

Biomethane as an alternative green maritime fuel

The Decarbonisation challenge in shipping—the role of biomethane:

The implementation of sustainable means of transport is vital to the global energy goals and climate objectives. Accelerating the deployment of advanced biofuels is a main EU and IMO strategy for a sustainable yet competitive maritime transportation sector. Biogas produced from the treatment of organic waste, in an Anaerobic Digestion process, has proved to be a renewable yet cost-effective transport fuel in the upgraded form of BioMethane. For countries, such as Cyprus, without relevant CNG infrastructure, the uptake of biomethane is extremely difficult.

30/04/2023, Larnaca, Cyprus

The BioCH4-to-Market project partners are delighted to present the project, officially launched in Limassol, Cyprus, on 14th of July, 2022. The project has received funding from the ‘RESEARCH IN ENTERPRISES’ programme of the **Research and Innovation Foundation (RIF) under grant agreement No: ENTERPRISES/0521/0162**. The project aims to (1) prove the use of biomethane as a marine drop-in biofuel, (2) further develop novel technological solutions for biogas to biomethane upgrading, (3) retrofit a marine diesel genset to combust biomethane as a drop-in fuel, (4) develop combustion strategies and emissions measurement and monitoring for biomethane in a marine genset, (5) develop an appropriate business plan to prove the feasibility of compressed biomethane in the maritime industry, and (6) enable market access via a virtual distribution network. The BioCH4-to-Market consortium, coordinated by InoMob, brings together 4 partners from industry and academia from Cyprus, namely Cyprus Marine and Maritime Institute, Petronav Shipmanagement Ltd, Cyprus University of Technology and The Alliance Experts. All partners share the vision of providing the wider maritime community and industry with effective and efficient ways to (1) progress an already prototyped (TRL 5) mobile biogas upgrading module to TRL 7, (2) progress an already

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On the Market of BioMethane as a Drop-In-Marine-BioFuel: Developing a Virtual Gas-Grid Solution prototyped (TRL 5) mobile BioMethane Storage and Refuelling module to facilitate a virtual gas grid, (3) re-design a tailored dual fuelling injection system, and retrofit an existing marine genset, as to allow fuel-efficient utilisation of BioMethane in a Drop-In-fuel Injection strategy, and (4) emissions monitoring including methane slip. The duration of the project is 18 months extending from June 2022 to November 2023 with funding of almost 200,000 Euros.

The innovation and originality of BioCH4-to-Market team will promote the 1) Clustering of individual biogas plants and upgrading biogas onsite, 2) Creation of a virtual gas grid able to bridge the supply gap between BioMethane production and potential consumers. Especially to facilitate BioMethane distribution in countries without CNG infrastructure, 3) Use of Compressed BioMethane and retrofit of an existing ship as a sustainable and cost-effective measure towards compliance with IMO's EEXI and CII emission regulations.

The project objectives are summarised below:

- Progress an already prototyped (TRL 5) mobile biogas upgrading module to TRL 7
- Progress an already prototyped (TRL 5) mobile BioMethane Storage and Refuelling module to facilitate a virtual gas grid
- Re-Design a tailored dual fuelling injection system, and retrofit an existing marine generator, as to allow fuel-efficient utilisation of BioMethane in a Drop-In-fuel Injection strategy
- Emissions monitoring including methane slip

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