotiations. LePage has since attempted to gain support for bringing forward discussions with Council but has not been successful.

The refusal will mean the legislation will likely pass into a second reading, which could delay proceedings for at least a year because of the approaching end of the parliamentary term in April 2014.

Source: http://www.europeanvoice.com/article/2013/october/biofuel-reform-delayed-indefinitely/78485.aspx

EU: Roll-out of refueling infrastructure

The European Commission has welcomed the vote of the European Parliament's Transport Committee on measures to build-up alternative fuel stations across Europe to break the oil dependency of transport. Commission Vice-President Siim Kallas, in charge of transport, said: "I am very pleased with the positive vote. It strengthens our proposal, especially as regards the minimum infrastructure coverage, information for consumers and innovation aspects. I am confident that ambitious measures will be adopted soon for the benefit of EU citizens and industry".

In January 2013, the European Commission proposed a Directive to ensure the roll-out of alternative fuels stations across the EU, with common standards to ensure EU wide mobility. The proposal aims at solving a "chicken and egg" problem: refueling stations for alternative fuels are not built because there are not enough vehicles while consumers do not buy the vehicles because there are no stations. Hence the proposal foresees a minimum coverage of refueling infrastructure for Electricity, Hydrogen and Natural Gas for road and sea transport, and their corresponding standards.

Source: http://ec.europa.eu/transport/newsletters/2013/11-29/articles/refuelling_en.htm

US: Zero emission vehicles and zero carbon

The State of New York along with California and 6 other states announced, on Oct 24, 2013, a pact to put 3.3 million Zero Emission Vehicles (ZEVs) on the road by 2025. If the objective is to reduce carbon dioxide emissions, this plan is totally inadequate and E100 optimized engines would be much better, the E100 Ethanol Group argues.

There are approximately 250 million light duty vehicles in the U.S. burning gasoline. Thus, even if the 3.3 million ZEV goal is achieved, that represents only 1.32% of the total number of light duty vehicles. The U.S. currently uses 135 billion gals of gasoline annually adding 3.267 trillion lbs. of new, net CO_2 to the atmosphere every year. We believe the goal should be to cut those numbers 50% by 2025, not just by 1.32%

With zero emission vehicles, CO_2 emissions won't even be cut by that 1.32%. While the Chevy Volt, Nissan Leaf, Tesla S, and fuel cell vehicles may be zero emission at the tailpipe, they are

certainly not zero emission if the net CO_2 produced when making the hydrogen or electricity necessary to move these vehicles is counted.

Vehicle	Fuel economy	Emission rate	CO2/mile (lbs)
Chevy Equinox	26 mpg on gasoline	24.2 per gal gasoline	0.931
Honda Civic CNG	4.84 miles per lb of CNG	3.231 per lb CNG	0.668
Chevy Volt	37 mpg (combined) on gasoline	24.2 per gal gasoline	0.654
Toyota Fuel Cell	23 miles per lb of hydrogen	11.8 per lb H2	0.513
Tesla S (85 KW)	100 miles per 38 KWHr	1.29 per KWHr2	0.490
Chevy Volt	100 miles per 35 KWHr	1.29 per KWHr2	0.452
Nissan Leaf	100 miles per 29 KWHr	1.29 per KWhr2	0.374
E100	26 mpg on ethanol - switchgrass	(1.60) per gal ethanol	-0.061
E100	26 mpg on ethanol - corn stover	(1.11) per gal ethanol	-0.081

Sources:
For emission rates, GREET v1.1.0.9096 (Argonne National Lab, 11/5/2013)
For Tesla, Volt and Leaf mileage, window decals
Electric emissions are from standard U.S. mix to produce electricity
E100 blend is 98/2/10ppm ethanol/iso-propanol/denatonium benzoate – approved as motor fuel per 27CFR19.1005

Source: http://www.biofuelsdigest.com/bdigest/2013/11/28/zero-emission-vehicles-and-zero-carbon-the-chart-that-the-wall-street-journal-and-the-washington-post-dare-not-publish/

US: Ethanol´s climate benefits

The Associated Press is out with a big new investigation concluding that U.S. ethanol policy is taking a heavy toll on U.S. lands and waters while offering dubious climate benefits. Among the morsels in AP's probe: Pro-ethanol Agriculture Secretary Tom Vilsack doesn't try to make the case that the fuel helps battle climate change. "I don't know whether I can make the environmental argument, or the economic argument," Vilsack tells AP. "To me, it's an opportunity argument."

Overall, the story explores conservation and virgin lands given over to corn planting, waters polluted by fertilizer, and questionable climate benefits from ethanol. "The ethanol era has proved far more damaging to the environment than politicians promised and much worse than the government admits today," AP reports. AP's report traces the effects of a 2007 law that required a major expansion in the amount of ethanol and other biofuels in the U.S. motor fuel mix.

The ethanol industry is pushing back hard against the story. The Renewable Fuels Association, a major ethanol trade group, said the story "vilifies the ethanol industry and omits hordes of facts about its environmental impact."

Source: http://thehill.com/blogs/e2-wire/189852-ag-secretary-vilsack-%E2%80%98i-don%E2%80%99t-know%E2%80%99-whether-ethanol-helps-climate

GASEOUS FUELS

Germany: H_2 mobility initiative

The six partners in the "H_2 Mobility" initiative - Air Liquide, Daimler, Linde, OMV, Shell and Total – have set up upon a specific action plan for the construction of a nationwide hydrogen refueling network for fuel cell powered electric vehicles. By the year 2023 the current network of 15 filling stations in Germany's public hydrogen infrastructure shall be expanded to about 400 H_2 filling stations. As a first step the deployment of 100 hydrogen stations in Germany over the next 4 years is intended. This would ensure a need-related supply for fuel cell powered electric vehicles

to be introduced into the market in the next years. An agreement has been signed by representatives of all the partners involved.

In addition to plans for a nationwide filling station network, the agreement includes the principles for the procurement and distribution of the necessary hydrogen and a request for support to the German Federal Government. Following the foundation of a joint venture (subject to necessary regulatory approvals), gradual expansion of the national filling station network will commence next year. This means that an H_2 supply suitable for everyday use shall be created not only for densely populated areas and main traffic arteries, but also for rural areas. The objective is to offer an H_2 station at least every 90 kilometers of motorway between densely populated areas.

According to this plan in metropolitan areas, drivers of fuel cell powered vehicles will have at least 10 hydrogen refueling stations available each from 2023. Thus zero tailpipe emission H_2-mobility is becoming increasingly attractive for customers. The "H_2 Mobility" initiative expects that a total investment of around €350 million will be required for this future-oriented infrastructure project.

Source: http://media.daimler.com/dcmedia/0-921-656547-1-1636552-1-0-1-0-0-1-11694-0-0-1-0-0-0-0-0.html?TS=1381756376162

Hyundai hydrogen fuel cell cars

Hyundai ix35 Fuel Cell vehicle at the No. 5 plant in Ulsan, South Korea.

Hyundai Motor Co. has started mass production of a hydrogen fuel cell-powered vehicle, and is making it available both in Europe and in the US.

The company wants to get 1,000 of its vehicles on the road by 2015. Those vehicles will be leased to private companies and governments. Hyundai hopes to start selling the car to consumers sometime in 2015.

The rollout is starting in Europe because a better hydrogen gas station infrastructure is in place. With prices per vehicle in the "upper $100,000s per car," the ix35—which emits only water vapor as its exhaust—is too expensive for general consumers right now. The company hopes to bring the price of hydrogen cell cars down to about $50,000 by the time they're ready to sell to consumers.

Source: http://www.usnews.com/news/articles/2013/02/26/hyundai-becomes-first-company-to-mass-produce-hydrogen-fuel-cell-cars

Crescentino biorefinery opened

The world's largest advanced bioethanol production facility has been opened in Northern Italy. The biorefinery was constructed by Beta Renewables (Mossi Ghisolfi Group) and cost €150 million euros. Operating at full capacity, the plant will produce 75 million liters a year of bioethanol, produced from non-food biomass such as agricultural residues and energy crops. The project was supported by the European Commission within the 7th Framework Programme for Research and Technological Development.

The "revolutionary" feature of the bio-refinery is the technology platform. The innovative PROESA™ (PROduzione di Etanolo da biomasSA - Production of ethanol from biomass) technology developed by Biochemtex (a Mossi Ghisolfi Group engineering company), combined with Cellic® enzymes produced by Novozymes, makes use of sugars that are present in lignocellulosic (non-food) biomass to obtain alcohol, fuel and other chemical products. Moreover, the PROESA technology produces biofuels that ensure a reduction in greenhouse gas emissions close to 90% of those generated by fossil fuels.

Source: http://betarenewables.com/press-release-detail/2/crescentinos-biorefinery-grand-opening

'Bioliq' pilot plant operational

For the first time, synthetic gasoline is produced by Karlsruhe Institute of Technology (KIT). The synthesis stage of the "bioliq" pilot plant successfully started operation. Now, all stages of the bioliq process, i.e. flash pyrolysis, high-pressure entrained-flow gasification, and synthesis, have been realized. The project will now be completed by testing the entire process chain and optimizing it for the large industrial scale.

Hence, KIT, in cooperation with Chemieanlagenbau Chemnitz GmbH, has progressed further in the production of environmentally compatible fuels from residual biomass. As soon as all stages of the bioliq process will have been linked, the pilot plant will supply high-quality fuel from straw, probably in mid-2014. The four-staged bioliq process developed by KIT accounts for the fact that straw and other biogenous residues have a low energy density and arise in a widely distributed manner. Moreover, the bioliq process allows for the economically efficient large-scale production of high-quality engine-compatible designer fuels.

The bioliq synthesis stage now is the last section of the bioliq pilot plant on KIT Campus North to successfully start operation. Upstream of hot gas cleaning, the synthesis stage converts synthesis

gas into high-quality Otto fuel based on two reaction steps. Plant design is specially adapted to CO-rich synthesis gas produced by gasification of biomass. Maximum utilization of the carbon contained in the biomass with a minimum investment volume is achieved by direct conversion of the synthesis gas into dimethyl ether in the first reaction step.

Source: http://dailyfusion.net/2013/10/first-gasoline-produced-biomass-bioliq-process-21840/

Recycling of beverages into ethanol

Energentium Inc. is finalizing tests before entering into full production in a few weeks at its new 15 MMly (4 MMgy) plant in Brantford, Ontario, to recycle waste beer and soft drinks into ethanol.

"Many companies are paying growing penalties to the government for the waste-material dumping and even bigger penalties in public relations in the public eye," Phil Artman, general manager, said. Production will start in November, "using technology that will not only make ethanol from waste materials in an efficient way, but create additional byproducts such as electricity, animal feed, omega 3 oils and CO_2, to name just a few."

Artman said the Energentium process is unique in several ways. Besides using waste beverages, the system can be adapted to use other food wastes including fruit and vegetables, jams, syrups, sugars and candies. The process, which incorporates reverse osmosis in a unique manner, is very energy efficient, Artman added. "It actually produces energy in the ethanol distillation process."

Source: http://www.ethanolproducer.com/articles/10412/ontario-plant-to-recycle-beverages-into-ethanol-other-products

Roll-out of Iogen technology

Brazilian ethanol giant Raízen Energia Participacoes has started construction of a commercial biomass-to-ethanol facility using Iogen Energy's advanced cellulosic biofuel technology. The US$100 million plant, to be located adjacent to Raízen's Costa Pinto sugar cane mill in Piracicaba, São Paulo, will produce 40 million liters of cellulosic ethanol a year from sugarcane bagasse and straw. Plant start-up is anticipated in the fourth quarter of 2014.

Initially, the project will use bagasse as the feedstock and return the lignin residue to the on-site boiler. The project will deploy all of the core operations developed by Iogen (pretreatment, enzymatic hydrolysis and fermentation) and take advantage of the substantial integration opportunities offered by co-locating with a sugarcane mill, which include:

- Access to bagasse at low cost, prepared for use and in steady supply
- Access to sugarcane straw currently left on the field
- Significant capital cost savings through use of existing equipment and other site infrastructure
- Operating costs savings due to sharing across the existing site.

Subsequent to this first facility, Raízen has said that it plans to build another seven facilities using Iogen Energy's cellulosic biofuel technology.

Source: http://www.iogen.ca/raizen-project/index.html

By-product corn oil

Pacific Ethanol, Inc. has begun commercial production of corn oil utilizing Edeniq, Inc.'s Oil Plus™ proprietary process at its Stockton, CA plant. Corn oil is a high value co-product with multiple markets including animal feed and biodiesel. Corn oil production at Pacific Ethanol´s ethanol plants is an important strategy to further diversify plant revenue streams and significantly improve operating income.

Source: http://www.pacificethanol.net/site/_documents/news/PEIXCornOil.pdf

US: E15 ethanol approved for 2007+ model years

In Washington, the U.S. Environmental Protection Agency (EPA) waived a limitation on selling fuel that is more than 10 percent ethanol for model year 2007 and newer cars and light trucks. The waiver applies to fuel that contains up to 15 percent ethanol – known as E15 – and only to model year 2007 and newer cars and light trucks. This represents the first of a number of actions that are needed from federal, state and industry towards commercialization of E15 gasoline blends.

EPA Administrator Lisa P. Jackson made the decision after a review of the Department of Energy's (DOE's) extensive testing and other available data on E15's impact on engine durability and emissions. "Thorough testing has now shown that E15 does not harm emissions control equipment in newer cars and light trucks," said EPA Administrator Lisa P. Jackson. "Wherever sound science and the law support steps to allow more home-grown fuels in America's vehicles, this administration takes those steps."

Source: http://www.biofuelsdigest.com/bdigest/2010/10/14/e15-ethanol-approved-in-us-for-2007-model-years-critics-supporters-react/

E85 becoming price-competitive with gasoline

In several Midwestern states of the USA, the retail price of E85 motor fuel, which is gasoline blended with up to 85% ethanol, has fallen in recent months. While ethanol has been cheaper than regular gasoline on a per-gallon basis for several years, ethanol's lower energy content often meant that consumers paid more per mile when using higher ethanol blends such as E85. However, recent declines in E85 prices at stations offering that fuel in several Midwestern states have brought E85 close to price parity with regular gasoline on an energy content basis.

Source: http://www.eia.gov/todayinenergy/detail.cfm?id=13031

Butanol as automotive engine fuel

Butanol shows strong potential to be used as a biofuel. Now, ASTM D7862-13, Specification for Butanol for Blending with Gasoline for Use as Automotive Spark-Ignition Engine Fuel, covers butanol that is intended to be blended with gasoline at 1 to 12.5 volume percent for use as an automotive spark-ignition engine fuel.

ASTM D7862 establishes performance requirements and test methods for butanol content, water content, acidity, inorganic chloride, solvent-washed gum, sulfur content and total sulfate. The ASTM D7862 specification will be used by biofuel producers, petroleum refiners, gasoline blenders, government agencies, inspection laboratories, and manufacturers of motor vehicles, marine engines and outdoor power equipment.

Source: http://www.astmnewsroom.org/default.aspx?pageid=3212

Greener bio-buses cut pollution

Ultra-modern "bio-buses" have hit the roads of Canterbury in east Kent, United Kingdom, ferrying university students between campus and the city center.

The six new buses, which run on 100 per cent biofuel, are being used by Stagecoach on the Unibus route between the University of Kent and city bus station. The biofuel is made by blending and refining used cooking oil and waste fat sourced from the UK food industry.

The new vehicles represent an investment of £1.1million.

As well as using sustainable fuel, the new buses are equipped with technologically-advanced Euro 5 engines. Operator Stagecoach expects the combination of biofuel and environmentally-friendly engines to reduce emissions by up to 50 per cent.

Source: http://www.thisiskent.co.uk/Greener-bio-buses-cut-pollution-city/story-19848928-detail/story.html#!

Sugarcane diesel decreases black smoke

Automaker MAN Latin America has recently announced that it has completed 500 hours of testing on diesel made from sugarcane. The test was performed on Euro 5 engines working on a dynamometer bench, whose power train components are measured from a static analysis, thus simulating different conditions operation. Four trucks Volkswagen Constellation 17190 (photo) and another 2 Volkswagen model 24280, all powered with 100% sugarcane diesel, were tested during the month of June in Rio de Janeiro.

The manufacturer concluded that there was a decrease of 15% in NOx emissions, 77% of particulate matter, and 42% in black smoke.

However, the first study on its kind was done by São Paulo's urban transport company Santa Brígida who tested five Volksbus 17,260 V-Tronic running on a mixture of 10% regular diesel and 90% of sugarcane diesel between December 2011 and February 2013: the vehicles traveled more than 500 thousand kms during the test.

Source: http://www.globalbiobusiness.com/nav.asp?l=36&cmd=view&articleid=60

EU: Import duties on biodiesel

The European Union will impose punitive duties on imports of biodiesel from both Argentina and Indonesia for the next five years, after ruling that producers there were selling at unfairly low prices detrimental to European manufacturers.

According to the European Commission, the EU's executive body, the duties would be set at an average of 24.6% for biodiesel from Argentina and 18.9% from Indonesia and will come into effect at the end of November 2013.

Argentina is the world's biggest biodiesel exporter, and the two countries represent 90% of EU biodiesel imports. Their share of the EU market rose to 22% in 2011 from 9% in 2009.

Argentina is allegedly preparing to take the European Union to the World Trade Organisation to challenge the punitive duties. The country has already launched a WTO challenge against EU rules for importing biodiesel, and the EU went to the Geneva-based trade body last December to claim that Argentine import restrictions are illegal. Indonesia's biodiesel companies were also likely to appeal against the EU imposing permanent duties.

Source: http://www.biofuels-news.com/industry_news.php?item_id=7103

SYNTHETIC AND RENEWABLE DIESEL / JET

EU-Project: CORE-JetFuel

The CORE-JetFuel project supports the European Commission in its dynamic and informed implementation of research and innovation projects in the field of sustainable alternative fuels for aviation. It links initiatives and projects at the EU and Member State level, serving as a focal point in this area to all public and private stakeholders. CORE-JetFuel addresses competent authorities, research institutions, feedstock and fuel producers, distributors, aircraft and engine manufactures, airlines and NGOs. The project is aimed to set up a European network of excellence for alternative fuels in aviation that brings together technical expertise from all across this complex thematic field and helps to coordinate R&D as well as implementation efforts.

Source: http://international.fnr.de/eu-activities/european-projects/core-jetfuel/

Neste Oil joins aviation biofuel initiative

Neste Oil committed itself to a Dutch initiative aimed at the deployment of sustainable biofuel in the aviation sector. The signatories of the initiative include KLM, SkyNRG, Schiphol Airport, the Port of Rotterdam, the state secretary of infrastructure and the environment, and the minister of economic affairs. Neste Oil's role in the initiative is to explore the production opportunities for aviation biofuel and scaling up production. Its renewable fuel refinery in Rotterdam will potentially be the first site for producing renewable aviation fuel in the Netherlands.

Neste Oil's renewable aviation fuel is based on its NExBTL technology, which can make very flexible use of a wide range of vegetable oil and waste-based raw materials. Neste Oil ensures the sustainability of all the renewable raw materials it uses and its supply chain complies with a number of sustainability certification schemes. NExBTL renewable aviation fuel meets the very stringent quality standards demanded of aircraft fuel and can significantly reduce an aircraft's greenhouse gas emissions compared to fossil fuel.

Source: http://www.biomassmagazine.com/articles/9673/neste-oil-joins-aviation-biofuel-initiative-in-the-netherlands

OTHER FUELS AND VEHICLES

Scania Euro 6 engines

Scania has used its vast experience of both EGR and SCR to develop its Euro 6 engine range. The latest additions are the 13-litre, 6 cylinder 370 hp and the 16-litre, 730 V8, today's most powerful Euro 6 truck engine. With eleven diesel engines available, every customer will find the optimal output level and engine characteristics for demanding applications, without compromising drivability or fuel economy.

Another flexible feature is that the gas engines, 280 or 340 hp, can be adapted to run on either CNG (compressed natural gas), LNG (liquefied natural gas) or biogas, making them very adaptable to local fuel availability. Thanks to their - for gas engines exceptional - torque, they are very flexible. Scania customers can now harvest all the efforts and investments made in Euro 6 from Scania's side.

One of the latest additions to Scania's Euro 6 engine range is the robust 370 inline six. It is characterized by its high torque, delivering impressive 1,900 Nm already from 1,000 r/min. This torque vs. power rate come handy in applications where for instance loads not always are on the heavy side but will appear occasionally, or when a truck has to do a lot of start and stop.

Source: http://www.scania.com/media/calendar/2013/a-complete-euro-6-range/A%20complete%20Euro%206%20range.aspx?tab=5

MISCELLANEOUS

EU: Methanol for maritime transport

The European Union will support with €11.2 million from the TEN-T Programme a study followed by real life trials to look at the use of methanol as a possible maritime fuel of the future. The initiative also contributes to the realization of the "Motorways of the Sea" (TEN-T Priority Project 21) concept.

The study, selected for funding under the 2012 TEN-T Multi-Annual Programme, will investigate how methanol could become a cost-effective and environmentally friendly solution for the maritime sector. This latter aspect is especially important as the industry must comply with the ambitious International Maritime Organisation and EU sulphur emission reduction targets.

Germany, Sweden and Finland will be taking part in the project, which involves the installation and testing of methanol on an existing passenger vessel operating on the short sea route between Gothenburg, Sweden and Kiel, Germany. In addition to retrofitting the vessel, the test phase will also create the appropriate port infrastructure for the supply of methanol for bunkering. A bunker vessel and a storage tank will be built in both ports.

The study will be monitored by the Trans-European Transport Network Executive Agency (TEN-T EA) and is set to be completed by December 2015.

Source: http://ec.europa.eu/transport/newsletters/2013/11-29/articles/ten-t-maritime_en.htm

Petrobras´ biofuel segment struggling

Brazil-based Petrobras S.A. has released financial results for the first half of 2012, demonstrating its biofuels segment is currently operating at a loss. In its financial report, Petrobras noted that while biodiesel margins have improved in 2012, those improvements have been more than offset by losses in ethanol due to several factors, including lower volumes and prices. Higher feedstock costs due to lower sugarcane production are also cited by the company as a factor leading to losses, as are the effects of the decrease on biological assets' value and the exchange variation effect. In addition, Petrobras also noted increased research and development costs associated with second-generation ethanol were also factor contributing to losses in the biofuel segment.

Source: http://ethanolproducer.com/articles/9018/petrobras-releases-financial-results-biofuel-segment-struggling

IEA & IEA-AMF NEWS

AMF IA

The Advanced Motor Fuels Implementing Agreement (AMF IA) is driving on a successful path towards cleaner and more efficient transport. Established in 1984, in its 30th year of existence the Implementing Agreement has grown to a number of 17 Contracting Parties which currently participate in 12 Annexes. Over the years, 35 Annexes have been successfully completed, and more than 50 reports have been published.

AMF Executive Committee

The 46th Meeting of the AMF Executive Committee was held 19 – 21 November 2013 in Santiago, Chile. Norway, Brazil, Chile and Uruguay participated as Observers. The meeting was dedicated to Annex progress reports, the discussion of the 2015-2019 AMF Strategic Plan, and to outreach to South America. It was complemented by a visit to the testing facility of the Chilean Transport Ministry, the "Centro de Control y Certificación Vehicular (3CV)".

Bus test at 3CV, Chile

The meeting included a seminar "Cleaner and More Efficient Public Transport". The focus was chosen with respect to the needs of Chile and especially Santiago, where about 6,000 buses will be replaced by new ones in the coming years, but a sound basis for procurement decisions is still lacking. AMF experts as well as 15 national experts contributed through presentations and discussions. The presentations are available online at the host´s webpage:

http://www.cmmolina.cl/46th-iea-advanced-motor-fuels-meeting-santiago-2013/.

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

Annex 39 Phase 2: Enhanced Emission Performance of HD Methane Engines

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

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

PUBLICATIONS

- **Land grabs for biofuels driven by EU biofuels policies** – In the debate on the sustainability of biofuels, one concern is that the EU demand may cause large scale land acquisitions with negative socio-economic impacts in countries all over the world. Commissioned by ePURE, a new Ecofys study now finds that the acreage of land possibly subject to land grabbing caused by EU biofuels demand is far less than often presented.
  Link: http://www.ecofys.com/files/files/ecofys-2013-report-on-land-grabbing-for-biofuels.pdf

- **The state of renewable energies in Europe – 12th EurObserv'ER Report** – A new Biofuels Barometer report has been published with information pertaining to the European Biofuels market, its main biofuel producing countries, and industrial players for 2012. According to the report biofuel consumption growth was 'firm' in the European Union, rising to almost 14.4 million tons of oil equivalent (toe) in 2012, i.e. a year-on-year increase of 0.4 million toe. However the previous years' weaker growth trend was confirmed at just 2.9% between 2011 and 2012 (5.3% between 2010 and 2011). This slowdown follows the strong build-up in biofuel consumption between 2005 and 2010.
  Link: http://www.energies-renouvelables.org/observ-er/stat_baro/barobilan/barobilan12.pdf

- **The Automotive Compressed Natural Gas Vehicles (NGV) Market 2013-2023 - Prospects for CNG Passenger Cars** – The automotive compressed natural gas vehicles (NGV) market is a dynamic and capital intensive industry. There is considerable variation at country and regional level in the demand for natural gas vehicles and this report explains the reasons for this. Visiongain assessed that the global sales of compressed natural gas vehicles will reach 1.5 million in 2013. Aftermarket systems have traditionally been the way cars were converted to run on compressed natural gas but as awareness of the benefits of natural gas vehicles grows more manufacturers are following companies like Fiat and Volvo and offering factory fitted options. Other manufacturers are offering CNG preparatory work at the factory and approved specialists then fit out the car.
  Link: http://www.reportlinker.com/p01693062/The-Automotive-Compressed-Natural-Gas-Vehicles-NGV-Market-Prospects-for-CNG-Passenger-Cars.html#utm_source=prnewswire&utm_medium=pr&utm_campaign=Oil_and_Gas_energy

- **Black carbon: Better monitoring needed to assess health and climate change impacts** – Black carbon is an air pollutant which harms human health and can contribute to climate change – so cutting emissions may have many benefits. The European Environment Agency (EEA) has published a report on the measurement of black carbon in the air. Of all air pollutants, PM is the most harmful to health in Europe. The black carbon

part of PM is particularly harmful as it represents a mixture of very fine, partly carcinogenic particles, small enough to enter the bloodstream and reach other organs. There is currently a lively debate about whether reducing this pollutant could have significant gains in reducing climate change, with a recent study suggesting that black carbon's effect on the climate is more potent than previously thought.
Link: http://www.eea.europa.eu/highlights/black-carbon-better-monitoring-needed

- **Road transport forecasts 2013** – Road Transport Forecasts 2013 presents the latest results from the Department for Transport's National Transport Model (NTM) for traffic demand, congestion and emissions in England up to 2040. The three key drivers for road traffic on the strategic road network are population, income and the fuel costs. Road traffic on the SRN is forecast to return to the growth with the recovery of the economy. By 2040 road traffic is forecast to be 46% higher than in 2010, implying an increase in congestion (measured as lost time) of about 114%. Despite this increase in traffic, CO2 emissions are forecast to decline by around 15% from 2010 levels, reflecting fleet fuel efficiency improvements and use of bio-fuels.
Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225483/road-transport-forecasts-2013-extended-version.pdf

- **Environment Switzerland 2013** – The report «Environment Switzerland 2013» provides an overview of the current state of the environment in this country. It assesses the measures implemented by the federal authorities to improve the quality of the environment and identifies areas in which further action is required. It also presents the progress achieved in Switzerland in the global context.
Link:
http://www.bafu.admin.ch/publikationen/publikation/01722/index.html?lang=en&download=NHzLpZig7t,lnp6I0NTU042l2Z6ln1ad1IZn4Z2qZpnO2Yuq2Z6gpJCHdXx4hGym162dpYbUzd,Gpd6emK2Oz9aGodetmqaN19XI2IdvoaCVZ,s-.pdf

- **Unintended Consequences of Renewable Energy** – Energy technologies in the future will need to be based on renewable sources of energy and will, ultimately, need to be sustainable. This book published by Springer provides insight into unintended, negative impacts and how they can be avoided. In order to steer away from the pitfalls and unintended effects, it is essential that the necessary knowledge is available to the developers and decision makers engaged in renewable energy. The value of this book lies in its presentation of the unintended health and environmental impacts from renewable energies.
Link: http://www.springer.com/energy/renewable+and+green+energy/book/978-1-4471-5531-7

- **Energy Technology Initiatives - 2013** – Ensuring energy security and addressing climate change cost-effectively are key global challenges. To find solutions, the public and private sectors must work together, sharing burdens and resources, while at the same time multiplying results and outcomes. Some 40 Implementing Agreements carry out programs in the areas of energy efficiency, fossil fuels, fusion power and renewable energy technologies. This publication highlights the most significant recent achievements of the IEA Implementing Agreements. At the core of the IEA energy technology network, these initiatives are a fundamental building block for facilitating the entry of new and improved energy technologies into the marketplace.
Link: http://www.iea.org/publications/freepublications/publication/EnergyTechnologyInitiatives_2013.pdf

- **CO_2 emissions performance of car manufacturers in 2012** – The EEA has collected Member States' data on passenger car registrations, in accordance with Regulation (EC)

No 443/2009 (CO_2 from cars). All Member States reported information on CO_2 emissions and the mass of cars, together with other vehicle characteristics. These data were used to evaluate the performance in 2012 of the new vehicle fleet, and its progress toward meeting the CO_2 emissions target.
Link: http://www.eea.europa.eu/publications/co2-emissions-performance-of-car-1/at_download/file

- **South Africa to mandate biofuel blending starting in 2015** – The Republic of South Africa's Department of Energy announced that the country will begin requiring biofuels to be blended with gasoline and diesel starting Oct. 1, 2015. Ethanol and Biodiesel blends will be permitted under the mandate.
Link: www.energy.gov.za/files/policies/Mandatory%20Blending%20Regulations%2024%20August%202012.pdf

- **E2 Advanced Biofuel Market Report 2013**– This E2 | Environmental Entrepreneurs report catalogs the growth and challenges of the advanced biofuel industry and provides updates on developments since the publication of last year's report in 2012. The scope of this work includes active advanced biofuel projects in the United States and Canada. Each project included in this report achieves at least a 50% reduction in carbon intensity relative to a petroleum baseline, using the direct and indirect effects as measured by the California Air Resources Board.
Link: http://www.e2.org/ext/doc/E2AdvancedBiofuelMarketReport2013.pdf

- **Audit of the DoE's Financial Assistance for Integrated Biorefineries** – Despite over 7 years of effort and the expenditure of about $603 million, the Department of Energy had not yet achieved its biorefinery goals. Specifically, the EPAct mandate to demonstrate the commercial application of integrated biorefineries had not been met and the Department was not on target to meet its biofuels production capacity goal. While the Program reported meeting its goal to demonstrate the successful operation of three integrated biorefineries by 2012, the authors of the report noted that none of these refineries were at the commercial scale. Rather, these biorefineries were primarily much smaller pilot projects. The Department had not successfully achieved commercial-scale operations even though the FOAs issued in 2006 and 2007 indicated that the proposed projects should be operational at the commercial scale within 3 to 4 years.
Link: http://www.ascension-publishing.com/BIZ/DOE-IG-audit-091913.pdf

- **Energy Efficiency - Market Trends and Medium-Term Prospects** – Energy efficiency has been referred to as a "hidden fuel", one that extends energy supplies, increases energy security, lowers carbon emissions and generally supports sustainable economic growth. The Energy Efficiency Market Report provides a practical basis for understanding energy efficiency market activities, a review of the methodological and practical challenges associated with measuring the market and its components, and statistical analysis of energy efficiency and its impact on energy demand. It also highlights a specific technology sector in which there is significant energy efficiency market activity, in this instance appliances and ICT. The report presents a selection of country case studies that illustrate current energy efficiency markets in specific sectors, and how they may evolve in the medium term.
Link: http://www.oecd-ilibrary.org/energy/medium-term-energy-efficiency-market-report-2013_9789264206052-en

- **CO_2 Emissions from Fuel Combustion 2013** – This book provides data on CO_2 emission from fuel combustion from 1971 to 2010 for more than 140 countries and regions by sector and by fuel. Emissions were calculated using IEA energy databases and the default methods and emission factors from the Revised 1996 IPCC Guidelines for National

Greenhouse Gas Inventories.
Link: http://www.oecd-ilibrary.org/energy/co2-emissions-from-fuel-combustion-2013_co2_fuel-2013-en

- **A harmonised Auto-Fuel biofuel roadmap for the EU to 2030**– The study published by E4tech shows that biofuels and vehicle efficiency will be vital to reducing greenhouse gas (GHG) emissions within Europe's transport sector, as liquid fuels will continue to play a significant role up to 2030 and beyond. Other alternative fuels - including gas, electricity and hydrogen - will also make an increasingly important contribution by 2030. For the first time, this report provides a harmonized Auto-Fuel Biofuels Roadmap for the EU to 2030, which examines in detail what the fuels industry could achieve in terms of sustainable biofuels supply and how it will be integrated into the vehicle fleet by 2030.
Link: http://www.e4tech.com/auto-fuel.html

- **Intensified processes for FAME production from waste cooking oil: a technological review** – This article reviews the intensification of fatty acid methyl esters (FAME) production from waste cooking oil (WCO) using innovative process equipment. In particular, it addresses the intensification of WCO feedstock transformation by transesterification, esterification and hydrolysis reactions. It also discusses catalyst choice and product separation. FAME production can be intensified via the use of a number of process equipment types, including as cavitational reactors, oscillatory baffled reactors, microwave reactors, reactive distillation, static mixers and microstructured reactors. Furthermore, continuous flow equipment that integrate both reaction and separation steps appear to be the best means for intensifying FAME production. Heterogeneous catalysts have also shown to provide attractive results in terms of reaction performance in certain equipment, such as microwave reactors and reactive distillation.
Link: http://oatao.univ-toulouse.fr/9758/1/mazubert_9758.pdf

- **Interactions between climate change and agriculture; and between biodiversity and agriculture in Europe** – This IEEP report for the European Parliament describes options for increasing the productivity of European agriculture whilst adapting to climate change, reducing emissions, and providing biodiversity and ecosystem service benefits from agriculture. There will be rising global demand for food and energy from the land over the coming decades resulting from population growth and economic development. This will coincide with the need to adapt agriculture to increasing climate-related threats (which will probably outweigh opportunities in Europe), whilst decreasing the impact of agricultural emissions on climate change. At the same time, biodiversity losses due to intensive agricultural practices and abandonment of biodiversity-rich farming are expected to continue. Additionally this report provides a review of some estimates of future European biofuel consumption and associated land use impacts.
Link:
http://www.ieep.eu/assets/1278/Interactions_between_climate_change_agriculture_and_between_biodiversity_agriculture_-_report.pdf

- **IEA Bioenergy Task 39 Newsletter, 35th Issue: Canada – Recent Progress in Transportation biofuels** – This newsletter, published by the IEA´s network on "Commercialization of Conventional & Advanced Liquid Biofuels from Biomass", includes latest news on biofuel related issues as well as a feature article on the Canadian situation.
Link: http://task39.org/newsletters/

- **Worldwide Fuel Charter 2013 - Fifth Edition** – The Fifth Edition introduces Category 5 for markets with highly advanced requirements for emission control and fuel efficiency. As many countries take steps to require vehicles and engines to meet strict fuel economy

standards in addition to stringent emission standards, Category 5, which raises the minimum research octane number (RON) to 95, will enable some gasoline technologies that can help increase vehicle and engine efficiency. For diesel fuel, this category establishes a high quality hydrocarbon-only specification that takes advantage of the characteristics of certain advanced biofuels, including hydro-treated vegetable oil (HVO) and Biomass-to-Liquid (BTL), provided all other specifications are respected and the resulting blend meets defined legislated limits.

Link: http://www.acea.be/images/uploads/files/Worldwide_Fuel_Charter_5ed_2013.pdf

EVENTS

Fuels of the Future 2014, 20-21 January 2014, Berlin, Germany
Conference website: http://www.fuels-of-the-future.com/

World LNG Fuels, 21-23 January 2014, Houston, Texas, USA
Conference website: http://www.worldlngfuels.com/

Advanced Automotive Battery Conference, 3-7 February 2014, Atlanta, Georgia, USA
Conference website: http://advancedautobat.com/conferences/automotive-battery-conference-2014/index.html

National Ethanol Conference, 17-19 February 2014, Orlando, Florida, USA
Conference website: http://www.nationalethanolconference.com/

31st International Battery Seminar & Exhibit, 10-13 March 2014, Fort Lauderdale, Florida, USA
Conference website: http://www.powersources.net/florida/31st.html

European Hydrogen Energy Conference (EHEC 2014), 12-14 March 2014, Sevilla, Spain
Conference website: http://www.ehec.info/

International Symposium "Automotive and Engine Technology", 18-19 March 2014, Stuttgart, Germany
Conference website: http://www.fkfs.de/english/company/events/stuttgart-symposium-2014/

New Energy Vehicle Show, 2 April 2014, Hong Kong, China
Conference website: http://www.nev-hk.com/

5th Transport Research Arena (TRA) 2014 conference, 14-17 April 2014, Paris-la-Defense, France
Conference website: http://www.traconference.eu/

7th Graz Symposium Virtuelles Fahrzeug, 27-28 May 2014, Graz, Austria
Conference website: http://www.gsvf.at/cms/index.php/en

World Bioenergy 2014, 3-5 June 2014, Jönköping, Sweden
Conference website: www.worldbioenergy.com

2nd International Conference of the Cluster of Excellence Tailor-Made Fuels from Biomass, 16-18 June 2014, Aachen, Germany
Conference website: http://www.fuelcenter.rwth-aachen.de/index.php?id=545

18th Int. Forum on Advanced Microsystems for Automotive Applications (AMAA 2014), 23 June 2014, Berlin, Germany
Conference website: http://www.amaa.de/

EngineExpo2014, 24 June 2014, Stuttgart, Germany
Conference website: http://www.engine-expo.com/english/index.php

11th EUROPEAN SOFC & SOE FORUM, 1-4 July 2014, Lucerne, Switzerland
Conference website: http://www.efcf.com/index.php?id=1195

4th International Symposium on Gasification and its Applications, 2-4 September 2014, Vienna, Austria
Conference website: http://www.i-sga.info/

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

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

21st International Symposium on Alcohol Fuels ISAF, 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

IEA AMF Delegates

Austria
Austrian Federal Ministry for Transport; Andreas Dorda

Canada
CanmetENERGY, Niklas Ekstrom

People's Republic of China
CATARC, Maodong Fang

Denmark
DTU, Jesper Schramm

Finland
VTT, Nils-Olof Nylund

France
ADEME, Patrick Coroller

Germany
FNR, Birger Kerckow

Israel
Ministry of Energy and Water Resources, Bracha Halaf

Italy
Eni SpA, Pietro Scorletti

Japan
AIST, Shinichi Goto
LEVO, Nobuichi Ueda

South Korea
KETEP, Hyun-choon Cho

Spain
IDAE,
Francisco José Domínguez Pérez

Sweden
Swedish Transport Administration, Magnus Lindgren

Switzerland
SFOE, Sandra Hermle

Thailand
PTT, Nirod Akarapanjavit

The United States
DOE, Kevin Stork

Editor: BIOENERGY 2020+, Gewerbepark Haag 3, A-3250 Wieselburg-Land dina.bacovsky@bioenergy2020.eu Dina Bacovsky