

Highlights.



Susanne Abrahamsson
President

Taking the Paris Agreement forward

World countries have agreed on a new global and legally binding climate agreement – the Paris Agreement. The new agreement will be the framework for the countries' climate efforts for a long time to come.

The first formal negotiation session after Paris has been implemented. There are different opinions about the detailed rules and guidelines to be established, but there is broad political agreement on the importance of safeguarding the new agreement.

The agreement calls for cooperation in many areas and among stakeholders.

The maritime community is on its way, as many initiatives are up and running. Energy efficiency and alternative energy sources are examples of areas in which the maritime industry currently puts in a lot of effort in cooperation with academia and authorities with the common goal of a more sustainable and safe future. You can read about some of these initiatives in this issue of SSPA Highlights.

To further speed up the transition towards a sustainable future, the maritime community very much urge for the development of global functional rules and conditions for the business sector and industry-specific measures.

To succeed it is important that innovations and technical work are carried out in cooperation with the industry, authorities and academia.

A lot has been done but even more remains to be explored in order to make the Paris Agreement come true.

Do not hesitate to contact us with feedback, comments or questions. We hope you enjoy issue 62 of SSPA Highlights.

Methanol as an alternative fuel for smaller vessels

Interest in methanol as an alternative fuel for meeting emissions requirements continues to grow, and there are currently both a retrofit solution for a large Ro-Pax ferry and chemical tanker newbuilding projects underway. Methanol is also a good alternative for smaller ships operating on coastal and inland waterways, but has yet to be tested in these applications. SSPA is coordinator of a new project, “Sustainable Marine Methanol” (SUMMETH), which is focused on developing methanol solutions for smaller vessels.



The SUMMETH project will investigate the conversion of smaller vessels such as road ferries and pilot boats to methanol operation to reduce emissions of air pollutants. Photo: Joanne Ellis.

Low emissions with methanol

Methanol is a sulphur-free and clean-burning alcohol that produces very low particulate emissions when combusted. Emissions of nitrogen oxides are also lower than for conventional fuels, with amounts depending on combustion concept and temperature. Although shipping is considered one of the “greenest” modes of transport, it is still a significant source of SO_x, NO_x, and particulate emissions, which have impacts on human health and the environment.

Smaller vessels often operate on coastal and inland waterways close to populated areas, and have an impact on air quality in these areas. Emission-reduction solutions for these vessels mostly involve switching to a cleaner conventional distillate fuel, as commercial marine engines for alcohols such as methanol are not yet available in the smaller engine segment. Although there are some smaller engines available that run on LNG, which is also a clean fuel, the infrastructure for LNG marine fuel supply is very limited. Requirements for methanol infrastruc-

ture are much simpler as it is a liquid at ambient temperature, and already widely distributed as a chemical commodity.

Development of methanol marine engines and fuel systems

One of the main goals of the SUMMETH project is to test and evaluate different methanol combustion concepts in a laboratory and to identify the best alternatives for the smaller marine engine segment. The work is focused on engines with power up to about 1200 kW and both Otto and diesel combustion concepts will be considered. The Stena Germanica project demonstrated that large engines (6000 kW) can be successfully converted to run on methanol. The SUMMETH project aims to show that this can also be done for smaller engines and vessels.

Methanol supply and infrastructure

Handling and storage of methanol is similar to that of liquid fuels such as diesel or gasoline. Thus it is considered to be relatively inexpensive



Sustainable methanol can be produced from renewables such as residue from the forest industry.



Methanol, with the chemical formula CH_3OH , is sulphur-free and burns cleanly, resulting in low emissions.

to provide infrastructure for methanol fuel storage and distribution at smaller ports.

Methanol is widely used in the chemical industry in Europe and there is an established transport and distribution infrastructure in place. However, there is currently no specific infrastructure for marine fuels and the SUMMETH project will investigate possibilities for this. The feasibility of using renewable methanol as marine fuel will also be investigated.

Renewable methanol for lower greenhouse gas emissions

Although renewable methanol currently constitutes only a very small percentage of the methanol on the market, it has great potential for reducing greenhouse gas (GHG) emissions from shipping. Renewable methanol can be produced from many feedstocks, including municipal or industrial waste, biomass, and carbon dioxide. Methanol produced from wood, also called wood alcohol, may be one of the first examples of methanol production. In Sweden, renewable methanol has

been produced via gasification of black liquor from a pulp mill.

Reductions in GHG emissions from renewable methanol on a “well-to-propeller” basis can be in the vicinity of 90% compared to emissions from conventional fuel use. Reductions depend on the feedstock and production method for the fuel.

Regulations for low-flashpoint fuels

Methanol is a low-flashpoint fuel and guidelines are currently in draft for incorporation into the International Maritime Organization’s recently adopted International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code).

The risk and safety analysis carried out for the SPIRETH project (Alcohol (Spirits) and Ethers as Marine Fuel), which was co-coordinated by SSPA and ScandiNAOS and tested methanol and DME as ship fuels, contributed to the development of the IGF code. It also contributed to the development of ship classification society rules for methanol as a ship fuel. The SUMMETH project will include a safety analysis for a methanol conversion of a road ferry and contribute to the development of safety measures for this ship type.

Growing interest in methanol

Other recent projects and developments regarding the use of methanol as ship fuel include the delivery in April 2016 of three methanol dual-fuel chemical carriers to be chartered by Waterfront Shipping – these are the first newbuild vessels to use methanol as a fuel.

SSPA recently completed a study for the European Maritime Safety Agency on the use of methanol and ethanol as alternative fuels in shipping, with results presented at the European Sustainable Shipping Forum in January 2016. As well a 2016 report by the European Com-



Joanne Ellis

Project Manager. Since joining SSPA in 1999, she has been involved in projects in the areas of risk, safety, alternative marine fuels,

and environmental assessment of marine transport. Prior to joining SSPA, she worked with environmental assessments, water quality issues, and transportation projects. Joanne has a Ph.D. from Chalmers University of Technology, where her thesis topic was assessing safety risks for sea transport of dangerous goods, and an MSc in Environmental Engineering from the University of British Columbia.

Contact information

E-mail: joanne.ellis@sspa.se

SUMMETH

Sustainable Marine Methanol

The SUMMETH project consortium consists of SSPA Sweden (project co-ordinator), ScandiNAOS (technical co-ordinator), Lund University, VTT Technical Research Centre of Finland, Scania AB, Marine Benchmark, Swedish Transport Administration Road Ferries, and the Swedish Maritime Technology Forum. The project is supported by the MARTEC II network and co-funded by the Swedish Maritime Administration, Region Västra Götaland, the Methanol Institute and Oiltanking Finland Oy.

Read more at: summeth.marinemethanol.com



mission’s Joint Research Centre on alternative fuels for marine and inland waterways concluded that methanol and LNG are currently the most promising for shipping.

These and other studies are showing that methanol is a viable alternative fuel for improving the environmental performance of shipping.