

March 2024

Advanced Motor Fuels News



US takes steps to fully decarbonize its aviation industry with SAF

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DEMONSTRATION / IMPLEMENTATION / MARKETS

EU project on maritime methanol kicked-off

The EU project “M2ARE” had their kick-off meeting in on December 1, 2023 in Frankfurt, Germany. The project aims to develop and demonstrate a novel process for “Maritime Methanol”, a new grade of low-cost low-carbon methanol based on biogenic CO₂ and renewable H₂, to support the needs of the global shipping sector in reducing their CO₂ emissions. M2ARE is committed to deliver by mid-2027 a European “Maritime Methanol” process (at TRL 7) providing >80% CO₂ emission reduction compared to fossil maritime fuels and >10% TCO savings compared to state-of-the art green methanol technologies.

The project is being funded with 7.5 € million under Horizon Europe.

(<https://cordis.europa.eu/project/id/101136080>)

Source: https://new.etaflorence.it/news/m%B2are-maritime-methanol-adaptable-renewable-and-environmentally-friendly-reducing-marine-fuel-co2-emissions-by-more-than-80/?utm_campaign=ETA%20January%202024&utm_medium=email&utm_source=EOACLK

EU project on Microalgae-Based Fuels kicked-off

The EU project “COCPIT” was launched on October 1, 2023, will support the large-scale implementation of microalgae-based fuels for aviation and maritime transport through an innovative and circular process, supplemented by a disruptive decision tool for end-users. COCPIT’s ambition is to enhance the SAF production chain by bringing ground-breaking innovations at each thread of it. It aims to also provide investors with a human centered decision tool in a “test before invest” spirit with a high confidence level to de-risk investments.

The project is being funded with 4.9 € million under Horizon Europe.

(<https://cordis.europa.eu/project/id/101122101>)

Source: https://www.cocpit-horizon.eu/?utm_campaign=ETA%20January%202024&utm_medium=email&utm_source=EOACLK

20% increase in biomethane production in Europe

Biomethane production in Europe grew by almost 20% in 2022 compared to the previous year according to the report published by the European Biogas Association. Europe’s biogas production (combined biogas and biomethane) in 2022 amounted to 21 bcm. This is more than Poland’s entire inland natural gas demand and represents 6% of the EU’s natural gas consumption in 2022. Biomethane production alone grew from 3.5 bcm in 2021 to 4.2 bcm in 2022. In the

case of Denmark, the share of biomethane in the gas grid was close to 40% and there are plans to increase this production to substitute 100% of the gas demand before 2030.

The versatility of biomethane as a renewable energy source is reflected in its balanced distribution pattern across end-uses, all in urgent need for decarbonization: 22% was used for buildings in 2022, whereas a further 14% was used in industry, 19% for transport and 15% for power generation.

Source: <https://www.europeanbiogas.eu/20-increase-in-biomethane-production-in-europe-shows-biogas-industry-report-released-today/>

Feasibility study to produce e-methane in Abu Dhabi

Masdar (Abu Dhabi Future Energy Company), INPEX, Tokyo Gas and Osaka Gas announced they have signed a collaboration agreement to conduct a joint feasibility study on e-methane production in Abu Dhabi, UAE. Masdar and INPEX have been conducting a joint study to produce e-methane utilizing low-cost renewable energy in Abu Dhabi based on an agreement signed on July 17, 2023. Tokyo Gas and Osaka Gas have newly joined this initiative, and plan to off take e-methane in volumes equivalent to 1% of each company’s annual city gas demand.

Source: <https://www.tokyo-gas.co.jp/en/IR/support/pdf/20240123-01e.pdf>

POLICY / LEGISLATION / MANDATES / STANDARDS

US DOE releases 2023 Billion-Ton Report

The US Department of Energy (DOE) released the 2023 Billion-Ton Report (BT23), which shows that the US could sustainably triple its production of biomass to more than 1 billion tons per year. The report—the fourth in a series of assessments of potential biomass resources in the U.S. since 2005—finds that 1 billion tons of biomass could satisfy over 100% of the projected demand for airplane fuel in the country, allowing the US to fully decarbonize the aviation industry with SAF. Advancing clean energy solutions like biomass is critical to reaching long-term national decarbonization objectives and a key component of President Biden’s Investing in America agenda to deliver new economic opportunities across the nation while tackling the climate crisis.

Source: <https://www.energy.gov/articles/doe-releases-report-outlining-how-america-can-sustainably-produce-more-one-billion-tons>

\$9.4 million to spur advanced biofuels

As part of US President Biden’s Investing in America agenda, the US Department of Energy (DOE) and the US Environmental Protection Agency (EPA) have released a Funding Opportunity Announcement (FOA), Inflation Reduction Act Funding for Advanced

Biofuels, for up to \$ 9.4 million for the development of advanced biofuels.

This investment through a new agreement between EPA and DOE is funded by President Biden's Inflation Reduction Act (IRA) and will support high-impact biofuel technology projects to improve the performance and reduce the cost of biofuel production technologies, scale up production systems in partnership with industry, and accelerate the American bioeconomy.

Source: <https://bioenergyinternational.com/doe-and-epa-announce-us9-4-million-to-spur-advanced-biofuels/#:~:text=As%20part%20of%20US%20President,the%20development%20of%20advanced%20biofuels>

Proposal for U.S. Clean Hydrogen Tax Incentives

The US Treasury Department proposed guidance for claiming the 45V Clean Hydrogen Production Tax Credit established under the Inflation Reduction Act. The guidance proposes definitions of key terms and describes how producers should calculate a project's lifecycle greenhouse gas emissions using 45VH2-GREET, a version of the Department of Energy's R&D GREET model, that is specifically tailored for hydrogen producers seeking the tax credit. It also proposes how to petition for a provisional emission rate if their production processes are not already included in the 45VH2-GREET model. The proposed rules include requiring hydrogen production via electrolysis to use energy attribute certificates that demonstrate that the electricity generation that is: time-matched to the period during which the electrolyzer is operating, deliverable to the electrolyzer, and incremental to existing generation.

Source: <https://www.whitehouse.gov/cleanenergy/clean-energy-updates/2023/12/22/treasury-sets-out-proposed-rules-for-transformative-clean-hydrogen-incentives/>

New Mexico implements low carbon fuel standard

In order to reduce the carbon intensity of its transportation fuels, New Mexico, USA signed a law creating the Clean Fuel Standard program, which will be similar to efforts in other states like California, Oregon, and Washington. The law requires New Mexico to finalize rules for the implementation of the program by July 1, 2026. The law provides some minimum guidepost for the rules including a technology-neutral mandate to reduce the carbon intensity of transportation fuels used in the state to achieve a 20% reduction in lifecycle GHGs by 2030 and a 30% reduction by 2040, using a 2018 baseline. Currently, Hawaii, Illinois, New Jersey, and New York have active bills under consideration in their state legislatures, but it is unclear if any of those efforts will pass.

Source: <https://www.velaw.com/insights/new-mexico-enacts-low-carbon-fuel-standard/>

Brazil to raise mandatory biodiesel mix

Brazil will increase the country's mandatory biodiesel mix into diesel from the 12% in 2023 to 14% in March 2024 and 15% starting in 2025. Brazil will also halt biodiesel imports until further notice. The measures will support the Brazilian oilseed crushing industry, which has been operating at 50% capacity in recent years. About 70% of the country's biodiesel is produced from processed soybeans.

Source:

<https://www.reuters.com/markets/commodities/brazil-policy-council-approves-raising-biodiesel-mix-2023-12-19/>

SPOTLIGHT SHIPPING

Wärtsilä introduces ammonia fuel supply system

Wärtsilä introduces a revolutionary Ammonia Fuel Supply System (AFSS) designed to propel ships towards a greener future. The primary objective of Wärtsilä's AFSS is to facilitate the adoption of ammonia as a marine fuel, aligning with the shipping industry's shift towards decarbonized fuels. Ammonia emerges as a frontrunner among alternative fuels due to its significant reduction in CO2 emissions, near-zero sulphur oxide (SOx) emissions, and substantial cuts in nitrogen oxide (NOx) and particulate matter (PM) emissions.

The system was designed to ensure the safe and efficient utilization of ammonia as a marine fuel, even under the most challenging sea conditions. It comprises a sophisticated network of pumps, heat exchangers, and purge gas treatment systems to deliver a stable and reliable fuel supply to the engine. By enabling the widespread adoption of ammonia as a marine fuel, the AFSS holds the potential to revolutionize the shipping industry's environmental footprint.

Source: <https://energynews.biz/wartsila-unveils-ammonia-fuel-supply-system-for-ships/>

Stena Provident completes first methanol bunkering

The US Port of Savannah has witnessed its first-ever methanol bunkering completed by Stena Provident, one of six methanol-fueled tankers commissioned through the partnership between Proman and Stena Bulk. The landmark represents another step forward for methanol as a marine fuel, according to Proman, pointing out that 2023 saw a record number of orders for methanol-fueled vessels, as its benefits as a cleaner burning fuel were further understood. According to DNV, the number of methanol-fueled ships in operation will more than double this year, with over 250 such ships in operation by the end of 2026.

Source: <https://www.offshore-energy.biz/historic-first-for-port-of-savannah-as-stena-provident-completes-methanol-bunkering/>

Westport launches marine methanol HPDI project

Canada-headed Westport, a leading supplier of advanced alternative fuel delivery systems and components for the global transportation industry, has announced a proof-of-concept project with a leading global supplier of power solutions for marine applications to test Westport's High-Pressure Direct Injection (HPDI) fuel system utilizing methanol for marine applications.

The project, expected to start in the first quarter of 2024, will be fully funded by the original equipment manufacturer (OEM) and is planned to run for approximately nine months. Using renewable or carbon-neutral methanol derived from green or blue hydrogen, Westport is confident this alternative fuel approach offers an economical and efficient pathway to decarbonize the sector without compromising performance.

Source: <https://bioenergyinternational.com/westport-launches-marine-methanol-hpdi-project/>

Push for green methanol

Denmark-headed global integrated logistics major Maersk has signed a Memorandum of Understanding with the City of Yokohama, and Mitsubishi Gas Chemical Company on the development of green methanol bunkering infrastructure in the Port of Yokohama, Japan. Maersk has set a target of achieving net-zero emissions by 2040 throughout its entire business. For shipping, it will equip its 25 container vessels with dual-fuel engines capable of sailing on green methanol.

Source: <https://bioenergyinternational.com/stakeholders-to-ready-port-of-yokohama-for-methanol/>

First large methanol-enabled vessel in Asia

Maersk launched the first of its 18 large methanol-enabled vessels currently on order. In February, the AE7 string entered into service connecting Asia and Europe, which includes port calls in Shanghai, Tanjung Pelepas, Colombo and Hamburg, with Ningbo, China, being its first destination.

The container vessel built by Hyundai Heavy Industries in South Korea has a nominal capacity of 16,000 containers and is equipped with a dual-fuel engine enabling operations on methanol as well as biodiesel and conventional bunker fuel. The following two sister vessels will be deployed in the first half of 2024 with naming events taking place in Yokohama, Japan, and Los Angeles, USA. Maersk expects to take delivery of four additional sister vessels in the second half of 2024.

Source: <https://www.maersk.com/news/articles/2023/12/07/maersk-to-deploy-first-large-methanol-enabled-vessel-on-asia-europe-trade-lane>

SPOTLIGHT AVIATION

Lhyfe and SAF+ International Group sign MoU

France-headed Lhyfe, a pioneer in the production of green and renewable hydrogen, and Canada-headed SAF+ International Group (SAF+), a world leader in the production and marketing of electro-sustainable aviation fuel (eSAF), have signed a Memorandum of Understanding (MoU) to produce eSAF from green and renewable hydrogen to decarbonize the aviation industry. According to a statement, the two companies wish to combine their expertise to develop the production of eSAF from green and renewable hydrogen, at a production site located in the Le Havre area in France.

Source: <https://advancedbiofuelsusa.info/lhyfe-and-saf-international-group-ink-mou>

Nordic aviation stakeholders to push hydrogen power

A consortium of Nordic aviation stakeholders including Airbus, Avinor, SAS, Swedavia, and energy utility major Vattenfall AB, have signed a Memorandum of Understanding to investigate the feasibility of a hydrogen infrastructure at airports in Sweden and Norway. According to a statement, this cooperation will provide a better understanding of hydrogen aircraft concepts and operations, supply, infrastructures, and refueling needs at airports to help develop this hydrogen aviation ecosystem in both countries.

Source: <https://advancedbiofuelsusa.info/nordic-aviation-stakeholders-to-push-hydrogen-power>

EU aviation-fuel legislation challenged

European renewable ethanol producers have launched a new legal challenge, now directed to the EU's RefuelEU Aviation Regulation, charging that it improperly excludes crop-based biofuels from the effort to reduce greenhouse-gas emissions from air transport. It is the second legal challenge from the EU renewable ethanol industry to be raised in recent months alleging discrimination in EU policymaking against RED-compliant crop-based biofuels despite their proven sustainability and benefits for emissions-reduction. In December 2023 the industry filed a similar case against the FuelEU Maritime Regulation. The new aviation Court action comes from companies representing nearly all of the EU's production of renewable ethanol, who are seeking to annul specific sections of the RefuelEU Aviation Regulation that exclude crop-based biofuels from the definition of sustainable aviation fuel.

Source: <https://www.epure.org/press-release/european-ethanol-producers-raise-new-legal-challenge-to-eu-aviation-fuel-legislation/>

NextChem awarded design contract for US SAF project

Italy-headed industrial group MARIE has announced that MyRechemical, part of the Sustainable Technology Solutions business unit led by its subsidiary NextChem has been selected by DG Fuels Louisiana, a subsidiary of advanced biofuels developer DG Fuels LLC, to provide the Process Design Package in relation to a SAF facility under development in the United States. The gasification technology and the know-how to transform synthetic gas into valuable products play a pivotal role within NextChem's technology portfolio, making MARIE a key player in enabling the decarbonization of the world's industries through the circular economy.

Source: <https://bioenergyinternational.com/nextchem-awarded-design-contract-for-us-saf-project/>

Southwest launches renewables venture subsidiary

US-headed air carrier Southwest Airlines has announced the launch of Southwest Airlines Renewable Ventures (SARV), a wholly-owned subsidiary of Southwest Airlines dedicated to creating more opportunities for Southwest to obtain scalable SAF, a critical component in the success of the carrier's goal to replace 10 % of its total jet fuel consumption with SAF by 2030. The carrier also announces a \$ 30 million investment in LanzaJet, Inc., a SAF technology provider and producer with patented ethanol-to-SAF technology and the world's first ethanol-to-SAF commercial plant, as part of the SARV investment portfolio.

Source: [https://bioenergyinternational.com/southwest-launches-renewables-venture-subsiary/#:~:text=In%20the%20United%20States%20\(US,a%20critical%20component%20in%20the](https://bioenergyinternational.com/southwest-launches-renewables-venture-subsiary/#:~:text=In%20the%20United%20States%20(US,a%20critical%20component%20in%20the)

First Ethanol-To-Jet Fuel Plant

In January 2024, the first commercial production facility for converting ethanol into SAF opened in Soperton, Georgia, USA. Supported by DOE's Bioenergy Technology Office (BETO), LanzaJet's Freedom Pines Fuel Facility will produce nine million gallons (34 million liters) of SAF and one million gallons (3.8 million liters) of renewable diesel in its first year of operations and will provide significant benefits for the local economy.

The opening of the Freedom Pines Fuel facility is a major milestone in meeting the SAF Grand Challenge, which was launched in 2021 by DOE, by the U.S. Department of Transportation, the U.S. Department of Agriculture, and industry partners, with a goal of producing three billion gallons (11 billion liters) of SAFs by 2030 and for SAFs to meet 100% of U.S. aviation fuel demand by 2050.

Source: <https://www.energy.gov/eere/bioenergy/articles/worlds-first-ethanol-jet-fuel-plant-paves-way-commercial-production>

GE Aerospace and partners pass 100% SAF milestone

GE Aerospace, the US-headed global provider of jet engines, components, and systems for commercial and military aircraft, has announced a new milestone for a more sustainable future of flight with the completion of testing on its 10th engine model using 100% SAF since 2016, confirming the company and its joint ventures have one of the most expansive programs for testing the alternative fuel in the industry. Emirates became the first airline to operate an Airbus A380 using 100 % SAF in one of the four GP7200 engines.

Additional engines tested at the component-, engine-, or aircraft level using 100 percent SAF include F414, GE9X, LEAP-1A, Passport, GENx, HF120, and CFM56 engines. The wide range of tests represents a mix of propulsion systems used for domestic and international commercial air travel, military aviation, and business and general aviation.

Source: [https://bioenergyinternational.com/ge-aerospace-and-partners-pass-100-saf-milestone/#:~:text=GE%20Aerospace%2C%20the%20US%2Dheaded,\(SAF\)%20since%202016%2C%20confirming](https://bioenergyinternational.com/ge-aerospace-and-partners-pass-100-saf-milestone/#:~:text=GE%20Aerospace%2C%20the%20US%2Dheaded,(SAF)%20since%202016%2C%20confirming)

Azure reveals US SAF plant plans

Canada-headed SAF project developer Azure Sustainable Fuels has disclosed details regarding its planned development of an SAF production facility in Cherryvale, Kansas in the United States. Azure is a privately held corporation solely focused on developing SAF-focused renewable fuels production facilities, which are required to meet current domestic and international mandates related to the reduction of carbon dioxide emissions generated by the aviation sector.

Source: <https://bioenergyinternational.com/azure-reveals-us-saf-plant-plans/#:~:text=An%20artist%27s%20rendering%20of%20an,of%2020%2C000%20barrels%20per%20day>

Jet Zero Australia and Apeiron Bioenergy partner-up

Singapore-headed Apeiron Bioenergy, one of the largest used cooking oil collectors in Asia, and Jet Zero Australia, an Australian bioenergy company backed by Airbus and Qantas, have partnered on a project under a proposed 50:50 joint venture. According to a joint statement, the recently announced partnership aims to develop low-carbon intensity feedstocks in Australia to help meet the demand for renewable fuels, including the sourcing of waste oils and production of non-edible crops for Hydrotreated Esters and Fatty Acids (HEFA) and SAF production.

Source: <https://bioenergyinternational.com/jet-zero-australia-and-apeiron-bioenergy-form-feedstock-partnership/>

Inauguration held for Praj Industries SAF demo facility

Bio-based technologies energy provider Praj Industries announced that it has launched a SAF demonstration facility at its R&D Center in Pune, India. The company said that it has developed a proprietary technology to process agricultural feedstocks for the production of SAF using the alcohol-to-jet (ATJ) pathway that can be blended with ATF. The Indian government has set a target to operationalize 1000 UDAN routes and to revive 100 airports by 2024. India is already the third largest and fastest-growing civil aviation market in the world. Praj Industries said that the low-carbon SAF has a significant role in helping India achieve its net zero goal targets by 2070.

Source: <https://www.safinvestor.com/news/144184/indias-praj-industries-launch-saf-demonstration-facility/>

Methanol-to-SAF pathway demonstrated with test flight

The first test flight to demonstrate the potential for converting Methanol to SAF took place in Dubai on the sidelines of COP28 in the UAE. Masdar, TotalEnergies, the UAE General Civil Aviation Authority, Airbus, Falcon Aviation Services and technology licensor Axens all contributed to the successful flight. The Alcohol-to-Jet Synthetic Paraffinic Kerosene pathway (ATJ-SPK) has been certified in 2016 as meeting international standards for jet fuel, however Methanol is not in the list of specified alcohols. The flight, which used a blend of aviation fuel made from olefins, will help support the certification of this new pathway for SAF production from methanol.

Source: <https://totalenergies.com/media/news/press-releases/cop28-totalenergies-and-masdar-demonstrate-methanol-saf-pathway>

SPOTLIGHT METHANOL

P1 Fuels and CRI to develop e-fuel production

Germany-based P1 Performance Fuels (P1 Fuels), a trailblazer in fossil-free synthetic fuel, has announced a transformative collaboration with Iceland's Emissions-to-Liquids technology providers Carbon Recycling International (CRI) to drive e-fuel production for internal combustion engine vehicles (ICE). P1 Fuels has signed a contract with CRI, a global leader in clean methanol technology, for the delivery of an e-methanol production unit. The strategic partnership aims to accelerate the shift towards replacing fossil fuels in ICE vehicles, contributing significantly to global climate goals.

Source: <https://bioenergyinternational.com/p1-fuels-and-cri-to-develop-e-fuel-production-in-germany/#:~:text=Germany%2Dbased%20P1%20Performance%20Fuels,production%20for%20internal%20combustion%20engine%20>

Finnish companies eye e-methanol

International technology group ANDRITZ and SSE Suomen Säästöenergia Oy, two leaders in clean energy and sustainable technologies, are collaborating to develop an innovative biofuel production plant at a site in the town of Nurmes, eastern Finland. The "Hybrid Refinery Nurmes" project will produce high-quality renewable methanol using gasification syngas from biomass and green hydrogen. Global demand for renewable methanol is growing strongly both in maritime transport and in the chemical industry, as the sectors strive to reduce greenhouse gas emissions and abandon fossil fuels. In addition, the Nurmes Hybrid Refinery is good news for wind power projects in Finland, as it offers a stable long-term customer for the electricity they produce.

Source: <https://www.andritz.com/newsroom-en/environmental-solutions/2023-12-12hybrid-refinery-nurmesgroup>

Sumitomo Chemical piloting CO2-to-methanol

Japan's Sumitomo Chemical has completed the construction of a pilot facility using a highly efficient process for producing methanol from CO₂ at its Ehime Works facility, located in Niihama City, Ehime Prefecture, Japan, and has started operations at the facility. The company aims to complete the demonstration of this technology by 2028, as well as start commercial production using the new process and license the technology to other companies in the 2030s.

Source: <https://www.chemanager-online.com/en/news/sumitomo-starts-new-co2-methanol-pilot-plant#:~:text=2023%20%2D%20Japan%27s%20Sumitomo%20Chemical%20has,started%20operations%20at%20the%20facility.>

SPOTLIGHT HYDROGEN

Lhyfe unveils first UK green hydrogen project plans

Green hydrogen firm Lhyfe has announced plans for its first UK production facility in the North East of England. Lhyfe said if plans are approved, the planned facility on the brownfield site of the historic Neptune Bank Power Station in Wallsend, North Tyneside, would have an initial capacity of 20 megawatts (MW), capable of producing up to eight tons of green hydrogen per day. According to the company eight tons would enable a hydrogen truck to travel approximately 100,000 km without emitting any CO₂, while a car could go around the Earth 20 times or travel around 800,000 km.

Source: <https://www.energyvoice.com/renewables-energy-transition/hydrogen/uk-hydrogen/548719/lhyfe-unveils-plans-for-first-uk-green-hydrogen-plant/>

Demo of green hydrogen energy carriers in Chile

A research project conducted by Germany's Fraunhofer IEE Institute and partners aims to explore the potential large-scale production of green hydrogen and downstream products in Chile for export and use within the country. Linde is planning to build a pilot plant in northern Chile that will produce green methanol and dimethyl ether (DME) in the megawatt range using solar power. The carbon dioxide required for methanol and DME synthesis in the pilot plant will be supplied by a cement factory. The DME produced will initially be used as a fuel in existing fleets for heavy-duty and off-road transportation. Researchers will assess the environmental, social, and economic aspects of the industrial production of DME and other hydrogen derivatives. They will also identify business models that enable the use of these energy sources in the region and then perform technical and economic assessments for exports, specifically looking at how to scale both production capacities and infrastructure.

Source: <https://www.iee.fraunhofer.de/en/presse-infothek/press-media/2023/paving-the-way-for-large-scale-production-of-green-hydrogen-energy-carriers-in-chile.html>

Mitsubishi and ADNOC reach agreement

Mitsubishi Heavy Industries (MHI) will act as a technology solution provider to support decarbonization of oil and gas production sites owned by ADNOC and the development of businesses to produce blue hydrogen and blue ammonia while creating demand for these resources over the world. The two companies will seek to complement each other's strengths and create synergies between ADNOC's assets and MHI's related technologies, with the aim of accelerating the development of the hydrogen and ammonia businesses, as well as carrying out initiatives with a view to supporting efforts to achieve net zero emissions globally.

Source: <https://www.mhi.com/news/23120805.html>

Start of hydrogen fuel cell systems production

In a pivotal moment in the commercialization of hydrogen fuel cell systems, GM and Honda announced the start of production at their 50-50 joint venture production facility, FCSM. FCSM is the first large-scale manufacturing joint venture to build fuel cells. FCSM was established in Brownstown, Michigan, USA in January 2017 based on a joint investment of \$85 million. The 70,000-square-foot (6503 m²) facility has already created 80 jobs. The world-class hydrogen power solutions built at FCSM will be used by both companies in various product applications and business ventures.

Source: <https://hondanews.com/en-US/releases/gm-honda-begin-commercial-production-at-industrys-first-hydrogen-fuel-cell-system-manufacturing-joint-venture?from=newslink>

AMF NEWS

Ongoing ExCo Activities

ExCo delegates are looking forward to meeting in Seattle, USA mid-June 2024. AMF is turning 40 this year and a jubilee publication is under creation. In addition, AMF is joining forces with sister TCPs to work on a White Paper to demonstrate the need for sustainable fuels in combustion engines.

Remote Emission Sensing

Task 61 on Remote Emission Sensing has been completed and the final report "Remote Emission Sensing as a means of detection and enforcement of gross-polluting vehicles" has been published. The work included findings from major projects in China and the EU.

The major conclusion of this work is that Remote Emission Sensing (RES) techniques have been substantially improved in recent years and are still continuously being further developed. They are important as complementary real driving vehicle emission measurement tools to help reduce emissions from vehicles with failing emission control systems (SCR systems, DPF, TWC). Also, RES techniques allow to cost-effectively follow up the future evolution of fleet average real-world emissions, i.e., to track the efficiency of the recently implemented very strict emission legislation in both Europe and China.

A webinar presenting the analysis and the findings is planned for 5 June. Please contact Ake Sjödin at ake.sjodin@ivl.se for details.

Link: https://iea-amf.org/content/projects/map_projects/61

Ongoing AMF Tasks

The full list of current AMF projects includes:

- Task 65: Powertrain options for non-road mobile machinery
- Task 64: E-fuels and End-Use Perspectives
- Task 62: Wear in engines using alternative fuels
- Task 61: Remote Emission Sensing
- Task 28: Information Service & AMF Website

Link: https://www.iea-amf.org/content/projects/ongoing_projects

PUBLICATIONS

Austria's Annual Greenhouse Gas Inventory 1990-2022

In the 'Austria's Annual Greenhouse Gas Inventory 1990–2022' report, the Umweltbundesamt presents updated greenhouse gas (GHG) emissions in Austria. In 2022, total GHG emissions amounted to 72.8 Mt CO₂e. This corresponds to a 7.9% decrease compared to 1990 and a 5.8% decrease compared to 2021. Key drivers for the development 2021–2022 were the lower natural gas and gasoil consumption, as well as lower diesel oil sales especially in fuel exports

with heavy duty vehicles in category Transport. Emissions of GHG covered by EU Regulation No. 2018/842 ('Effort Sharing Regulation') amounted to around 46.2 Mt CO₂e in 2022 and were thus below the annual emission allocation for that year. Content and format of this report are in accordance with the obligations under the Governance Regulation (EU) No. 218/1999.

Link: https://www.umweltbundesamt.at/studien-reports/publikationsdetail?pub_id=2511&cHash=d5665a0fc84a11b437873817a57ae897

<https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0892.pdf>

Influence of aviation fuel composition on contrails

The question of how the composition of jet fuel affects the formation and lifetime of condensation trails is a complex one. The Concawe report finds that although the theory regarding initial contrail formation is well-founded in thermodynamics and proven to be correct by measurements, there remain large uncertainties in terms of persistent contrails forming contrail cirrus. These originate both from processes which are not yet fully understood and from the complexity of quantifying the many factors of influence on their effect on climate. There is an extended cause-effect chain from fuel composition through its combustion and consequential emissions, to contrail formation and their spreading in the atmosphere, and microphysical and optical properties. These properties affect the lifetime and radiative effect of single contrails to the global and multi-annual average of the radiative effects of all contrails, and thus eventually to their climate impact. This problem extends over 17 orders of magnitude in space and time, from the scales of single molecules (about 0.1 nm) and their elementary interactions (say, 1 ns) to the global scales of climate (say, 10,000 km and 10-30 years). It is not possible to cover such a vast range with a single numerical model or with relatively few measurements.

Link: <https://www.concawe.eu/publication/influence-of-aviation-fuel-composition-on-the-formation-and-lifetime-of-contrails-a-literature-review/>

https://www.concawe.eu/wp-content/uploads/Rpt_24-1-1-Copy-2.pdf

Risks of allowing feed crops in EU biomethane target

The European Parliament voted to include a 35 billion cubic meter (bcm) biomethane target in amendments to the Proposal for a Regulation on the Internal Markets for Renewable and Natural Gases and for Hydrogen (recast). In this study by the International Council on Clean Transportation (ICCT), the authors explain that this target faces potential climate and sustainability risks, particularly with using feed and feed materials to produce biomethane. Moreover, the authors explain how policymakers could consider implementing safeguards, specifically by referencing

the low-GHG feedstocks in Annex IX of the Renewable Energy Directive (RED).

Link: <https://theicct.org/publication/climate-risk-of-allowing-feed-crops-in-the-eu-gas-package-biomethane-target-nov23/>
<https://theicct.org/wp-content/uploads/2023/11/ID-31-%E2%80%93-EU-biomethane-Briefing-A4-40040-fv-1.pdf>

Global energy and climate outlook 2023

This edition of the Global Energy and Climate Outlook (GECO 2023) presents an updated view on the implications of energy and climate policies worldwide to reaching the goals of the Paris Agreement, and contributes to JRC's work in the UNFCCC policy process.

Link: https://op.europa.eu/en/publication-detail/-/publication/380090c3-a2dc-11ee-b164-01aa75ed71a1/language-en?WT.mc_id=Selectedpublications&WT.ria_c=41957&WT.ria_f=6394&WT.ria_ev=search&WT.URL=https%3A%2F%2Fop.europa.eu%2Fen%2Fweb%2Fgeneral-publications%2Fenvironment

Lessons learned for biofuels deployment

The IEA Bioenergy project "Lessons learned biofuels" examined the technical, economic, societal, and political reasons underlying the past and ongoing booms and busts cycles of biofuel technologies development, demonstration, deployment, and replication. The aim was to identify key factors for technology successes and the best policy framework conditions as well as the measures for stimulating increased future markets for production and consumption of sustainable liquid transport biofuels.

Link: <https://www.ieabioenergy.com/blog/publications/assessment-of-successes-and-lessons-learned-for-biofuels-deployment-synopsis/>

Assessing Canadian light-duty electric vehicle costs

Canada plans to require that all sales of passenger light-duty vehicles be zero-emission by 2035. The researchers examine the costs of producing zero-emission vehicles (ZEVs) compared to internal combustion engine vehicles (ICEVs) over the next two decades. In the baseline scenario, ZEVs are projected to achieve upfront cost parity with ICEVs by 2035 for certain vehicle segments. The researchers find that plug-in hybrid electric vehicles will not reach cost parity with ICEVs in any overlapping classes or segments. The analysis highlights the importance of indirect overhead cost assumptions on the timing of OEM cost parity. The paper notes the adoption of advanced battery technology and increased government support for charging infrastructure would help expedite cost parity.

Link: <https://theicct.org/publication/assessment-of-light-duty-electric-vehicle-costs-in-canada-in-the-2023-to-2040-time-frame-dec23/>

Analyzing electric bus deployment in Bogota

A set of three case studies were released analyzing the strategies taken by the city of Bogotá as a mentor city for the Transformative Urban Mobility Initiative (TUMI) in deploying electric buses covering: technological advancement (with the detail of pilot tests and routes for electric buses); business models (the present document; raising the overall innovations enforced and governance established for making electric buses feasibly purchasing); and recharge infrastructure (offering how to provide infrastructure and restore energy considering technical and regulatory issues).

Link:

<https://theicct.org/publication/technology-development-plan-transition-to-electric-buses-bogota-dc-dec23/>

https://transformative-mobility.org/wp-content/uploads/2023/05/Business-model-Bogota_EN.pdf

<https://theicct.org/publication/charging-infrastructure-for-zero-emissions-buses-strategies-in-bogota-colombia/>

Future mobility fuel scenarios

This report presents the findings of a comprehensive 3-year study that focuses on the potential trade-offs that East Asia Summit (EAS) countries might encounter in the future. It assesses existing biofuel policies and implementation plans while estimating the 'well-to-tank' and 'tank-to-wheel' carbon emissions associated with biofuel usage and the mineral resources required for electrifying the mobility sector. Taking into consideration factors such as biofuel feedstock accessibility and mineral resource availability, the report also delves into the policy implications for pricing electric vehicles, developing associated infrastructure facilities, and devising new taxation systems.

Link: <https://www.eria.org/research/analysis-of-future-mobility-fuel-scenarios-considering-the-sustainable-use-of-biofuels-and-other-alternative-vehicle-fuels-in-east-asia-summit-countries-phase-iii>

EVENTS

Advanced Clean Technology (ACT) Expo

20-23 May 2024, Las Vegas, Nevada, USA

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

JSAE Annual Congress

22-24 May 2024, Yokohama, Japan

<https://www.jsae.or.jp/2024haru/english/>

International Fuel Ethanol Workshop & Expo and Biodiesel Summit

10-12 June 2024, Minneapolis, Minnesota, USA

<https://few.bbiconferences.com/ema>

15th Edition - Oleofuels 2024

12-13 June in Milan, Italy

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

32nd European Biomass Conference & Exhibition

24-27 June, Marseilles, France

<https://www.eubce.com/eubce-in-brief/>

North American SAF Conference & Expo

11-12 September 2024, Minneapolis, Minnesota, USA

<https://saf.bbiconferences.com/ema>

8th Rostock Large Engine Symposium

12-13 September, Rostock, Germany

<https://rgmt.de/>

Electric & Hybrid Vehicle Technology Expo

7-10 October 2024, Detroit, Michigan, USA

<https://evtechexpo.com/>

RNG Conference

9-12 December 2024, Dana Point, California, USA

<https://www.rngcoalition.com/rng-conference/>

Transportation Research Board Annual Meeting

5-9 January 2025, Washington, D.C., USA

<https://www.trb.org/AnnualMeeting/AnnualMeeting.aspx>

Clean Fuels Conference

20-23 January 2025, San Diego, California, USA

<https://www.cleanfuelsconference.org/>

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 Robert ROSENITSCH, TU Vienna, Shinichi GOTO, AIST, and Andy BURNHAM, ANL. It is edited by Lena Huck, FNR. 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.

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