DT4GS

News & updates

Vol.7 - January 2025

Technical Updates and Project Highlights

The **DT4GS** project is progressing well towards its objectives and it is our pleasure to present the **7th newsletter** on behalf of the **DT4GS** consortium. In this edition, you will find an overview of the various activities undertaken and the key results achieved by our project partners in recent months.

As our project reaches its final phase, we are delighted to announce that the **upcoming General Assembly** will take place in **Genoa on the 27th and 28th of February**. This important gathering will provide a platform to **reflect on our accomplishments, align on the final steps, and ensure a lasting impact for the project**.

Stay tuned for more details—we look forward to coming together in Genoa to celebrate our journey and define the project's legacy!

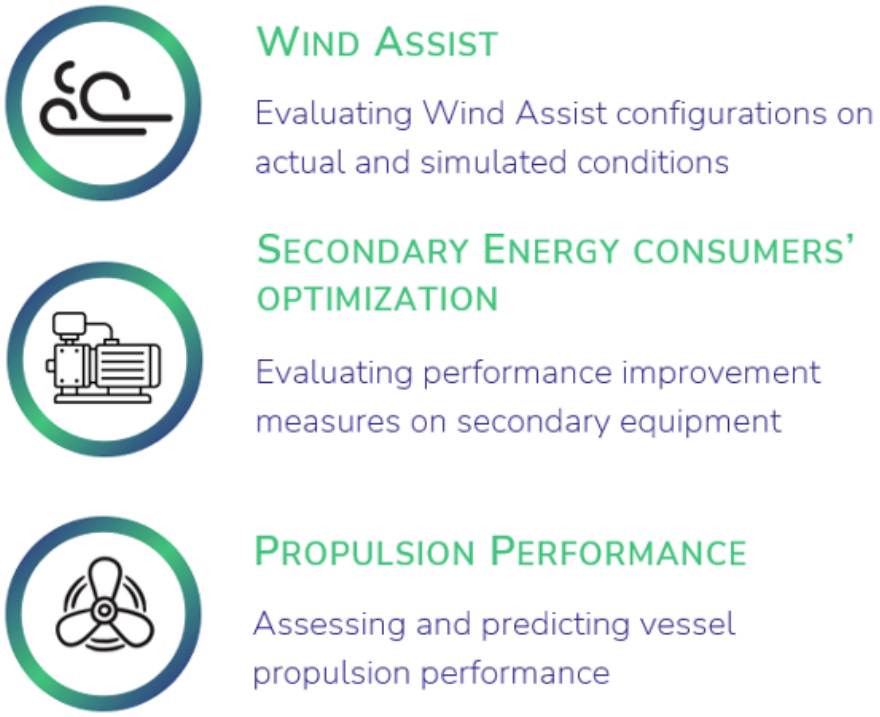
Advancements in Digital Twinning Technology

We are thrilled to announce the launch of three new tools based on our Digital Twinning technology, designed to empower our Living Labs and external stakeholders to explore opportunities for reducing the environmental impact of the maritime industry. These tools mark a

significant step forward in leveraging digital technologies to foster sustainable practices.

The new tools are built upon the robust DT4GS framework and showcases the combination of the extensive work carried out by our consortium throughout the lifecycle of the DT4GS project. By integrating advanced analytics, user-friendly interfaces, and cutting-edge technology, these tools aim to enable smarter decision-making and drive measurable environmental benefits.

The integration of these applications has been spearheaded by **Konnecta**, the leader of the "Open DT4GS Infrastructure" development and task owner of the DT4GS user interface. Their expertise has ensured that these tools are not only functional but also seamlessly aligned with the needs of users across diverse maritime contexts.

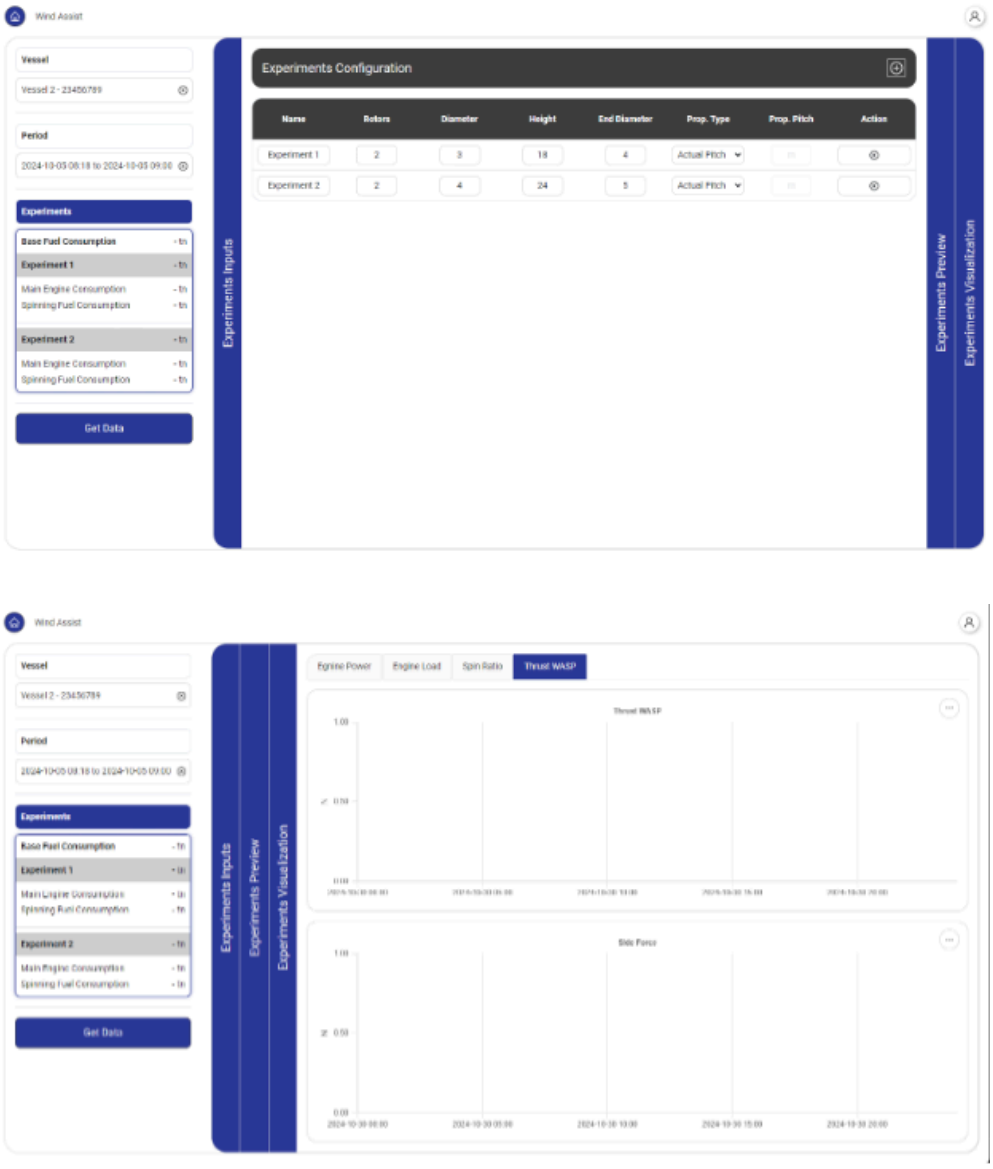


Three new tools based on project's Digital Twinning technology, designed to empower project's Living Labs

The first tool focuses on wind assist and enables users to evaluate the application of different wind assist configurations using actual performance, operational, and weather data. This is particularly useful for the evaluation of potential retrofits and planning of new builds, assisting in establishing a decarbonization pathway. The model is trained either on the fly using real-time data or using past data to

reflect the actual operational and commercial profile of the vessel, in terms of routes, encountered weather conditions, operating speed, loading, and fuel consumption.

The WASP (Wind Assisted Ship Propulsion) models, residing in the DT4GS open model library and developed by **CEA**, are fed with the required data including wind conditions (speed and direction), engine power, and vessel speed. Users can define multiple WASP configurations defining the geometrical characteristics, as well as the propeller configuration for the model to account for propeller matching. The model internally estimates the best spin ratio and provides spinning power and thrust, which ultimately results in the reduced fuel oil consumption of the wind-assisted vessel.



First tool: Wind Assist

The second tool focuses on the optimization of the operation of secondary energy consumers. Typically, when discussing fuel consumption, the focus is given to the main propulsion system, and

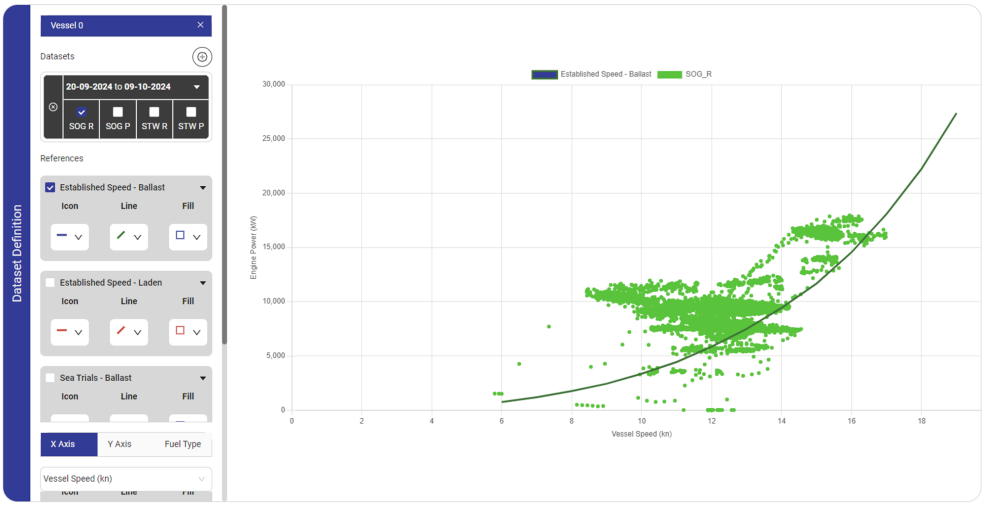
secondary consumers are often overlooked. However, as margins for fuel savings in primary systems narrow, optimizing other onboard machinery can lead to significant fuel savings and, consequently, better financial and environmental performance.
This application examines the use of Variable Frequency Drives (VFD) to operate pumps and ventilators at loads lower than their nominal capacity. For example, the cooling pump of the freshwater circuit, which feeds seawater to the freshwater exchanger that cools the main engine, operates at full load regardless of the heat rejected from the main engine—which depends on its load and the seawater temperature. Leveraging the experience and the "VFD" model provided by **Remontowa**, the developed tool estimates the energy consumption reduction of pumps using real-time or historical data.
Specifically, the tool uses vessel coordinates and date to estimate seawater temperature and calculates heat losses based on engine load. The seawater temperature and rejected heat are then used to estimate the required pump load. The same methodology can be easily adapted for various applications on board vessels where electric motors are involved, enabling broader optimization of secondary energy consumers.

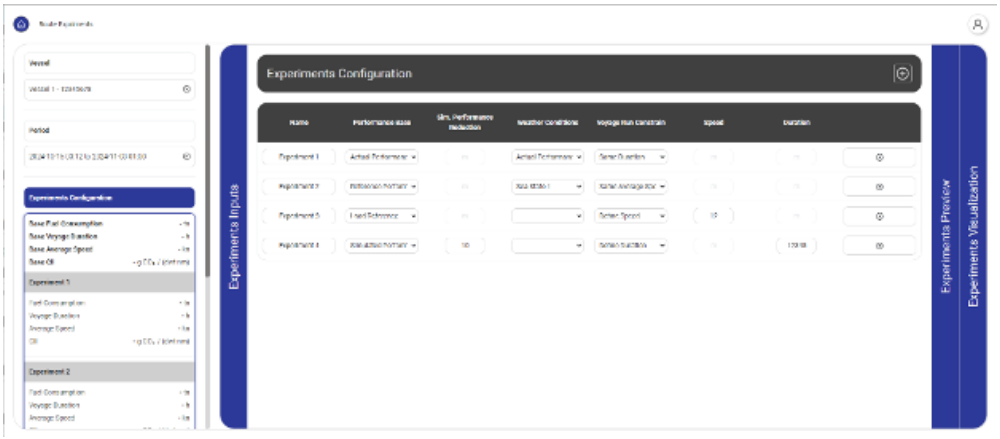
The third tool is dedicated to assessing hull condition and quantifying the impact of hull dirtiness on vessel performance. By integrating advanced modeling and simulation techniques, this tool enables users to:

- **Assess hull condition:** Evaluate the current state of the vessel's hull, providing actionable insights into its maintenance needs.
- **Quantify the effect of hull dirtiness:** Measure how biofouling or other factors impact the vessel's resistance, fuel efficiency, and overall performance.
- **Simulate vessel performance under various conditions:** Run scenarios to understand how the vessel will perform with different levels of hull cleanliness, weather conditions, and operational parameters.
- **Assist decision-making on vessel operation and maintenance:** Provide data-driven recommendations for cleaning schedules, hull coating selection, and operational adjustments to enhance efficiency and sustainability.

By offering these capabilities, the tool empowers operators to make informed decisions that optimize vessel performance, reduce fuel consumption, and lower greenhouse gas emissions. This is yet

another step toward achieving the industry's decarbonization goals while improving operational cost efficiency.





Third tool: Propulsion Perfomance

With these new applications, we are opening the door to exciting possibilities for innovation and collaboration. Together, we can navigate the challenges of decarbonization and sustainability in the maritime sector, paving the way for a greener future.

Stay tuned for more updates and insights into how these tools are transforming the industry. Let’s chart the course to a sustainable tomorrow!

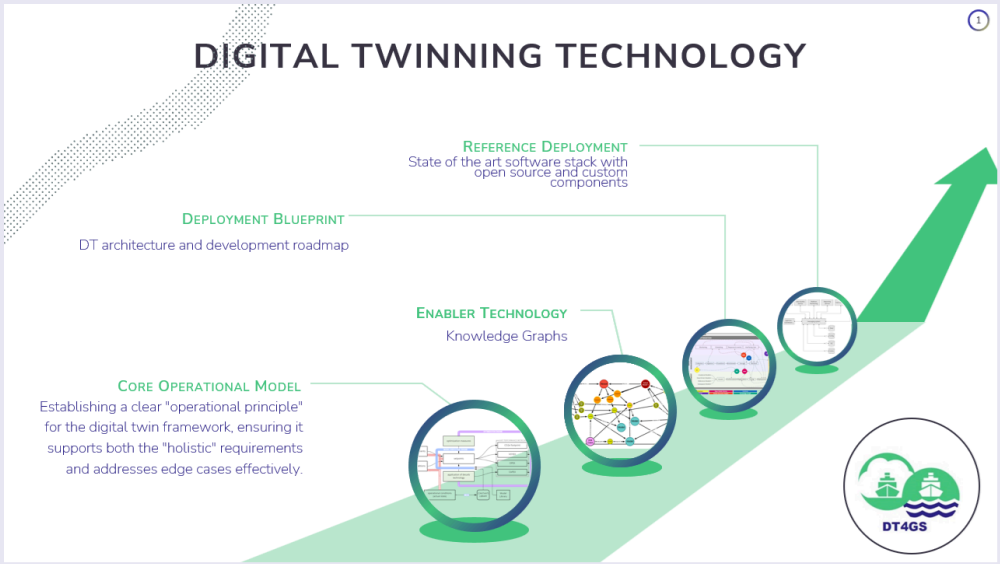
FIND OUT MORE ON OUR WEBSITE

COMMUNICATION HIGHLIGHTS

- DT4GS videos are available **here**
- The project's flyer and leaflet available on the **website**.
- Project's press release is available **here**.
- Project's publications are available **here**

DT4GS project , funded by the European Commission (GA N0.101056799) establishes the DT4GS ALLIANCE, a consortium of leading organizations working together to accelerate the decarbonization of the shipping industry through the use of Digital Twin technology.

DT4GS News



KONNECTA showcased DT4GS progress at Shipbuilding & Ship Performance 4.0 Conference 2025

On January 25th, our partner **Konnecta** represented us at the **Shipbuilding & Ship Performance 4.0 2025 Conference**, presenting to an audience of 172 professionals from 125 leading maritime companies, taking the opportunity to showcase the advancements in our project, including our digital twinning technology and the launch of new innovative applications aimed at reducing the environmental impact of the maritime industry.

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DT4GS virtual workshop – Save the date

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DT4GS at the 3rd Workshop of EU Research & Innovation Maritime of Danaos

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A progress report on the creation of the DT4GS IoT infrastructure

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DT4GS Flyer

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DT4GS will provide an **industry-wide decarbonization decision-support system** for shipyards, equipment manufacturers, port authorities and operators, river commissions, classification societies, energy companies and transport /corridor infrastructure companies.

Go to our website →

For more information about the DT4GS project, please feel free to contact us at **info@dt4gs.eu**

DT4GS is on social media!
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This project has received funding from the European Union's Horizon Europe research and innovation program under grant agreement no. 101056799