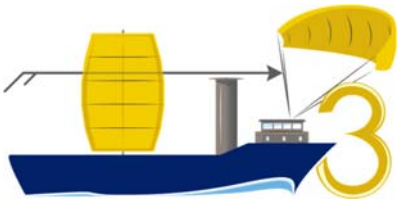
WiSP 3 Joint Industry Project

Wind-assisted Ship Propulsion

A reliable performance prediction, harmonised rules and regulation and industry standards are key for a further uptake of wind propulsion. Developments are not yet completed. This realisation came after the very successful WiSP and WiSP 2 Joint Industry Projects. For this reason, a follow-up project is being launched: WiSP 3.

WiSP 3 will focus on the standardisation of performance predictions of wind assisted ships and updates on the regulatory framework, including EEDI, EEXI and CII. The aim is to provide industry standards on the methods to predict fuel savings and emission reductions, enabling fair comparison.



Background

Wind propulsion is steadily gaining traction. At the start of 2023 there were about 24 commercial ships with wind propulsion, which is doubling throughout 2023. Many makers investing in their production process, so growth is expected to accelerate thereafter. The current savings we see of the ships now being equipped with wind propulsion are roughly 5% - 15% overall fuel and greenhouse gas emission. Moreover, there are several projects with serious dedication aiming for delivering the majority of thrust from wind propulsion .

This rapid pace of development shows the increasing urgency for reliable predictions, rules and regulations and industry standards. The WiSP3 Joint Industry Project will start in 2024, following-up successful Joint Industry Projects WiSP and WiSP2. To this end, we are pleased to present the research activities as outlined in this leaflet

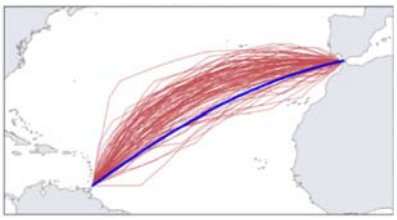
Schedule
The WiSP 3 JIP is expected to run for a period of 2 years. The first meeting is scheduled for November 30, 2023 when the initial work plan will be discussed.

News
For latest updates, please refer to www.marin.nl/jips/wisp-3

Scope of the project

The aim is to cover the majority of marketed wind-assisted ship propulsors in this pre-competitive project, thereby extending systems considered in WiSP and WiSP2. The project will not go into the details of company-specific design solutions.

- Harmonisation of class rules. Further gap analysis in class rules and regulations will be addressed and discussed amongst class society via IACS.



Example voyage simulation tracks with optimized routes (and speeds)

Measurements, such as already conducted on MV Afros, should serve as validation material

Interested?
The project is of interest to many organisations in the maritime industry worldwide: WASP suppliers, design offices, shipyards, ship owners, ship operators, classification societies and universities.

WiSP 3 is initiated by MARIN, in cooperation with American Bureau of Shipping (ABS) and together with a large number of WiSP 1 and 2 participants. WiSP 3 is open for new participants.

For more information contact MARIN:
Patrick Hooijmans
T + 31 317 49 32 44
E p.m.hooijmans@marin.nl

- Improved performance predictions:
  - *Hindcast versus forecast data.* Finding the impact on performance due to differences between forecast and hindcast weather data, including decisions based on the forecast data
  - *Full scale validation.* Full scale on-board measurements are analysed and compared against prediction data.
  - *Further assessment on aerodynamics.* Interaction effects, boundary layer effects and wind gust impacts are investigated
  - *Impact on propeller and engine operations.* Engine load variations, especially for hybrid propulsion systems may have an impact on the actual power and fuel savings .In case of sustained propeller unloading, pressure side cavitation on the propeller can occur.
  - *Numerical and sea trial verification method for manoeuvrability and stability.* The present IMO regulations do not address application of wind propulsion systems.
  - *EEDI sea trial verification standards.* EEDI approval standards are required. Moreover, exemption standards need to be formulated in case of wind propulsion.
- Propose industry standards for laboratory tests on combined hydrodynamics and aerodynamics. By seeking collaboration with wind tunnels, develop standards for determining the performance of wind propulsion systems. Standards for conducting model tests will be proposed for hydrodynamic performance assessment.
- Identify the impact of unsteady conditions on the performance of wind propulsion systems. Wind propulsion systems may perform differently when in rough sea conditions. Time domain simulations and model tests will identify the impact.
- The Blueroute application (https://blueroute.application.marin.nl/) will be further developed, enabling re-routing options and high fidelity performance predictions.
- Impact of WASP controls and design considerations will be addressed. Focus will be on the impact of the WASP location as well as the WASP controls on the performance in operational conditions.

Organisation

WiSP 3 is initiated by MARIN, in cooperation with American Bureau of Shipping (ABS) and International Wind Ship Association (IWSA) and a large number of participants, to investigate ways to overcome barriers to wind propulsion uptake.

Time schedule

The kick-off meeting will be organised in April 2024 during the BlueWeek (www.blueforum.org) in Venice, Italy. The project will take 2 years to complete.

Costs

The results are expected to be widely used for many years to come. The total participant fee is set as 15 k€ for SME and 25k€ for companies with >49 employees for early-bird participants. Late participants (after 1 April 2024) will encounter 25% higher participant fee. To start the project, at least 15 participants would be required. The scope of work will be confirmed during the kick-off meeting and based on the number of confirmed participants at that time.