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Issue 1

HARPOONERS

Welcome to the 1st edition of the HARPOONERS project newsletter!

Dear Reader, We are pleased to announce the publication of the 1st issue of the HARPOONERS project newsletter. If you are interested in innovative solutions for ship electrifacation you are at the right place!

Representing a powerful consortium of high-profile partners from all over Europe, the Horizon Europe funded HARPOONERS project aims to contribute to the development of efficient solutions that support the decarbonisation of the maritime sector.

Stay tuned @ https://harpooners.eu/!

With best wishes,

The HARPOONERS project team.

THE HARPOONERS PROJECT

Driving the future of electric maritime transport

HARPOONERS is a pioneering European project dedicated to developing high-voltage, modular, and lightweight battery storage systems for maritime and inland waterborne transport.

By introducing a modular and flexible AC battery system, the project aims to revolutionize vessel electrification, eliminating combustion engines (zero-emission operations) in smaller ships and enhancing energy efficiency in larger vessels.

From innovation to real-world impact

HARPOONERS is not just about research—it's about real-world application. The project will develop, test, and validate its high-voltage battery systems in actual maritime and inland waterborne environments, ensuring their efficiency, scalability, and compliance with safety standards. By bridging innovation and industry needs, HARPOONERS is shaping the future of zero-emission, high-efficiency maritime transport.

HARPOONERS is structured around three main innovation pillars:

- High-Voltage Powertrain Development
- Sustainability
- Digitalization & Safety

Expected results:

- Development of a next-generation high-voltage battery system tailored for maritime and inland waterway applications.
- Development of a cyber-secure and intelligent connected digital twin platform for monitoring and optimization of maritime electric powertrains.
- Advancement in certification frameworks and safety standards to facilitate widespread adoption of new battery technologies.
- Acceleration of commercial deployment through techno-economic analysis and exploitation strategies.

A step-by-step innovation plan

To achieve its ambitious goals, HARPOONERS is structured into eight Work Packages (WPs), each addressing a crucial aspect of the project:

- WP1 – Project coordination and management
- WP2 – System requirements and specifications definition
- WP3 – Novel powertrain development for high-voltage maritime and inland applications
- WP4 – Safety lifecycle and identification of certification requirements
- WP5 – Digital twin technologies and cloud-based real-time monitoring
- WP6 – System integration, testing, and validation
- WP7 – Accelerating commercial exploitation, techno-economic analysis, and deployment plans
- WP8 – Innovation management, recommendations, and dissemination

TECHNICAL PROGRESS AND DELIVERABLES

Over the past months, we have made significant progress on various Work Packages. Below are some of the key updates:

WP2 Almost finished

This WP aims at defining the system requirements and Use Cases specifications.

- Vessels data: Load profiles from the HARPOONERS three use cases are available to be used in other WPs.
- Deliverables development: we developed 1non-public deliverable on the use case definition and 2 public deliverables are in progress.

WP3 to WP8 Progress

We have been progressing on WP3 to WP8:

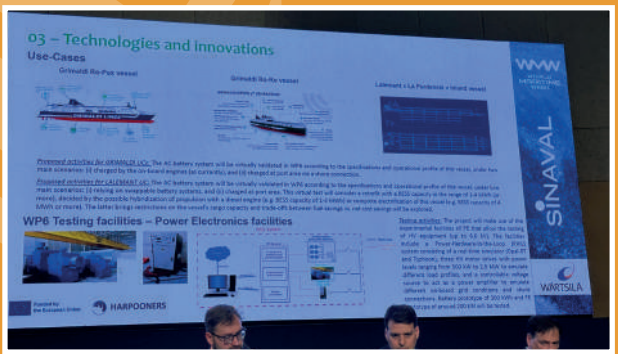
- BESS system sizing: we have finalised the power converter architecture selection and we are currently conducting several assessments in terms of topology and technology studies.
- Digital twins: progress is ongoing for the digital platform.
- Dissemination and Liaison activities:
  - We have finalized the "Communication and Dissemination Plan" as the document that will guide the Communication and Dissemination actions with the objective of ensuring a successful project uptake in the European Market.
  - A Brand identity and logo of the HARPOONERS Project has been developed and since then, used in all activities and specially in the communication and dissemination ones, and different materials (brochure, roll-ups, etc.) as well.
  - Initial contacts with other EU funded projects ongoing.

1) HARPOONERS EVENTS

- **KICK-OFF AND GENERAL ASSEMBLIES:** we held a kick-off and will hold next General Assemblies (GA) from the project start in early 2025. The kick-off was in Brussels, Belgium, in February 2025, followed by the next GA to be hosted by Tecnalia in Bilbao, Spain. These gatherings are filled with presentations and fruitful discussions GAs will be stablished every 6 months to present the technical progress of the WPs and discuss technical open points.

- **THE SESSION ON RD FINANCING AT WORLD MARITIME WEEK (WMW)** - Bilbao, 23 March 2025

The HARPOONERS project was presented at the session "R&D Financing: Programmes and Success Cases". The session aimed to inform about public R&D funding programmes (at local, national and European level), with the aim of raising awareness and encouraging companies to participate in them, as well as presenting each of the success stories (HARPOONERS among them), their objectives, partners, etc. The presentation was given by Mr. Eneko Otaola from Tecnalia.



- **THE BASQUE MARITIME CLUSTER'S WORKING GROUP ON ELECTRIFICATION OF SHIPS MEETING – Zamudio, 14 April 2025**

On April 14th, the Basque Maritime Cluster (BMC) organized a meeting of the Electric Vessel Working Group at Tecnalia facilities.

On that meeting, which was attended by representatives of 23 companies, issues such as electric and hybrid vessels, fuel cells, ammonia reformers, and new European funding for technological development in naval electrification were discussed. During the meeting, the HARPOONERS project, was presented.

It was undoubtedly a key meeting for continuing to advance the decarbonization of the maritime sector and a great opportunity to inform the community of companies working on the electrification of the Basque maritime sector about the HARPOONERS project. On this meeting, the presentation was given by Mr. Pablo Prieto from Tecnalia.

• NOR-SHIPPING 2025 – Oslo, 01-06 June 2025

Nor-Shipping is the event of the year in the international maritime sector, as reflected by its 1.012 exhibiting companies from 50 countries in 23.700 m², its 17 national pavilions, or its 63.700 visitors from 104 countries. Due to this, is the place where the Maritime sector gathers: shipyards, naval engineering companies, manufacturers of marine equipment, etc. Norway is a ship-owning power and a country committed to the ecological transition and this is how it is transferred to its maritime sector. The fair is traditionally a good showcase where companies present their novelties and in recent years those related to the digital and ecological transitions stand out. For all these reasons, FMV has taken the opportunity to present the HARPOONERS project, informing the companies that came to the FMV stand about the objectives of the project.

• FMV GENERAL ASSEMBLY, Bilbao 19 June 2025

The HARPOONERS project was presented during the FMV General Assembly that took place on June 19, 2025. The General Assembly is the annual event of the cluster and for this reason, it is attended by a large part of the Basque maritime sector. About 130 people representing institutions and companies in the Basque maritime sector were present at the Assembly. During the General Assembly, BMC's Managing Director, Ms. Sarai Blanc briefed those present about the HARPOONERS project, its objectives and the development of the project.

2) COLLABORATION WITH OTHER PROJECTS

- In July 2025, HARPOONERS started a collaboration with one EU Project, the "eWAVE" (https://ewave-project.eu/). The aim is to identify common areas of interest, explore ways to adopt best practices and to enhance both results for the benefit of waterborne transport.

3) SCIENTIFIC PUBLICATIONS

- E. Ibarra, A. Moratiel, E. Otaola, A. Sainz de la Maza, E. Trancho, A. Sierra-Gonzalez, A. Gelbentzu, S. Ceballos, **"Control de un sistema electrónico de potencia para aplicaciones bacteria a red basado en topología CHB "**, Seminario Anual de Automática, Electrónica Industrial e Instrumentación (SAAEI), 2025.
- A. Gelbentzu, A. Sainz de la Maza, E. Otaola, E. Ibarra, E. Trancho, A. Rubio, D. Ansean, **"Towards the development of a power-HiL platform for the evaluation of battery management systems in maritime transport applications"**, Seminario Anual de Automática, Electrónica Industrial e Instrumentación (SAAEI), 2025.
- Ettore Soldaini, Sachin Kumar Bhoi, Sajib Chakraborty, Omar Hegazy, **"Cybersecurity Strategies for Marine Electronic Control Units"**, Conference paper for 25th EEEIC: International Conference on Environment and Electrical Engineering

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info@harpooners.eu

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