

# ADVANCED MOTOR FUELS

## Technology Collaboration Programme

### WHO WE ARE

Advanced Motor Fuels (AMF) is one of the actors putting transport on track to sustainability and reducing the environmental impacts from transport. Established in 1984, AMF has a strong international network that serves to foster collaborative research, development, and deployment (RD&D) and to provide unbiased information on clean, energy-efficient, and sustainable fuels and related engine and vehicle technology.

### OUR VISION

Advanced motor fuels, applicable to all modes of transport, significantly contribute to a sustainable society around the globe.

### OUR MISSION

The mission of AMF is to advance the understanding and appreciation of the potential of advanced motor fuels towards transport sustainability. We provide sound scientific information and technology assessments to facilitate informed and science-based decisions regarding advanced motor fuels at all levels of decision-making.

### HOW TO JOIN AMF

Participation in one of the IEA's technology collaboration programs, such as the AMF Technology Collaboration Programme (TCP), is based on mutual benefit to the program and to the interested newcomer.

Each contracting party is represented by a delegate and an alternate delegate. The respective [contact details](#) are listed on the AMF TCP website.

The Secretary will provide details on the AMF TCP and invite newcomers to attend an Executive Committee (ExCo) meeting as observers. By attending or even hosting an ExCo meeting, interested newcomers will become familiar with AMF ([www.iea-amf.org](http://www.iea-amf.org)).

Please visit output products like the [AMF Annual Report](#), [Project Reports](#), and [Fuel Information](#) on the [www.iea-amf.org](http://www.iea-amf.org) website, and follow the AMF on [LinkedIn](#) and [Twitter](#).

### OVERVIEW OF ACTIVITIES

AMF looks upon transport fuel issues in a systemic way, taking into account production, distribution and end-use related aspects. AMF liaises with other IEA Technology Collaboration programmes (e.g., IEA Bioenergy and IEA Combustion) and works in close collaboration with important players within the field of AMF (e.g., ITF and Methanol Institute). Because fuels, engines and exhaust after-treatment systems have to be considered as interactive systems, the scope of AMF also covers propulsion systems that use advanced motor fuels.

### MOST RECENT PROJECTS (TASKS)

Work within AMF is carried out in individual projects (Tasks). Detailed information on each of the projects can be assessed on the AMF website ([www.iea-amf.org](http://www.iea-amf.org)).

#### Task 28 Information Service and AMF Website

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#### Task 60 The Progress of Advanced Marine Fuels

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#### Task 61 Remote Emission Sensing

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#### Task 62 Wear in Engines Using Alternative Fuels

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#### Task 63 Sustainable Aviation Fuels

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#### Task 64 E-fuels and End-Use Perspectives

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### CONTACT

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#### AMF Chair

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## PARTICIPANTS

Currently there are 15 contracting parties from 13 countries from around the globe. Japan has designated three contracting parties.



## PROJECT HIGHLIGHTS

### Task 60 – The Progress of Advanced Marine Fuels

A study conducted in Sweden comparing technologies for short sea shipping and inland waterways covered seven fuels: HVO, biogas, ethanol, methanol, hydrogen, ammonia, and electricity (batteries). Technology readiness is highest for HVO, biogas and battery, and lowest for ammonia. All alternatives will generate higher fuel cost than conventional shipping fuels. HVO is almost three times the cost of reference fuel. Biogas and electricity were found to be the cheapest low-carbon options.

	Diesel	Metanol	Reduction
NO	ppm	1200	600
NO <sub>2</sub>	ppm	50	20
NOx	ppm	1250	620
THC	ppm	50	40
CO	ppm	170	150
PM	mg/Nm <sup>3</sup>	25	12

*Test results from a MAN 2 MW marine engine with renewable methanol fuel.*

### Task 61 – Remote Emission Sensing

Remote Emission Sensing (RES) can be used to detect high-emitting vehicles. For instance, RES installed in chasing vehicles have proven effective both in Europe and China to identify trucks with excess emissions of NOx and particulate matter. A recent study conducted in Switzerland found that the most crucial volume of air that stationary (fixed) RES equipment must capture is the core exhaust plume within 1.5 m behind the vehicle.



*The EMPA parameter study found that the most crucial volume stationary RES must capture is the core exhaust plume, within 1.5 m behind the vehicle.*

## STRATEGIC WORK PLAN 2020-2024

Internationally, there are several fuels-related organizations. However, these organizations are solely focused on a specific fuel or group of fuels — for example, alcohols, natural gas, liquid petroleum gas, and synthetic fuels. In addition, there are organizations promoting electro-mobility. In the field of transport fuels, AMF is the only internationally recognized, technology-neutral clearinghouse for fuels-related information. Download the [Work Plan](#) from the AMF website at [www.iea-amf.org](http://www.iea-amf.org) > About AMF.

### Fuels

- Performance evaluation (energy efficiency, GHG, air quality) of new fuels and technology platforms
- Focus on fuels substituting diesel (including substitution of marine fuels)
- (Pre) studies on emerging fuels (electrofuels, ammonia, alternative aviation fuels)

### Vehicles

- Real driving emissions, including deterioration of emission performance over distance
- Efficiency of heavy-duty vehicles (with possible spill-over towards non-road machinery)
- Range extender options for EVs

### System analysis

- Comparison of different energy carriers for transport applications (timeline, impact, cost)
- Assessment of drop-in types of fuels vs. fuels requiring new vehicles and technologies and new infrastructure

### Communication and dissemination

- Provide information on AMF publications on the AMF website
- Provide information on advanced motor fuels on the AMF website and through the AMF newsletter
- Organize topical workshops to exchange information and deepen understanding