

Alternative fuels to reduce airborne emissions from shipping

Project: Alcohol (Spirits) and Ethers as Marine Fuel

Project owner: SSPA AB, Sweden

Duration: 2012–2014

Year of BSAP funding: 2012

Approximate total budget: EUR 3.7 million

BSAP Funding: EUR 650,000

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Airborne emissions from shipping contribute to pollution and environmental problems. The Helcom Baltic Sea Action Plan has identified emissions from shipping as one of the inputs of nitrogen to the Baltic Sea area which contributes to the eutrophication problem. Alternative fuels will be part of solving this problem.

The Baltic Sea is part of a designated Sulphur Emission Control Area where the maximum allowable sulphur content in marine fuels will be reduced to 0.1% in 2015. Nitrogen oxide (NO_x) emissions will also need to be reduced in emission control areas starting from 2016.



Switching from heavy fuel oils to cleaner alternatives is, from an environmental perspective, a sound solution for reducing emissions. Methanol and di-methyl ether (DME) are very interesting alternative fuels that should enable ships to comply with the upcoming SECA regulations without any further exhaust gas after-treatment. They can also be produced from several types of feed stock such as fossil fuels, biomass and by synthesis of H₂ and CO₂ in a so called Carbon Capture and Recycling (CCR) process, thus they have the potential to be a “green” fuel in the future.

The use of a methanol-based fuel will be demonstrated in a marine engine on board an existing Swedish ropax vessel. An auxiliary engine and generator set will be modified to operate on a fuel which is a blend of methanol and DME. This fuel will be produced from methanol in a process plant on board the vessel, using a technology called “On Board Alcohol To Ether” (OBATE). The project also includes modifying a marine engine for operation on methanol and testing it in an engine laboratory.

An assessment of operational performance, safety, and environmental performance with respect to emissions reduction will be carried out within the project. The on board testing is expected to provide unique field-based information on emissions levels, engine performance, and operational costs. The cost effectiveness and cost benefit of the systems will be assessed and compared to other methods of meeting emission control guidelines.

The project group consists of SSPA Sweden (project coordinator), ScandinNAOS (technical coordinator), Stena Rederi, Haldor-Topsøe, Wärtsilä, Lloyd’s Register EMEA, and Methanex. The results of the pilot demonstrator project are expected to be useful for ship operators within the Baltic Sea area for making decisions regarding the fulfilment of upcoming emissions regulations.



Baltic Sea Action Plan Fund

The BSAP Fund is a fund managed by the Nordic Investment Bank (NIB) and the Nordic Environment Finance Corporation (NEFCO). The fund provides grants for technical assistance to projects that support the implementation of the HELCOM Baltic Sea Action Plan (BSAP). The aim of the BSAP is to help restore the ecological status of the Baltic Sea.

Recipients eligible for financing through the BSAP Fund include both public and private entities operating in the agricultural and wastewater treatment sectors, shipping and ports, as well as those working to reduce hazardous waste in the Baltic Sea catchment area. A key purpose of the fund is to facilitate and speed up the preparation of bankable projects.

The fund provides grant financing for the following:

- Project preparation and development, including feasibility studies, development of business ideas, and cash-flow models
- Technical assistance for institutional support, including training and support needed for project preparation, development and implementation
- Measures that improve efficiency and quality in project implementation (e.g., the acquisition of equipment for demonstration purposes.

Sweden has committed SEK 90 million (EUR 9 million) to the BSAP Fund and Finland EUR 2 million.

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