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Orcelle Horizon

Wind as main propulsion

Deliverable D7.6 – Report on Cooperation with IMO and Other Stakeholders

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Abstract

Deliverable abstract	

As wind power is gaining traction as a solution for maritime decarbonization, updated regulations and guidelines are required. This deliverable provides an overview of the Orcelle Horizon project's cooperation with international stakeholders, focusing on regulatory engagement with the International Maritime Organization (IMO) and technical standardisation through the International Towing Tank Conference (ITTC). It documents the project's contribution to the 108th session of the IMO Maritime Safety Committee, the development of new ITTC guidelines for performance assessment of wind-powered ships, and support to IMO regulations on GFI, coordinated by project partners. These activities support the IMO's efforts to establish appropriate safety, training, and performance standards for alternative propulsion technologies under its 2023 GHG Strategy.

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1 Introduction

In alignment with the Dissemination and Exploitation Plan, the Orcelle Horizon project has engaged several targeted stakeholders through direct contact and collaborative efforts. Key project partners are actively working with the International Maritime Organization (IMO). Oceanbird and RISE are members of the International Wind Ship Association (IWSA), which holds observer status at IMO, supporting IWSA in policy development and submissions concerning IMO regulations like EEDI, EEXI, and CII. These regulations currently do not cover ships predominantly powered by wind.

Under Task 2.6 of Orcelle Horizon, DNV has identified shortcomings and gaps in current regulatory aspects related to safety. Wind propulsion technology affects various technical areas that will require attention in the future. As an outcome of the gap study, an Information Paper was created, an effort led by DNV. Wallenius Wilhelmsen (WalWil) and Oceanbird later presented this to IMO's Maritime Safety Committee, MSC108. Drawing on the technical development in Orcelle Horizon, RISE has also supported the International Wind Ship Association (IWSA) in their input to the IMO's GFI regulations.

Our project team has also collaborated closely with the international maritime industry to standardize procedures for assessing the performance of wind-powered ships. This collaboration includes active participation in the International Towing Tank Committee's (ITTC) Specialist Committee for Wind Powered and Wind Assisted Ships. Notably, under the chairmanship of RISE, this committee published, for the first time, Recommended Procedures and Guidelines for predicting and assessing wind-powered ships in 2024.

These efforts are further described below. Additionally, MCT coordinated efforts to exchange information with various stakeholder groups through partner networks, meetings, and conferences to further the objectives and impact of Orcelle Horizon. For example, project partners have presented at MCT's annual Chasing Zero Conference in 2023 and 2024, which gathered policymakers, shipping companies, members of the IMO, and other stakeholders.

2 IMO Maritime Safety Committee

In March 2024, the European Commission submitted a formal information paper (*MSC 108/INF.24*) to the 108th session of the IMO Maritime Safety Committee (MSC 108).[i] The paper introduced the Orcelle project and its ambition to demonstrate wind as a main propulsion system in commercial deep-sea shipping. The submission supports the IMO's ongoing work to develop a safety regulatory framework for greenhouse gas (GHG) reduction through new technologies.

In addition to the information paper, a dissemination event was held during the MSC 108 meeting in May 2024, where the Orcelle Horizon project was presented and discussed with participants. The event was organized by DNV, supported by WalWil, RISE, NTUA, Oceanbird, and Wallenius Marine.

Key points from the white paper and presentation include the following:

- The uptake of wind-assisted propulsion systems is growing yet remains limited in commercial shipping due to challenges such as limited access to capital, lack of incentives, and insufficient verified data on safety, operability, durability, and economic impact.
- Most existing wind applications provide modest energy contributions (1–10%), but Orcelle Horizon aims to push this significantly higher – towards and beyond 50% – positioning wind as a main source of propulsion.
- Wind propulsion systems are expected to challenge the existing regulatory framework, particularly due to changes in ship design, operational dynamics, and design loads.
- While some classification societies, such as DNV, have rules for wind-assisted ships, no formal framework currently exists for certifying vessels in international trade using wind as their primary propulsion source.
- Orcelle Horizon is conducting a regulatory gap analysis to inform IMO instruments that may need revision. This includes identifying needs for:

  - Safe operation in adverse conditions, including extreme wind loads and sail-lowering protocols.
  - Ship manoeuvrability in line with IMO's minimum propulsion requirements.
- These developments may require updates to key IMO conventions, including International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), International Regulations for Preventing Collisions at Sea (COLREGs), and International Convention for the Safety of Life at Sea (SOLAS), alongside the creation of new training programmes for crew operating wind-powered vessels.
- The Orcelle Horizon project directly supports IMO's GHG reduction objectives by:
  - Developing and demonstrating wind power solutions for deep-sea vessels.
  - Collecting operational data to validate safety standards and modelling tools.
  - Proposing new safety standards and regulations for wind as main propulsion.
  - Providing simulation platforms and digital toolkits to assist industry adoption.
  - Enabling new logistics models to accommodate longer, wind-optimised voyages.
- By addressing both the technical and regulatory challenges, Orcelle Horizon contributes concrete data, tested innovations, and policy input to help shape a future IMO framework that supports large-scale deployment of wind propulsion in commercial shipping.

Fig. 1: Presentation by Jon Tarjei Kråkenes, Head of Orcelle Accelerator at Wallenius Wilhelmsen, and Niclas Dahl, Managing Director of Oceanbird, to delegates the Maritime Safety Committee at the IMO headquarters in London.

3 ITTC Guidelines

The steadily growing wind propulsion industry calls for standardized terminology and definitions, especially regarding performance indicators and performance models. Therefore, the International Towing Tank Conference (ITTC) started up a Specialist Committee for Wind Assisted and Wind Powered Ships in 2019. ITTC is recognized as an NGO with observer status to IMO, the International Maritime Organization, where ITTC participates actively in matters regarding safety and performance. A number of technical committees perform defined work tasks between Full Conferences held every three years and constitutes the highest authority of the ITTC.

The Specialist Committee for Wind Assisted and Wind Powered Ships, chaired by RISE, is specifically tasked with developing key performance indicators (KPIs), guidelines for performance predictions, and sea trial procedures for wind-assisted ships. This work has been conducted in close connection with Orcelle Horizon. The developed guidelines were reviewed, and the committee received feedback from 18 industry partners (including Oceanbird, DNV, and NTUA from the Orcelle Horizon consortium). These guidelines were approved by the ITTC Executive Board in September 2024 and are now freely available.[ii]

4 Support to IMO regulations on GFI

Over the last years, the IMO has developed the 2023 IMO Strategy on reduction of GHG emissions from ships in which the GHG Fuel Intensity (GFI) is a key regulatory measure. An open question has been how to introduce the effect of Wind Propulsion in the GFI.

In 2024–2025, RISE has supported the International Wind Ship Association (IWSA) in proposing how wind propulsion can be accounted for in GFI and how it can be verified. This work was done in close connection with Orcelle Horizon, drawing on the outcome of the technical development in WP2 and WP6. The outcome was submitted by IWSA to the 83rd session of IMO's Marine Environment Protection Committee (MEPC) as MEPC 83/7/33.[iii]

5 Conclusion

Orcelle Horizon is contributing actively to shaping the regulatory foundation for wind propulsion in commercial shipping. Through its formal engagement with the IMO Maritime Safety Committee and leadership in technical standardisation via the ITTC, the project has addressed both policy-level and practical challenges. By identifying regulatory gaps, proposing safety measures, and providing data from full-scale demonstrations, the project supports the development of credible, actionable standards for ships using wind as main propulsion. These contributions help position wind technology as a viable part of the global decarbonisation effort, aligned with the IMO's revised GHG Strategy.

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[i] MSC-108-INF.24 EC Orcelle Project

[ii] https://www.ittc.info/media/11974/75-04-01-02.pdf and https://www.ittc.info/media/11806/75-02-03-019.pdf

[iii] Measurement & Inclusion of Wind Propulsion in the GFI formula