October 2019, issue no. 2/2019

AMF Newsletter

Renewable gas can be produced from biomass through a range of processes and applied in trucks to power the transport sector

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Heavy-duty LNG Trucks in Japan

The development and demonstration project named "Heavy-duty LNG truck and optimal design for refueling infrastructure" was carried out with funds from the Ministry of Environment for around 3 years until the end of March 2019. Two LNG trucks developed in this project were operated in commercial operation by two freight companies, and fuel economies, CO2 emission, and drivability were monitored. Also, the L+CNG station demonstrated its viability through actual refueling of LNG to LNG trucks.

Technology for heavy-duty CNG trucks, which was developed by ISUZU Motors in Japan, was utilized. The first Japanese L+CNG station was constructed in the Nanko area of Osaka, has an LNG storage tank and can refuel both LNG and CNG to vehicles. Another L+CNG station was constructed in the Keihin area of Tokyo under another project at the same time.

The development goals of the demonstration testing have been achieved with over 1,000 km cruising range on LNG fuel and around 10% CO2 reduction compared with diesel trucks on the long-distance running between Tokyo and Osaka. In this testing, we were also able to identify some basic issues to be addressed regarding the operation of the L+CNG station. From April 2019, ISUZU Motors and the Organization for the promotion of low emission vehicles (LEVO) launched additional demonstration testing to collect more operation data, evaluate LNG trucks and work out measures for better infrastructure operations.

Source: http://www.levo.or.jp/newslevo/pdf/newslevo76.pdf（Japanese）

RNG Market Analysis

A market analysis of renewable natural gas (RNG) for transportation in the U.S. found that between 2015 and 2018 the production doubled to 300 million ethanol gallons equivalent (EGE), with a 30% annual growth rate, while the total natural gas demand for transportation was about 1,000 million EGE. There is substantial technical potential for increased RNG production, with an estimate of an additional 5,000 million EGE from landfills, wastewater, and other organic wastes. However, the economics of RNG projects can be challenging due to the large amount of capital investment needed.

Source: Bates White Economic Consulting, www.bateswhite.com
Link: https://www.bateswhite.com/media/publication/179_BW%20RNG%20Report.pdf

Biomethane Positive Externalities

The French biomethane sector promotes the many direct and indirect benefits as well as the economic, agronomic and ecological advantages of biomethane over fossil fuels. The list is long: fight against water pollution, reduction of GHG emissions, organic fertilizer inputs, soil cover, changes in agricultural practices, etc. Enea Consulting reviewed the externalities associated with biomethane production and concluded that the additional benefits of biomethane - in addition to the energy produced - would amount to 55 to 75 Euros per MWh by 2030.

Source: Enea Consulting, www.enea-consulting.com
Link: http://www.enea-consulting.com/competitivite-de-la-filiere-biomethane-francaise/ *(in French only)*

Biomethane from P2G

27 project partners from six European countries are developing power to gas (P2G) technology in the Horizon 2020 project STORE&GO. Three different technologies are tested in Germany (Falkenhagen, Brandenburg) with an alkaline electrolyser and an isothermal catalytic P2G technology (1 MWel), in Italy (Troia, Apulia) with a PEM electrolyser and a modular milli-structured catalytic P2G technology (200kWel), and in Switzerland (Solothurn) with a PEM electrolyser and a microbial methanisation (700kWel peak power). The latter is a fully integrated plant with connection to a water, heat, gas and electricity grid. Hydrogen is produced from solar energy and directly fed into the gas grid or used in P2G with CO2 from industry or ambient air.

Source: http://www.storeandgo.info/

Asian Clean Energy Technology Workshops

The Ministry of Economy, Trade and Industry of Japan (METI) has been cooperating in advancing low-carbonization efforts around the world, with the Joint Crediting Mechanism (JCM) program as a countermeasure against climate change.

In FY2018, jointly with Thailand, Vietnam and Indonesia, METI held a series of Government-Private Workshops on Clean Energy Technology in these respective countries. These workshops were part of the efforts for enhancing cooperation between Japan and each partner country in the fields of energy and climate change. Participants shared information on successful case examples and knowhow of projects that Japan and each partner country have jointly conducted.

Source: https://www.meti.go.jp/english/press/2019/0422_002.html

The Real Urban Emissions (TRUE) Initiative

The G20 Transport Task Group hosted a webinar on how The Real Urban Emissions (TRUE) Initiative and C40 partner cities are working to measure and reduce vehicle emissions. The webinar featured three presentations:

- The TRUE Initiative - How Remote Sensing Technology Enables Cities to Measure and Monitor Vehicle Emissions
- London's Activities to Measure and Control Vehicle Emissions
- C40 Cities Green and Healthy Streets Declaration

Recording:
https://www.gotostage.com/channel/8cbbead0ccab418cafd9bd47d55334dd/recording/9eccc3c07b304b5b8988ad0a778194aa/watch?source=CHANNEL

POLICY / LEGISLATION / MANDATES / STANDARDS

E15 Now Available Year-Round in the U.S.

The U.S. Environmental Protection Agency (EPA) issued a final rule allowing the year-round sale of E15, by finding that E10 and E15 are "substantially similar". Previously, the sale of E15 was prohibited during the summer driving season, defined as June 1 to September 15, to limit motor gasoline volatility and resulting evaporative volatile organic compound emissions. The EPA now allows E15 to meet the same Reid Vapor Pressure limit (10 psi) as E10 for summer gasoline.

Source: https://www.epa.gov/renewable-fuel-standard-program/final-rulemaking-modifications-fuel-regulations-provide-flexibility

B20 Underground Storage

California became the final state in the U.S. to remove limits on storing B20 blends in underground storage tanks, which was a major barrier to B20 use in the state. The California State Water Resources Control amended its previous rules, by stating that B20 meeting ASTM standards is recognized as equivalent to diesel for the purpose of complying with existing approval requirements for double-walled underground storage tanks. Most diesel fuel is stored in underground storage tanks and state regulators had concerns that any degradation of materials due to biodiesel could lead to water contamination.

Source: https://www.prnewswire.com/news-releases/california-approves-b20-biodiesel-in-underground-storage-tanks-300898139.html

B30 in Indonesia

The president of Indonesia said he wanted to increase the portion of diesel blended with crude palm oil (CPO) from the current 20 percent (B20) to 30 percent (B30) starting January next year and to 50 percent (B50) by the end of 2020. The leap is expected to bring down imports of oil, which drags down Indonesia's trade balance, while also generating domestic demand for CPO amid external uncertainties affecting CPO prices. On-road testing of B30 is being carried out and expected to conclude in October.

Source: The Jakarta Post
Link: https://www.thejakartapost.com/news/2019/08/12/jokowi-wants-30-biodiesel-in-cars-as-soon-as-january-next-year.html

Strategic Roadmap for Hydrogen and Fuel Cells

The Council for a Strategy for Hydrogen and Fuel Cells for Japan has first formulated the Strategic Road Map for Hydrogen and Fuel Cells in 2014, revised it in 2016, and again in 2019.

Toward the achievement of goals set forth in this revised Strategic Roadmap for Hydrogen and Fuel Cells, industry, academia, and government will mutually cooperate to accelerate their efforts. The renewed roadmap defines (i) new targets on the specification of basic technologies and the breakdown of costs, and necessary measures for achieving these goals, and (ii) that Japan will convene a working group consisting of experts to review the status of implementation in each area stipulated by the roadmap.

Source: https://www.meti.go.jp/english/press/2019/0312_002.html

SPOTLIGHT ELECTRIC VEHICLES IN THE USA

Utility Freight Electrification Corridor Planning

A group of more than 30 electric utilities are sponsoring a study to support electric charging for long-haul freight trucks on a major interstate stretching from the Canadian to the Mexican border. While individual utilities had been examining light-duty electric vehicle travel on this corridor, the consortium will focus on utility best practices and charging locations for heavy duty electric vehicles.

Source: https://www.smud.org/en/Corporate/About-us/News-and-Media/2019/2019/West-Coast-Clean-Transit-Corridor-Initiative

Fuel Cell Freight Truck Demonstration

Toyota and Kenworth developed a fuel cell electric heavy-duty truck as part of a $41 million Zero and Near-Zero Emissions Freight Facilities grant from the California Air Resources Board. The 10 fuel cell trucks developed under this project will be operated by several companies moving freight from the Port of Los Angeles. Shell will develop two large capacity hydrogen fuelling stations for these heavy-duty trucks as part of the grant.

Source: https://www.truckinginfo.com/330270/toyota-and-kenworth-unveil-jointly-developed-hydrogen-fuel-cell-truck

Fuel Cell Commercial Truck Partnership

Hyundai and Cummins have entered into a memorandum of understanding to jointly evaluate opportunities to develop and commercialize electric and fuel cell powertrains using Hyundai's fuel-cell systems with Cummins' electric powertrain technologies. The initial development will be focused on the North American commercial vehicle market, including Class 8 units.

Source: https://www.ttnews.com/articles/cummins-hyundai-agree-examine-fuel-cells-together

100,000 Electric Delivery Vehicle Order

Amazon ordered 100,000 delivery vehicles from Rivian, an electric vehicle start-up company based in Michigan. The first 10,000 vehicles are expected to be on the road by 2022, with the entire 100,000 being delivered by 2030. Rivian has announced that its first 2 vehicles, a pick-up truck and a sports utility vehicle, both with 400 miles range will be produced beginning in 2020.

Source: https://arstechnica.com/cars/2019/09/amazon-orders-100000-electric-trucks-to-fight-climate-change/

California Funding for Electric Vehicles

The California Energy Commission approved $70 million in funding to replace more than 200 diesel school buses with all-electric buses, with more than $90 million to be awarded in total. They estimate that schools will save nearly $120,000 in fuel and maintenance costs per bus over 20 years. In addition, the Commission approved an additional $95 million plan to increase the adoption of electric vehicles in the state. The plan includes $33 million for light-duty charging, $30 million for heavy-duty ZEVs and charging, and $20 million for hydrogen refuelling.

Sources: https://www.energy.ca.gov/news/2019-07/energy-commission-awards-nearly-70-million-replace-polluting-diesel-school-buses *and* https://www.energy.ca.gov/news/2019-09/cec-approves-95-million-plan-critical-clean-transportation-investments

State Zero Emission Vehicle Standards

Two states recently enacted zero emission vehicle (ZEV) standard. In Colorado, the standard requires automakers to sell more than 5% ZEVs by 2023 and more than 6% by 2025. Colorado expects that the mandate will result in manufacturers selling a wider range of models in the state, including SUVs and light trucks. In Oregon, the standard sets the goal of at least 50,000 registered ZEVs by 2020, 250,000 by 2025, and at least 90% of new sales by 2035.

Sources: https://www.colorado.gov/pacific/cdphe/news/AQCC-ZEV *and*
https://energyinfo.oregon.gov/blog/2019/7/19/governor-brown-signs-zero-emissions-target-bill-into-law

Funding for Heavy-Duty EV Charging

The California Public Utilities Commission has approved a San Diego Gas & Electric program that will build 3,000 electric vehicle charging stations for medium- and heavy-duty vehicles. The stations will be built over the next 5 years in about 300 locations and will serve about 6,000 vehicles. The initiative will cost $107 million, which will be paid by ratepayers.

Source: https://www.ttnews.com/articles/san-diego-rolls-out-1074-million-large-vehicle-charging-stations

SPOTLIGHT SHIPPING AND AVIATION

Marine Biofuels in the EU

In 2018 UMAS, a British research company analyzing shipping, published a report on market, bunkering infrastructure investments and risks in the context of GHG reductions for LNG in shipping. They looked at three scenarios: "high gas", "limited gas" and "transition". They concluded that there is no significant CO2eq reduction achieved through the use of LNG as marine fuel relative to the reduction required to achieve the IMO's 2050 objectives of at least 50% GHG reduction by 2050 on 2008 levels. This is consistent with many other studies. Reducing total annual emissions from shipping, in-line with the Paris temperature goals, is only possible with a switch to increased use of non-fossil fuel sources from 2030 and with rapid growth thereafter, as explored in two of the decarbonisation scenarios "Limited Gas" and "Transition".

Link: https://u-mas.co.uk/LinkClick.aspx?fileticket=yVGOF-ct68s%3D&portalid=0

European Aviation Environmental Report 2019

The European Aviation Environmental Report 2019, published jointly by EASA, the EEA and EUROCONTROL, provides an updated assessment of the environmental performance of the aviation sector in Europe.

The report confirms that the current trends and outlooks in aviation are not compatible with protecting the environment, climate and people's health, Hans Bruyninckx, EEA Executive Director, said. Europe must lead the way towards a more sustainable aviation sector. Strong policies and robust implementation can mitigate future impacts and foster innovation and the fundamental shift needed in consumer behaviour.

Source/ Downloads:
https://www.eea.europa.eu/highlights/environment-and-climate-impacts-of?utm_medium=email&utm_campaign=Environment%20and%20climate%20impacts%20of%20aviation%20continue%20growing&utm_content=Environment%20and%20climate%20impacts%20of%20aviation%20continue%20growing+CID_7d9f0ab9df1f0da4020856851f3bec2a&utm_source=EEA%20Newsletter&utm_term=Read%20more#tab-related-publications

IEA & IEA-AMF NEWS

Transport Decarbonisation Workshop

In the light of climate change, there is an urgent need to decarbonize our societies. The transport sector is specifically challenging, as transport demand is still growing, and so are the sector´s GHG emissions. Electric mobility will not be able to solve this on its own, and advanced renewable transport fuels can help to bridge the gap between GHG emission reduction targets and the prospected emission reductions.

Just how large can and must the contribution of advanced renewable transport fuels be? – This is currently under assessment by a group of experts collaborating within AMF Annex 58 and IEA Bioenergy Task 41. The results will be presented at a workshop in Brussels.

Albert Borschette Conference Centre
Rue Froissart 36, 1040 Etterbeek,
Brussels, Belgium
18th November, 2019
8:30 - 18:00

Four sessions and a panel discussion will focus on the following aspects:

- The need for decarbonising the transport sector
- Availability of renewable transport fuels and electric drivetrains
- The role of renewable transport fuels in reaching national GHG emission reduction targets
- Are we on track to achive the 2030 targets?

More information: https://iea-amf.org/content/news/TD-WS
Registration: https://ec.europa.eu/eusurvey/runner/AdvancedRenewableTransportFuelsIEABIOAMF2019

PUBLICATIONS

Building a Low-carbon Energy System

The key driver for changes in the global and European energy system is the need for a clean energy transition that drastically reduces greenhouse gas emissions. The report "Adaptation challenges and opportunities for the European energy system - Building a climate-resilient low-carbon energy system" identifies the challenges of, and opportunities for, climate change adaptation and climate resilience in the context of a decarbonizing energy system in Europe.

Link: https://www.eea.europa.eu/publications/adaptation-in-energy-system/at_download/file

Renewable Energy in Europe

This report introduces several methods the European Environment Agency (EEA) has developed for assessing and communicating early RES growth and the important knock-on effects that RES growth has on the energy sector and related areas. The report provides specific information at EU and country level on estimated RES progress in 2013, estimated gross avoided carbon dioxide (CO2) emissions and avoided fossil fuel use due to the additional use of renewable energy since

2005, as well as an assessment of the statistical impacts of growing RES use on primary energy consumption.

Source: European Environment Agency (EEA) - Publications https://www.eea.europa.eu/publications/renewable-energy-in-europe-2018#tab-data-references
Download: https://www.eea.europa.eu/publications/renewable-energy-in-europe-2018/at_download/file

EU Energy in Figures

The Statistical Pocketbook 2019 provides an overview of the most relevant annual energy-related statistics for the European Union as a whole and for each of its Member States. The data contained in this pocketbook is drawn from several sources: from the European Commission's services, from international organisations such as the European Environment Agency and the International Energy Agency and also from the European Commission's estimates when other data is unavailable.

Source: Publications Office of the EU
https://op.europa.eu/en/publication-detail/-/publication/e0544b72-db53-11e9-9c4e-01aa75ed71a1/language-en/format-PDF/source-107080828
Download:
https://op.europa.eu/portal2012-portlet/html/downloadHandler.jsp?identifier=e0544b72-db53-11e9-9c4e-01aa75ed71a1&format=PDF&language=en&productionSystem=cellar

Transition to Zero-Emission Mobility

The 2019 edition of ACEA's 'Making the Transition to Zero-Emission Mobility' report tracks progress made on the key 'enabling factors' for a stronger consumer uptake of electric and other alternatively-powered cars in the European Union.

Source: ACEA - Association des Constructeurs Européens d'Automobiles
https://www.acea.be/publications/article/making-the-transition-to-zero-emission-mobility-2019-progress-report
Download: https://www.acea.be/uploads/publications/ACEA_progress_report_2019.pdf

Tracking methane emissions

The IEA has launched a new "methane tracker", offering the most comprehensive global picture of methane emissions, covering eight industry areas across more than seventy countries. This new and unique tool provides up-to-date estimates of current oil and gas methane emissions drawing on the best available data.

Link: https://www.iea.org/weo/methane/database/

Gas definitions for the European Union

Decarbonizing the EU's gas sector requires identifying and deploying the best-performing sources of alternative gas. However, the wide variety of feedstocks and conversion pathways for producing gases necessitates more nuanced terms than "renewable" or "sustainable" to characterize their suitability for long-term decarbonization. This ICCT briefing paper discusses key terms related to gas in the context of energy policy and climate change mitigation goals in the European Union. It also proposes a method of categorizing gas sources based on their GHG emissions intensity and illustrates how these categories can be used to refer to gas from different sources.

Link: https://theicct.org/sites/default/files/publications/ICCT_eu_gas_def_20190529.pdf

Blending Methods Impact Ethanol Emissions

The Urban Air Initiative has commissioned an independent, third party study titled Effects of Ethanol Blends on Light-Duty Vehicle Emissions: A Critical Review. The authors reviewed nearly 100 different peer-reviewed studies examining the emissions impact of low- and mid-level ethanol blends. They found that type of blending used was the major factor in inconsistent results between studies. Many of the test blends used in the reviewed studies do not reflect the typical makeup of fuels being used by consumers. Specifically match blending can lead to studies misrepresenting the impact of ethanol on emissions. The analysis suggests that future studies should seek to use fuels at different blend levels that represent real world fuels.

Link: https://fixourfuel.com/2019/01/21/independent-analysis-finds-vehicle-emission-testing-is-not-reliable

Workshop on Clean Energy and Fuels

In conjunction with EUBCE 2019, EC DG RTD has organised a workshop 'Paving the way towards clean energy and fuels in Europe'. A summary report and all presentations are provided online under the link below.

Link: Report EUBCE 2019 workshop on clean energy and fuels

Advanced Biofuels for Germany

The report "Projected contribution of advanced fuels to Germany's RED II targets in 2030" by ICCT assesses the potential for Germany to meet the transport sector targets set by the EU RED II using advanced, non-food-based fuels.

Source: icct - the International Council on Clean Transportation:
https://theicct.org/publications/projected-contribution-advanced-fuels-germanys-red-ii-targets-2030
Download:
https://theicct.org/sites/default/files/publications/Advanced_fuels_potential_Germany_fact_sheet_20190916.pdf

UFOP Biodiesel Assessment Report 2018/19

The report gives an overview about the state of the art on national and European biofuel policy. The main topics are the implementation and consequences of the Renewable Energies Directive and in particular the national framework conditions resulting from the Climate Protection Act. The statistical annex provides information on the development of sales in Germany and the European Union as well as on the biofuel mandates in selected EU member states.

Link: https://www.ufop.de/medien/downloads/english/general/

Top Biofuel Blendstocks for Engine Efficiency

U.S. Department of Energy's national laboratory researchers identified the top biofuel-derived blendstock candidates to improve turbocharged spark-ignited engine efficiency. This comprehensive assessment included more than 400 bio-derived molecules and mixtures across many chemical families. The report is aimed at biofuel researchers looking to better understand the efficiency implications of biofuels under development, as well as engine researchers who are interested in future biofuels with properties that enable more efficient engine design and operation. The top ten blendstocks identified had the potential to increase engine efficiency by 10%, reduce life-cycle GHGs by 60%, and be produced at a competitive cost.

Link: https://www.pnnl.gov/publications/top-ten-blendstocks-turbocharged-gasoline-engines

Economics and Emissions of Pyrolysis Feedstocks

Researchers evaluated the process economics and GHGs for the conversion of 11 biomass feedstocks to produce transportation fuels via fast pyrolysis and then pyrolysis oil upgrading via hydrodeoxygenation. The team used 6 pure feeds (pine, tulip poplar, hybrid poplar, switchgrass, corn stover, oriented strand board) and five blends of those in various ratios. They found that for all 11 feedstocks, the largest cost contribution (30-40%) to fuel price is capital-related cost. The feedstock cost (30%), hydrotreating catalyst cost (13-18%), and labor costs (12-15%) were the other major factors. Process parameters that most significantly affect the life cycle GHG emissions include natural gas and electricity use for pyrolysis and oil upgrading; energy use for harvesting and transportation; and nitrogen fertilizer.

Link: https://www.sciencedirect.com/science/article/pii/S0016236119315728?via%3Dihub

Governing Sustainability in Biomass Supply Chains

IEA Bioenergy held a workshop in collaboration with the IEA, GBEP, FAO, IRENA, the Biofuture Platform, below50 and the Netherlands Enterprise Agency in Utrecht, The Netherlands. The theme of the workshop was Governing sustainability in biomass supply chains for the bioeconomy.

The workshop included two plenary sessions during which fifteen invited speakers gave presentations covering 'setting the scene and policy experience'; and 'collecting the evidence' with views from multi-lateral partnerships, industry and civil society. This was followed by two "World Cafe" sessions during which break-out groups discussed 'actions needed for progressing towards a sustainable, circular bioeconomy', and 'a collaborative way forward'.

The workshop concluded with a plenary session collecting the summaries from the "World Cafe" sessions and elaborating on the conclusions and next steps.

The workshop summary has been published and is now available under the following link.

Link: https://www.ieabioenergy.com/publications/ws24-governing-sustainability-in-biomass-supply-chains-for-the-bioeconomy/

Comprehensive Review on Biomass and Bioenergy

The article "A review on biomass: importance, chemistry, classification, and conversion" reviews the different sources of biomass available, along with their chemical composition and properties. Subsequently, different conversion technologies (i.e., thermo-chemical, biochemical, and physicochemical conversions) and their corresponding products are reviewed and discussed. In the continuation, the global status of biomass vs. the other renewable energies is scrutinized. Biomass-derived energy production was analyzed from economic and environmental perspectives.

Source: Biofuel Research Journal 22 (2019) 962-979
Download: https://www.biofueljournal.com/article_88067_bf6e89f01897e13b461e01d124fce61f.pdf

The Future Costs of Fuel Cells

Carnegie Mellon University interviewed nearly 40 experts to assess the future cost, durability, and power density of automotive proton exchange membrane fuel cells. Most respondents anticipated that the DOE's ultimate cost target of $30/kW would be met by 2050, but most respondents provided 2020 assessments higher than the DOE's 2020 target of $40/kW. The

study identified barriers to improving cost and performance in order to help prioritize research and development. High platinum-group metal loading was identified as the most significant barrier to reducing costs, with membrane and bipolar plate costs also being highlighted as a key challenge. Several barriers were identified to be important to improving durability including the instability of alloyed catalysts, platinum sintering, platinum dissolution, and carbon support corrosion. The experts suggested that high cathode activation loss and the platinum–electrolyte oxygen transport resistance were the largest barriers to improving power density.

Link: https://www.pnas.org/content/116/11/4899

EVENTS

Sustainable Aviation Summit at ABLC NEXT, 30 October – 1 November 2019, San Francisco, USA
Conference website: http://biofuelsdigest.com/ablcnext/?source=BD

European E-Fuels Conference, 6-7 November 2019, Munich, Germany
Conference website: https://www.wplgroup.com/aci/event/european-e-fuels/

The Contribution of Advanced Renewable Transport Fuels to the Decarbonisation of Transport in 2030 and beyond, 18 November 2019, Brussels, Belgium
For more information please contact dina.bacovsky@bioenergy2020.eu

8th ANGVA International Biennial Conference & Exhibition 2019, 25-27 November 2019, Jakarta, Indonesia
Conference website: http://www.angva2019.com/

RNG 2019 Conference, 2-5 December 2019, Dana Point, California, USA
Conference website: http://www.rngcoalition.com/rng-conference/

Transportation Research Board 99th Annual Meeting, 12–16 January 2020, Washington, D.C., USA
Conference website: http://www.trb.org/AnnualMeeting/AnnualMeeting.aspx

Fuels of the Future 2020, 20-21 January 2020, Berlin, Germany
Conference website: https://www.fuels-of-the-future.com/

National Biodiesel Conference & Expo, 20-23 January 2020, Tampa, Florida, USA
Conference website: https://www.biodieselconference.org/

Renewable Fuels Association National Ethanol Conference, 10-12 February 2020, Houston, Texas, USA
Conference website: http://www.nationalethanolconference.com/

Lignofuels 2020, 26-27 February 2020, Helsinki, Finland
Conference website: https://www.wplgroup.com/aci/event/lignocellulosic-fuel-conference-europe/

The Work Truck Show & GreenTruck Summit, 3-6 March 2020, Indianapolis, Indiana, USA
Conference website: http://www.worktruckshow.com/

SAE World Congress Experience, 21-23 April 2020, Detroit, Michigan, USA
Conference website: https://www.sae.org/attend/wcx/

Advanced Clean Technology (ACT) Expo, 11-14 May 2020, Long Beach, California, USA
Conference website: https://www.actexpo.com/

32nd International AVL Conference "Engine & Environment", 28-29 May, 2020, Graz, Austria
Conference website: https://www.avl.com/web/guest/-/32nd-international-avl-conference-engine-environment

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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