POSEIDON PROJECT MARKS ONE YEAR OF PROGRESS IN DECARBONIZING NAVAL TRANSPORT WITH E-METHANOL

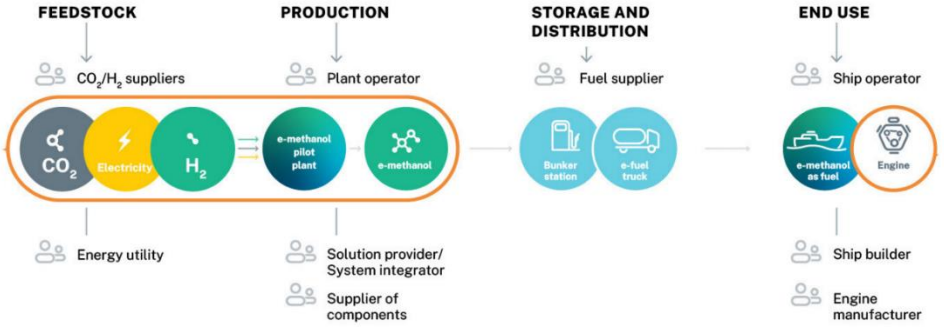
Karlsruhe, Germany – September 25, 2024 – *The POSEIDON project, dedicated to demonstrating the use of synthetic methanol (e-methanol) as a sustainable fuel for shipping, celebrates its first year with significant progress. This ambitious initiative has made notable strides in developing a comprehensive map of the e-methanol value chain, establishing communities of practice in Thessaloniki and Valencia and designing an innovative TRL7 e-methanol pilot plant.*

The POSEIDON project is crucial for decarbonizing the shipping sector by developing efficient technologies for the e-methanol production and end-use onboard ships. It will contribute to the production and use of renewable fuels in EU, and the identification of the necessary infrastructure to connect production and demand clusters.

Mapping the POSEIDON's value chain and stakeholders as first key project step

The value chain is the cornerstone of the POSEIDON project, encompassing all the critical components and players involved in the production, distribution and use of synthetic methanol (e-methanol) as a sustainable fuel for maritime transport. Defining this framework was the first key step within the POSEIDON project to ensure that all partners have a shared understanding of the value chain and that subsequent tasks can be started.

The e-methanol value chain mapping task was initiated in September 2023 during the kick-off meeting in Karlsruhe and was continued through a series of workshops moderated by partner Steinbeis. This iterative process allowed to finetune the value chain step by step by considering feedback from project partners and various Greek and Spanish stakeholders involved in the value chain. During the workshops, technical configurations for the case studies in Valencia and Thessaloniki were examined, and suitable ship types for e-methanol use were determined. The second Advisory Board meeting in March 2024 marked the completion of this activity, incorporating final inputs and feedback from Advisory Board members. All findings were compiled in a report delivered by lead partner EIFER in April 2024. As highlighted during the third consortium meeting organized by CERTH in Thessaloniki in September 2024, the value chain will be instrumental in various future activities, such as definition of scenarios to be studied for the two case studies, the creation of a database on key technologies, the assessment of impacts, and the development of a value chain modeling tool. The picture below presents a simplified view of POSEIDON value chain.



Simplified version of the POSEIDON value chain

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Empowering maritime decarbonization: Communities of Practice (COP) in action

Local Communities of Practice (COPs) were established in the ports of Valencia and Thessaloniki to foster public acceptance, ensure the long-term success and exploitation of the POSEIDON project results, strengthen collaborations between local stakeholders and involve them in the value chain building process. These COPs unite local project partners, external networks, industrial stakeholders, public authorities with the long-term goal of implementing new value chains based on e-methanol as a renewable fuel for shipping in two main EU ports.

A comprehensive COP framework, defining the rules and guiding principles for COP activities to ensure sustained member engagement, was developed from September 2023 to February 2024, involving Greek and Spanish project partners and external stakeholders. Partners FVP and ThPA were both appointed managers of the COP in Valencia and Thessaloniki, respectively. Each COP is designed as an open discussion and exchange platform, with activities focusing on learning and capacity building for COP members and project-oriented tasks such as co-creating research results. The Spanish COP was launched with an in-person meeting in March 2024, while the Greek COP had its kick-off in September 2024 during the 88th International Trade Fair of Thessaloniki. In the next months, COP members will provide feedback and contribute to the co-development and validation of project results such the scenarios definition led by partner AUTH and the study on decarbonization challenges overseen by partner RINA.

Detailed design of ICODOS' e-methanol prototype plant nearing completion

At the heart of POSEIDON demonstration activities is the construction and testing of an advanced power-to-e-methanol pilot plant. This cutting-edge prototype is designed and built by ICODOS with the support of partner KIT. The innovative ICODOS plant features CO_2 capture and methanol synthesis technologies, significantly reducing investment and operating costs by minimizing energy requirements and equipment needs. It is set to produce 750 liters of renewable e-methanol per day, utilizing carbon dioxide (CO_2), hydrogen (H_2), and renewable power. The pilot plant will undergo rigorous testing at EDF's Power-to-X test platform near Paris, France and multiple test campaigns will be conducted to evaluate various gas mixtures, assess the durability of the e-methanol prototype, and produce sufficient e-methanol for engine tests. The synthetic fuel generated will be used by partners WinGD, IFM, and SMA for testing in 2-stroke and 4-stroke engines, as well as a methanol-powered boat operating on the Baltic sea.

ICODOS has completed the basic engineering study in March 2024 and is since then working on the detailed engineering which includes the development of the piping models, the static analysis and the first orders to purchase key components. KIT, in collaboration with a contract engineering company, oversees the quality assurance of the detailed engineering and develops models to create a complete digital twin of the ICODOS plant. EDF has regular exchanges with ICODOS to adapt the test platform of Les Renardières (South of Paris, France) based on the specifications of the e-methanol plant. EDF has already completed basic design studies of the platform and a preliminary risk study and will soon launch a call for tender related to the detailed design studies of the test platform to be started in 2025. The next steps include the completion of the engineering work by ICODOS by early 2025, which will mark the official start of construction of the plant, which will take place throughout 2025. EDF will soon apply for construction permission for the test platform and will carry out a hazard and operability study, known as HAZOP, to identify potential risks and formulate risk mitigation strategies, in line with POSEIDON's safety culture.

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Group picture of POSEIDON project partners during 3rd consortium meeting, Thessaloniki 2024

The POSEIDON project in short

The project, coordinated by European Institute for Energy Research (EIFER), started in September 2023 and will run until August 2027. It consists of 19 partners from 7 European countries: EIFER, EDF, KIT, RINA, Fundación Valenciaport, Aristotle University of Thessaloniki, ICODOS, Fincantieri, Isotta Fraschini Motori - IFM, Winterthur Gas & Diesel - WinGD, Steinbeis Innovation gGmbH, Global Omnium, Port of Thessaloniki – ThPA S.A., CERTH, CNR-STEMS, Swedish Maritime Administration, Inventors, CAO Hellas Natural Chemicals, CAO Hellas Macedonia, and AVEBIOM.

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For more information, please visit https://project-poseidon.eu/ and follow our LinkedIn channel

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