M²ARE

Renewable methanol production for the shipping industry

M²ARE aims at producing a new grade of **low-cost** and **low-carbon methanol**, based on **biogenic CO_2** and **renewable H_2**

Switching from conventional fossil-based maritime fuels to methanol based on current technologies will already decrease GHG emissions significantly, with **up to 70% of savings.**

Today, **marine transportation** is primarly driven by **diesel engines**

3 % Of total EU GHG emissions are represented by shipping

13% Of the transport sector EU GHG emissions are represented by shipping

The overall **ambition** is to deliver a **TRL 7 European methanol synthesis process** by **2027**, to support the needs of the global shipping sector in **reducing** its CO_2 emissions.

1. Mapping bio-CO_2 feedstocks for its conversion into maritime methanol
2. Demonstrating a 1st generation of maritime methanol synthesis from CO_2 feedstocks
3. Development of a new reactor (GEN2) for methanol synthesis
4. Methanol purification: developing a fuel with improved product properties
5. Engine test: validation of the new maritime methanol in marine engines
6. Deployment roadmap and scale-up for the production of maritime methanol

M²ARE Project

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Reduction of:

80% CO_2 emissions by 2030

90% CO_2 emissions by 2040

Support targets for producing:

2 Mta by **2030**

40 Mta by **2040**

100 Mta by **2050**

of maritime methanol

Coordinator: Air Liquide

Partners: CPERI Chemical Process and Energy Resources Institute; TU Delft; Université de Lorraine; MAN Energy Solutions; LRGP Laboratoire Réactions et Génie des Procédés; TeCIP Institute, Sant'Anna School of Advanced Studies – Pisa; etaflorence renewable energies

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