

AMFI Newsletter



The 56th AMF Executive Committee meeting was held in New Delhi, India, 15-18 October, 2018. Two new projects were started, any several ideas for further work were discussed.

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DEMONSTRATION / IMPLEMENTATION / MARKETS

Modern diesel cars on-road emissions

New data released by the European Automobile Manufacturers' Association provides evidence that latest-generation diesel cars emit low on-road pollutant emissions. This data was measured in real-driving conditions by the drivers of the various national type approval authorities.

Some 270 new types of diesel cars type-approved against the latest Euro 6d-TEMP standard were introduced on the European market over the past year. The new data shows that all of these diesel cars performed well below the NO_x threshold of the real driving emissions (RDE) test, which applies to all new car types since September 2017. RDE measures key pollutants, such as NO_x and particles, emitted by cars while driven on public roads over a wide range of conditions. RDE ensures that pollutant emission levels measured during the laboratory test (WLTP) are confirmed on the road, and that the legal thresholds are not exceeded during day-to-day driving.

The German automobile club, ADAC, estimates that there are more than 1,200 different RDE-compliant cars available today. ADAC recently performed an on-road testing of RDE-compliant diesel vehicles and found that modern diesels emit 85% less NO_x on average than Euro 5 cars.

Source/ find out more: www.acea.be/press-releases/article/diesel-new-data-proves-that-modern-diesel-cars-emit-low-pollutant-emissions

ADAC overview of RDE-compliant cars: www.adac.de/infotestrat/umwelt-und-innovation/abgas/modelle_mit_euro_6d_temp/

Decarbonisation of road transport with LNG

BioLNG EuroNet announced a commitment to the further expansion of LNG (liquefied natural gas) as a road transport fuel across Europe. The consortium, comprising Shell, DISA, Scania, IVECO, CNH Industrial Capital Europe under the trademark of IVECO Capital and Nordsol will each deliver separate activities that will see 2,000 more LNG trucks on the road, 39 LNG fuelling stations and the construction of a BioLNG production plant in the Netherlands.

The LNG retail stations will form part of a pan-European network. The stations will be located approximately every 400 km along core road network corridors from Spain to eastern Poland. The BioLNG facility will produce 3,000 MT/year of BioLNG and will use biogas produced from organic waste. This will be sold to end-users via the LNG network.

Source/ read more: <https://biolngeuronet.eu/2018/12/06/biolng-euronet-will-drive-forward-decarbonisation-of-road-transport-across-europe-with-lng/?linkId=60677055s>

BASF produces EU-REDcert-methanol

BASF has started production of methanol according to the biomass balance approach. The company replaces fossil raw materials with second-generation renewable raw materials and uses waste as well as residual materials. As a result, BASF reduces emissions of greenhouse gases by 50 % compared with conventionally produced methanol. BASF markets the methanol to customers and also uses it itself as an intermediate for other biomass balance based products. The biomass balance approach is comparable to the green electricity principle. The electricity does not necessarily come from renewable energy, but the corresponding amount of renewable energy is fed into the grid.

Source: <https://www.basf.com/en/company/news-and-media/news-releases/2018/11/p-18-370.html>

POLICY / LEGISLATION / MANDATES / STANDARDS

Carbon emissions set to rise

The IEA expects CO2 emissions in advanced economies to increase by around 0.5% in 2018. Based on the latest available energy data, energy-related CO2 emissions in North America, the European Union and other advanced economies in Asia Pacific grew, as higher oil and gas use more than offset declining coal consumption. As a result, the IEA expects CO2 emissions in these economies to increase by around 0.5% in 2018.

Although the growth in emissions is lower than the 2.4% rise in economic growth, it is particularly worrisome for global efforts to meet the Paris Agreement. Global energy-related CO2 emissions need to peak as soon as possible and then enter a steep decline for countries to meet climate goals.

Global oil demand is set to grow robustly in 2018, global gas use is also increasing strongly, pushed in particular by Chinese policies aiming to curb air pollution in cities, while large numbers of new coal power plants continue to be built and come online. The IEA expects this will lead to a growth in global CO2 emissions in 2018. This growth will follow last year's 1.6% increase, which ended a three-year period of flat emissions between 2014 and 2016. In the IEA's Sustainable Development Scenario, which is aligned with the goals of the Paris Agreement as well as lower air pollution and universal energy access, global emissions fall by over 1% every year to 2025.

Source: IEA

Link: <https://www.iea.org/newsroom/news/2018/december/carbon-emissions-from-advanced-economies-set-to-rise-in-2018-for-first-time-in-fi.html>

Ethanol production in China

China is currently building or seeking approval for new ethanol plants with capacity to produce 6.6 million tonnes of the biofuel a year, Dou Kejun, a researcher at the China National Renewable Energy Centre, told an industry event in the country's south. China had an ethanol production capacity of 2.8 Mio. t in 2017, he said.

The country last year said it would require gasoline supplies to be blended with ethanol by 2020, a move that would require about 15 Mio. t of the biofuel annually. That target is being widely watched by global biofuel markets as China is unlikely to meet its ethanol needs through domestic production.

Link: <https://www.reuters.com/article/us-china-ethanol/china-set-to-triple-its-ethanol-production-capacity-government-researcher-idUSKBN10A0FH>

Biofuels and/or Electrification?

A major study carried out by Ricardo for European fuels industry body Concawe has investigated the impacts of three scenarios capable of delivering circa 85 percent greenhouse gas (GHG) emissions reductions from the light-duty vehicle parc within the EU by 2050 – and offers some surprising insights on the hazards of over-reliance upon any one technology.

The study drew upon expertise from across the strategic consulting, energy and environment, and technical consulting teams of the Ricardo group to provide a broad-ranging, quantitative and objective analysis of possible scenarios capable of delivering EU-targets for light-duty vehicle

parc GHG emissions reductions for 2050. Rather than being forecasts, these scenarios offer three potential mixes of vehicle technology types that would be capable of delivering these levels of emissions reductions, compared to the reference 'business as usual' scenario. Each scenario was analysed in terms of costs, as well as wider market and economic impacts.

The three 2050 scenarios considered were:

- a mass roll-out of battery electric vehicles (EVs), representing a fully electrified market by 2040 and 90 percent of the EU parc a decade later;
- a focus instead on the development of low carbon fuels, including both biofuels and artificially synthesized eFuels, alongside some electrification, and
- a third scenario representing greater use of plug-in hybrid electric vehicles (PHEVs) together with increased use of bio- and eFuels.

All three scenarios were shown to be capable of delivering the EU target of light-duty vehicle parc life well-to-wheels GHG emissions reductions to less than 13 percent of those of 2015 by 2050. The study examined capital investment costs for building infrastructure, reduction of fiscal revenue from fuel duties, total end-user cost, implication on GHG emissions, and risks of each scenario. Among other results, the analysis suggests that we will achieve more GHG reduction faster and at less cost if we drive towards a mix of electrification and low carbon, clean fuel.

Source: Ricardo

Link: <https://ricardo.com/news-and-media/press-releases/report-shows-balanced-use-of-technologies-preferable-to-sole-focus-on-electrification>

SPOTLIGHT AVIATION

Waste to jet fuel

BP and Johnson Matthey (JM) have signed an agreement with Fulcrum BioEnergy to license their Fischer Tropsch (FT) technology to support Fulcrum's drive to convert municipal solid waste into biojet fuel.

BP and JM have developed a simple-to-operate and cost-advantaged FT technology that can operate both at large and small scale to economically convert synthesis gas, generated from sources such as municipal solid waste and other renewable biomass, into long-chain hydrocarbons suitable for the production of diesel and jet fuels. Fulcrum will use the BP and JM technology in their new Sierra BioFuels Plant located in Storey County, Nevada, approximately 20 miles east of Reno.

The Sierra plant will be the first commercial-scale plant in the US to convert municipal solid waste feedstock, or household garbage that would otherwise be landfilled, into a low-carbon, renewable transportation fuel. When the plant begins commercial operation, planned for the first quarter of 2020, Sierra is expected to convert approximately 175,000 tons of household garbage into approximately 11 million gallons of fuel each year: equivalent to the fuel needed for more than 180 return flights between London and New York.

Source: BP

Link: <https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bp-and-johnson-matthey-license-innovative-waste-to-fuels-technology-to-biofuels-producer-fulcrum-bioenergy.html>

Setting up the supply chain

Neste and Air BP, an international fuel products and services supplier, have entered into an agreement to explore opportunities to increase the supply and availability of sustainable aviation fuel for airline customers. Through this innovative collaboration, Neste's solutions for producing and blending renewable jet fuel will be brought together with Air BP's customer relationships, expertise in developing efficient and effective supply chains, as well as their certification and product quality assurance capabilities. One goal of the cooperation will be complementary efforts to bring a co-branded sustainable aviation fuel to market at airports across Air BP's global network.

Source: *Neste Corporation Press Release 11 October 2018 at 10 am (EET)*

Link: <https://www.neste.com/releases-and-news/neste-and-air-bp-enter-innovative-industry-collaboration-support-sustainable-aviation-fuel-supply>

SPOTLIGHT FUEL CELL VEHICLES AND HYDROGEN

Large-scale Liquid Hydrogen Plant

Air Liquide will build the first large-scale liquid hydrogen production plant dedicated to the hydrogen transportation markets in North America. Plant construction will begin in 2019 and it will have a production capacity of 10 million kg of hydrogen per year. Air Liquide is partnering with FirstElement Fuel to supply liquid hydrogen to retail fuelling stations in California.

Source: <https://www.airliquide.com/media/air-liquide-build-first-world-scale-liquid-hydrogen-production-plant-dedicated-supply-hydrogen-energy-markets>

Hydrogen Energy Ministerial Meeting in Japan

The Ministry of Economy, Trade and Industry (METI) and the New Energy and Industrial Technology Development Organization (NEDO) will jointly hold a Hydrogen Energy Ministerial Meeting. The meeting will bring together ministers of major countries committed to hydrogen-related efforts worldwide, representatives of private companies and other stakeholders. Participants will exchange views on innovative developments in each country, the latest knowledge and possibility of international cooperation, and will hold in-depth discussions on future directions of policies for global utilization of hydrogen.

Source: *METI Japan, 23 October 2018*

http://www.meti.go.jp/english/press/2018/0508_001.html

Japan constructs large hydrogen production plant

The New Energy and Industrial Technology Development Organization and other organizations have started construction of what will be one of the world's largest hydrogen plants in Fukushima Prefecture. Hydrogen generated at the plant in the town of Namie will be used for fuel-cell vehicles and other purposes during the 2020 Tokyo Olympics and Paralympics. The plant will use up to 10,000 kilowatts of power generated from sunlight and other sources to extract up to 900 tons of hydrogen each year from water for storage and supply. Test operations will start by July 2020 to check and examine technological issues.

Source: *Japan Times, 10 August 2018*

<https://www.japantimes.co.jp/news/2018/08/10/national/construction-begins-large-hydrogen-plant-fukushima/>

Deployment of hydrogen stations in Japan

Toyota, Honda, and Nissan created a new company to accelerate the development of hydrogen stations in Japan. The goal is to increase the number of FCVs on the road smoothly, thus building a sustainable hydrogen station business. An ambitious 10-year plan is in place – the company intends to begin construction of 80 stations nationwide by the fiscal year 2021, with further expansion of the network afterwards. The roadmap released by the government’s Council for a Strategy for Hydrogen and Fuel Cells aims for around 160 hydrogen stations to be built by 2020, serving around 40,000 hydrogen vehicles on the road.

Source: Paultan, 5 march 2018

<https://paultan.org/?s=Toyota%2C+Honda>

Korea pushes manufacture of fuel cells

In June, the Ministry of Industry, Trade and Energy of Korea announced a 2.6 trillion won plan aimed at supplying 16,000 units of vehicles powered by hydrogen and building 310 refilling stations across the country. Under the five-year-plan, businesses are expected to get state support for the development of fuel cell stacks and fuel cell storage containers - crucial for hydrogen transport systems - as well as tax breaks for hydrogen vehicle drivers.

Source: <http://www.theinvestor.co.kr/view.php?ud=20180805000171>

Fuel Cell Electric Trucks

Hyundai Motor Company has entered into a Memorandum of Understanding (MOU) with Swiss hydrogen company H2 Energy (H2E). Beginning in 2019 and over a five year period Hyundai Motor and H2 Energy will provide 1,000 heavy-duty fuel cell electric trucks and an adequate supply chain for renewable hydrogen.

The fuel cell electric truck is being developed according to European regulations. It features a new 190kW hydrogen fuel cell system with two fuel cell systems connected in parallel. It is expected to deliver a single-fueling travel range of approximately 400km, and in order to secure sufficient range, eight large hydrogen tanks are being compactly installed, utilizing areas such as between the cabin and the rigid body.

Source: H2 Energy

Link: <https://h2energy.ch/en/hyundai-motor-and-h2-energy-will-bring-the-worlds-first-fleet-of-fuel-cell-electric-truck-into-commercial-operation/>

IEA & IEA-AMF NEWS

AMF ExCo 56

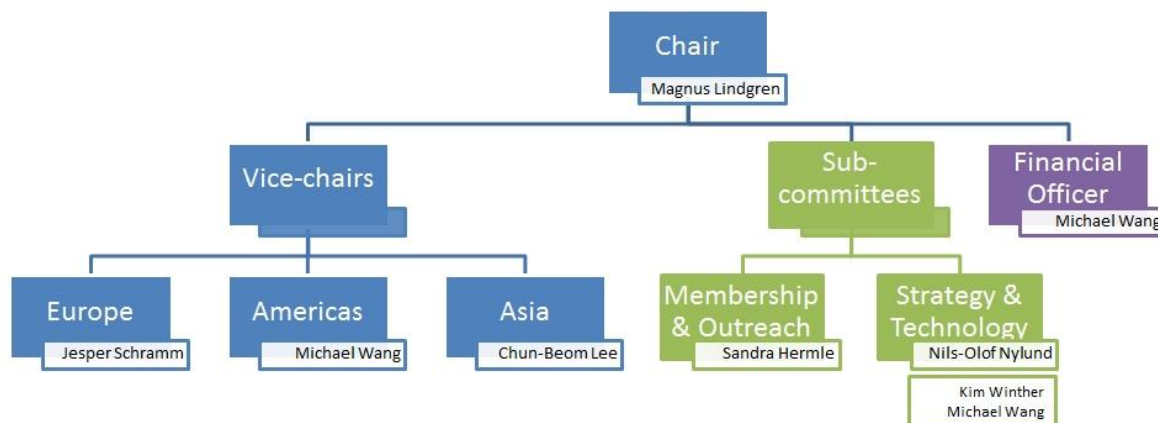
The 56th AMF Executive Committee meeting took place in New Delhi, India, 15-18 October, 2018. 10 out of 16 Contracting Parties participated in the meeting, and progress reports on all ongoing AMF projects (annexes) were presented.

The ExCo meeting focused on revising the AMF strategy as to reflect new trends and developments. The final document will be presented at the next ExCo meeting.

New project proposals discussed included “Ammonia as engine fuel”, “Lessons learned regarding market introduction”, “Advanced maritime fuels”, “The role of biofuels in decarbonizing the transport sector”, and “Biofuels from agricultural residues and municipal waste”.

It was decided to spend some seed money to finance a first literature review on the potential for ammonia as a transport fuel and the possible impact it could have. The lessons learned proposal was approved on precondition that the supporting national funding request to the Austrian energy R&D program is being granted. The other proposals will be further developed and discussed again at the next meeting.

Finally, new ExCo Vice-Chairs were elected. Office bearers now are as depicted below.



New AMF Projects

Annex 56: Methanol as Motor Fuel

The purpose of this project is to explore the potential of methanol to act as motor fuel and to meet global challenges on economy, energy security and climate change. Different transport sectors will be covered including light-duty and heavy-duty road vehicles, as well as ships. The review will identify barriers for commercialization of methanol and provide suggestions how to overcome these barriers.

For more information please contact Gideon Goldwine of Technion in Israel, gidi.goldwine@gmail.com.

Annex 57: Heavy-duty Vehicle Performance Evaluation

The purpose and objective of this project is to demonstrate and predict the progress in energy efficiency of heavy-duty vehicles, thus generating information to be used by transport companies, those procuring transport services and those forming transport policy. The project will encompass newest diesel technologies on different markets, but also alternative fuelled vehicles and advanced powertrain configurations.

For more information please contact Petri Söderena of VTT, Finland: petri.soderena@vtt.fi.

New AMF Publications

Final Report of Annex 53: Sustainable Bus Systems

The first phase of Annex 53 on Sustainable Bus Systems has been completed and the final report is available on the AMF website. The project's aim was to design a representative driving cycle for the city of Santiago, using laboratory measurements, along with a proposal for a labelling system which includes the procedures needed to certify energy efficiency and emissions from the different public bus technologies.

The project was very successful. The “Santiago driving cycle” was officially adopted by the Chilean Government. All new bus models that are coming to the bus market of Santiago must be tested under this cycle as part of the process of homologation. This allows promoting the adoption of advanced, innovative, clean and efficient technologies.

In the second phase of Annex 53 the objective is to develop a platform of information, tools and training that facilitate the successful deployment of advanced bus technologies in further cities of developing countries during the next decades.

Full document:

For more information on the second project phase please contact Gianni Lopez of Centro Mario Molina, Chile: glopez@cmmolina.cl.

Key Messages of Annex 50: Fuel and Technology Alternatives in Non-Road Engines

Compared with on-road vehicles, especially old non-road mobile machinery are high emitters of local pollutants. However, Annex 50 has shown that the latest emission class, Stage V, results in extremely low emissions during real world operation of non-road mobile machinery. The recommendation is, when possible, to leapfrog directly from less sophisticated technology to Stage V. Alternatively, if sulphur free diesel can't be guaranteed, leapfrogging to Tier 3/Stage IIIA would be the best option. Renewable and advanced drop-in fuels are a viable option to reduce GHG and regulated emissions from both new and existing machinery.

Full document: https://iea-amf.org/content/projects/map_projects/50

Key Messages of Annex 52: Fuels for Efficiency

The analysis of five different concepts for improving fuel efficiency revealed that the use of ethanol blended fuels and paraffinic fuels as well as the use of a methanol steam reformer all allow for better fuel efficiency if operated with modern engines and eventually adapting the engines regarding ignition timing or fuel injection duration. Modern engines should be flexible for a wide range of fuels.

Full document: https://iea-amf.org/content/projects/map_projects/52

PUBLICATIONS

Towards Decarbonising Transport

To keep global temperature rise well below 2 degrees Celsius, the world's leading economies must act immediately to reduce transport emissions. This is the main conclusion of a joint report released by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the Renewable Energy Policy Network for the 21st Century (REN21) and the Berlin-based think tank Agora Verkehrswende.

The transport sector is responsible for roughly one quarter of emissions from the burning of fossil fuels, with road traffic being the largest culprit. Transport emissions in the G20 make up more than two-thirds of the global total, and G20 emission levels continue to grow (though not as quickly as the rest of the world). For this reason, the report says, the G20 nations must take the lead when it comes to breaking old habits.

Link: <https://www.agora-verkehrswende.de/en/press/news/g20-countries-must-act-quickly-to-decarbonise-the-transport-sector-1/>

Creating the Biofuture

The report "Creating the Biofuture: A Report on the State of the Low Carbon Bioeconomy", published by the Biofuture Platform, affirms – in line with models and scenarios by the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), and the Intergovernmental Panel on Climate Change (IPCC) – that biofuels and bioproducts must play an integral role in the global energy transition, in tandem with other complementary mitigation efforts across all sectors.

Link: <http://biofutureplatform.org/creating-the-biofuture-report/>

CO₂ Emissions from Fuel Combustion 2018

CO₂ Emissions from Fuel Combustion 2018 provides comprehensive estimates of CO₂ emissions from fuel combustion across the world and across the sectors of the global economy. This 2018 edition includes data from 1971 to 2016 for more than 150 countries and regions worldwide, by sector and by fuel; as well as a number of CO₂-related indicators.

This overview from CO₂ Emissions from Fuel Combustion 2018 contains a summary of recent trends in fuel combustion emissions.

Link: <https://webstore.iea.org/co2-emissions-from-fuel-combustion-2018>

Biofuels in East Asia

East Asian countries are actively promoting the introduction of first-generation biofuels such as bioethanol and biodiesel, but are constrained by several feedstock and production factors. To reduce the import of crude oil and energy consumption in the transportation sector, overarching action such as production of next-generation biofuels from nonconventional resources, improvement of fuel efficiency of vehicles, and maintenance of road infrastructure needs to be taken. Against this background, the report "Study of Renewable Energy Potential and Its Effective Usage in East Asia Summit Countries" estimates the potential of a diversified transportation energy mix, analyses the techno-economic feasibility of next-generation biofuels, and scrutinises the advances that need to be made in the use of bio-methanol as a mainstream energy carrier. Country-specific recommendations on the introduction of alternate biofuels, fuel efficiency standards, and regional trade are provided for Indonesia, Thailand, Malaysia, and the Philippines.

Source: ERIA, 26 October 2018

Link: <http://www.eria.org/publications/study-of-renewable-energy-potential-and-its-effective-usage-in-east-asia-summit-countries/>

Enhancing Fuel Economy

Researchers at four U.S. Department of Energy national laboratories assessed for the economic, technology readiness, and environmental viability of 24 biomass-derived compounds that were identified based on their physical properties to improve spark ignition engine fuel economy. They developed 17 metrics in which each bio-blendstock was determined to be favourable, neutral, or unfavourable. This work supports early stage research and development to help spotlight the compounds that are most likely to be viable in the near term.

Link: <https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.7b02871>

Renewable methane as a transport fuel

Renewable methane could conceivably displace natural gas for use in existing vehicle fleets, reducing greenhouse gas (GHG) emissions as well as emissions of air pollutants like NOx. This study estimates the cost-effectiveness of and additional technical potential for using renewable methane from sustainable feedstocks in France, Italy, and Spain in 2030, relative to its current production. We also estimate the maximum total potential greenhouse gas (GHG) savings for renewable methane, as well as the GHG savings that could be achieved at realistic levels of policy support.

Source: *icct - the International Council on Clean Transportation* <https://www.theicct.org/publications/potential-renewable-methane-france-italy-spain>

Download: https://www.theicct.org/sites/default/files/publications/Biogas_potential_FR_IT_ES_20181109.pdf

Alternative fuels for greener shipping

This paper examines the cost, availability, regulatory challenges and environmental benefits of alternative fuels and technologies. LNG has already overcome the hurdles of international legislation, and methanol and biofuels will follow suit very soon. The existing and upcoming environmental restrictions can be met by all alternative fuels using existing technology. However, the IMO target of reducing GHG emissions by 50 per cent by 2050 is ambitious and will likely require widespread uptake of zero-carbon fuels and further energy efficiency enhancements.

Link: https://www.dnvgl.com/expert-story/maritime-impact/alternative-fuels.html?utm_campaign=MA_18Q4_ART_Insights_Alternative%20fuel%3A%20the%20options&utm_medium=email&utm_source=Eloqua

Comprehensive analysis on renewable jet fuels

The PhD thesis of Sierk De Jong addresses costs, climate impact and future supply of RJF for a wide range of RJF production systems. The future supply of RJF in the EU towards 2030 is modelled and the impact on other bio-based sectors is analyzed.

Source: *Research Gate*

Link: https://www.researchgate.net/publication/325719256_Green_Horizons_-_On_the_production_costs_climate_impact_and_future_supply_of_renewable_jet_fuels_PhD_thesis_Sierk_De_Jong_2018

Deployment of fuel cell electric vehicles

The Advanced Fuel Cells TCP has published a report detailing the deployment of fuel cell electric vehicles by the end of 2017. Toyota Mirai is the most-sold fuel cell electric vehicle (FCEV) in the world with more than 6000 units put on the road by the end of 2017. Almost half of these vehicles are sold in the U.S. Toyota is aiming to sell 30,000 FCEV per year worldwide by 2020. Further FCEVs are sold by Honda, Hyundai and Symbio.

Link: https://www.ieafuelcell.com/documents/AFC%20TCP_survey%20status%20FCEV%202017.pdf

ACEA Report: Vehicles in use - Europe 2018

The 2018 edition of ACEA's 'Vehicles in use' report provides an overview of the European motor vehicle fleet. The report also provides interesting statistics per vehicle segment for each country.

Link: <https://www.acea.be/statistics/article/report-vehicles-in-use-europe-2018>

EVENTS

V Latin American Congress on Biorefineries, 7-9 January 2019, Concepcion, Chile

Conference Website: <https://en.biorrefinerias.cl/registration/>

Transportation Research Board 98th Annual Meeting, 13–17 January 2019, Washington D.C., USA

Conference website: <http://www.trb.org/AnnualMeeting/AnnualMeeting.aspx>

16th International conference on renewable mobility "Fuels of the Future 2019", 21-22 January 2019, CityCube Berlin, Germany

Conference Website: <https://www.fuels-of-the-future.com>

National Biodiesel Conference & Expo, 21–24 January 2019, San Diego, California, USA

Conference website: <https://www.biodieselconference.org/>

Renewable Fuels Association National Ethanol Conference, 11-13 February 2019, Orlando, Florida, USA

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

Lignofuels 2019, 13-14 February 2019, Oslo, Norway

Conference Website: <https://www.wplgroup.com/aci/event/lignofuels-2019/>

14th International Conference on Biofuels, Energy & Economy, 22-23 February 2019, Dallas, Texas, USA

Conference website: <https://biofuels-bioenergy.conferenceseries.com/>

The Work Truck Show & GreenTruck Summit, 5-8 March 2019, Indianapolis, Indiana, USA

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

AltFuels México 2018, 11-14 March 2019, Mexico City, Mexico

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

2nd EU-India conference on Advanced Bio Fuels, 12-14 March, 2019, New Delhi, India

Conference registration: <https://ec.europa.eu/eusurvey/runner/2EU-INDIAbiofuelsConference>

Gasification 2019, 13-14 March 2019, Brussels, Belgium

Conference website: <https://www.wplgroup.com/aci/event/gasification/>

SAE World Congress Experience, 9-11 April 2019, Detroit, Michigan, USA

Conference website: <https://www.sae.org/attend/wcx/>

Advanced Clean Technology (ACT) Expo, 23-26 April 2019, Long Beach, California, USA

Conference website: <https://www.actexpo.com/>

40th International Vienna Motor Symposium, 15-17 May, 2019, Vienna, Austria

Conference website: <https://wiener-motorensymposium.at/en/information/>

2019 JSAE Annual Congress (Spring), 22-24 May 2019, Yokohama, Japan

Conference Website: <http://www.jsae.or.jp/2019haru/english/index.html>

Oleofuels 2019, 5-6 June 2019, Venice, Italy

Conference website: <https://www.wplgroup.com/aci/event/oleofuels/>

9th Symposium on Advances in Automotive Control (AAC 19), 24-27 June 2019, Orleans, France

Conference Website: <https://aac19.sciencesconf.org/>

JSAE/SAE 2019 International Powertrains, Fuels and Lubricants Meeting (PFL2019), 26-29 August 2019

Conference Website: <https://www.pfl2019.jp/>

IMPRINT

The **Advanced Motor Fuels Technology Collaboration Programme** (AMF TCP) is one of the International Energy Agency's (IEA) transportation related Technology Collaboration Programmes. These are multilateral technology initiatives that encourage technology-related activities that support energy security, economic growth and environmental protection.

AMF provides an international platform for co-operation to promote cleaner and more energy efficient fuels and vehicle technologies. This newsletter contains news articles on research, development and demonstration of advanced motor fuels, information about related policies, links to AMF projects, and an overview over publications and events.

The newsletter is prepared based on contributions from Werner TOBER and Robert ROSENITSCH, TU Vienna, Shinichi GOTO, AIST, and Manfred WÖRGETTER, BIOENERGY 2020+. It is edited by Dina Bacovsky, BIOENERGY 2020+. The Newsletter is available online at: www.iea-amf.org

AMF welcomes interested parties to make contact and to become members of the AMF family. If you wish to get in touch please contact the AMF Secretary, the AMF ExCo Chair or your national AMF Delegate, see contact information below.

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People's Republic of China

CATARC, Donglian Tian

Denmark

DTU, Jesper Schramm

Finland

VTT, Nils-Olof Nylund

Germany

FNR, Birger Kerckow

Israel

Ministry of Energy and Water
Resources, Bracha Halaf

Japan

AIST, Shinichi Goto
LEVO, Yutaka Takada
NTSEL, Ichiro Sakamoto

South Korea

KETEP, Hyun-choon Cho

Spain

IDAE,
Francisco José Domínguez Pérez

Sweden

Swedish Transport Administration,
Magnus Lindgren

Switzerland

SFOE, Sandra Hermle

Thailand

PTT, Arunratt Wuttimongkolchai

The United States

DOE, Kevin Stork
