

# ENGIMMONIA Project: Sustainable technologies for future long distance shipping towards complete decarbonization

Testing on board of vessels clean energy solutions to make EU shipping sector lighthouse in maritime pollution reduction.

On May 1<sup>st</sup> the project ENGIMMONIA officially started and the kick-off meeting of the project was organized virtually on May 4<sup>th</sup>-21<sup>st</sup>.

ENGIMMONIA Project aims to develop and test innovative solutions that focus on two main pillars: i) promote the global introduction of alternative fuels (ammonia) in shipping sector reducing their environmental impact, ii) transfer to maritime sector clean energy technologies robustly demonstrated for terrestrial application (e.g. Waste heat recovery, renewables etc) in order to reduce vessels' emission.

ENGIMMONIA will indeed study the benefits of using a carbon-free fuel like ammonia (that in any case could have a GHG impact due to N<sub>2</sub>O emissions that should be properly treated by an EATS to be developed in the project) in vessel engines also coupling its benefits/performances with other clean energy technologies like: (1) waste heat recovery solutions based on ORC and adsorption chiller for the production of electricity and space cooling respectively, (2) renewables integration on board thanks to the installation of PV composite surface easily installable on vessel structural parts, (3) on board fuel/energy/heat management optimization via real time Energy Management System. Such technologies will be moved to marine sector also from a regulatory/business point of view.

To do so ENGIMMONIA technologies will be demonstrated at TRL>5 in real scale engines (MAN) and on board of three vessels: an oil tanker (FAMOUS), a shipping vessel (DANAOS) and a ferry (ANEK) thus proving their replicability on board of different type of vessels. To guarantee ENGIMMONIA innovations wide acceptance, maritime sector's key players are involved in the project while other will interact as stakeholders, also supporting IMO and IACS initiatives at policy/regulatory level.

In this way, ENGIMMONIA consortium composed by 21 partners from 9 countries under RINA Consulting coordination, will demonstrate a rich portfolio of clean energy solutions towards a full decarbonization goal, promoting Renewables on board and the optimization of on-board energy assets.

One of these technological partners will be TECNALIA, a Spanish Technology center, private foundation, highly committed with all the aspects related to the sustainability of our society. TECNALIA will face the integration of photovoltaic (PV) systems in the vessels, by adapting a highly innovative solution based on composite materials for the manufacturing of structural products with the PV cells embed on them. These PV products will meet the harsh marine conditions (wet environment, corrosion, salinity) and will be



integrated in different parts in the vessels, which will require the adaptation of the designs and products to the vessels working conditions, making this activity very challenging. TECNALIA will be also dealing with the replication of clean and efficient concepts in vessels thanks to the experience of TECNALIA's Thermal Energy team in this field. For this purpose, TECNALIA will collaborate with the University of Basque Country.

ENGIMMONIA was funded by the European Commission in the framework of Horizon 2020 research and innovation program Grant Agreement 955413 in line with the commitment to decarbonize the shipping sector targeting ambitious decarbonisation goals set by IMO.

### **Project FactSheet**

**Start Date:** 01/05/2021

**End Date:** 30/04/2025

**Overall budget:** € 9 500 000

**Project Coordinator:** RINA CONSULTING SpA (Italy)

**Project Partners:** NATIONAL TECHNICAL UNIVERSITY OF ATHENS (Greece), Consiglio Nazionale delle Ricerche (Italy), TECHNISCHE UNIVERSITÄT MÜNCHEN (Germany), UNIVERSITÀ DEGLI STUDI DI GENOVA (Italy), ARISTOTELIO PANEPISTIMIO THESSALONIKIS (Greece), FUNDACION TECNALIA RESEARCH & INNOVATION (Spain), DANMARKS TEKNISKE UNIVERSITET (Denmark), LUNDS UNIVERSITET (Sweden), POLITECNICO DI MILANO (Italy), ORCAN ENERGY AG (Germany), METIS CYBERSPACE SOCIETÀ ANONIMA SOFTWARE AND ELECTRONIC SYSTEMS (Greece), Fahrenheit GmbH (Germany), C-JOB & PARTNERS B.V. (Netherlands), RICREATION IKE (Greece), SEASTEMA S.P.A. (Italy), MAN ENERGY SOLUTIONS SE (Denmark), ANONIMI NAFTILIAKI ETERIA KRITIS (ANEK) S.A. (Greece), DANAOS Shipping Co. Ltd. (Cyprus), Autorità di Sistema Portuale del Mar Ligure Occidentale (Italy), Famous Accounting, Technical, Commercial, Brokering, Shipping Single Membered Company Limited (Greece), HALDOR TOPSOE AS (Denmark)

Useful Link: <https://cordis.europa.eu/project/id/955413>



*ENGIMMONIA has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 955413*



*ENGIMMONIA has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 955413*