

Accurate wind data elevates DP system safety and efficiency

Case Study



The client:

Navis Engineering Oy

Vaisala solution:

WINDCAP® Ultrasonic Wind Sensor WMT700

Navis Engineering specializes in developing innovative advanced vessel motion control systems for the maritime industry. Focusing on reliability, safety and performance, their Dynamic Positioning Control System lets vessels automatically keep their position and heading accurately, even in tough conditions affected by wind, waves and currents.

Navis Engineering has been partnering with Vaisala for over 15 years to integrate WINDCAP® Ultrasonic Wind Sensor WMT700 into their DP systems. These sensors are perfectly tailored to meet the needs of their customers, with an installed base spanning hundreds of vessels worldwide, including specialized and research vessels.

THE CHALLENGE:

Integrating precise wind data for optimal Dynamic Positioning systems

Navis Engineering faced the critical challenge of ensuring their DP Control System could maintain precise control of a vessel's position and heading, even in the face of unpredictable and challenging and icing weather conditions. To achieve this, they required highly accurate and reliable wind sensors capable of delivering precise data on wind direction and force.

This information is essential for the system's mathematical model and control algorithms to calculate wind-generated forces and enable swift, accurate adjustments. Without it, deviations could compromise vessel safety and operational efficiency, particularly in high-stakes environments. Finding a solution that met stringent maritime

"Wind readings are essential for the Dynamic Positioning (DP) system to adapt effectively to changing weather conditions, ensuring accurate and smooth operation. Vaisala's wind sensors provide reliable and precise measurements, helping us maintain the safety and efficiency of our solutions. Our long-term partnership, built on a shared Finnish commitment to quality and innovation, consistently delivers great results for our clients and supports the maritime industry's transition towards sustainability"

*Evgeny Kottsov
Sales Director, Navis Engineering Oy*

standards, delivered consistent performance, and could withstand harsh environments was critical for their systems.

THE APPROACH:

Exceptional accuracy, durability and performance

To address the challenge of maintaining precise vessel positioning in challenging conditions, Navis Engineering integrated WMT700 sensors into their DP system, chosen for their exceptional accuracy in measuring wind speed and direction, low power consumption, and robust performance across a wide heating options and temperature range.

WMT700 offers precise wind measurements crucial for calculating wind forces and moments affecting the vessel. It utilizes a sophisticated wind model that considers the vessel's aerodynamic properties and coefficients for various attack angles. Inputs like wind speed, direction, and vessel heading determine wind-induced forces and the resulting moment.

This data improves the DP system's feedforward loop, allowing it to anticipate and counter wind effects swiftly. As a result, it delivers enhanced station-keeping performance, ensuring stability, safety, and operational efficiency.

For example, during operations like docking in strong winds or maintaining position near offshore installations, the wind data of WMT700 allows the DP system to make precise adjustments in real-time, preemptively compensating for wind

forces and ensuring optimal performance under demanding conditions.

THE RESULTS:

Serving an expanding maritime market with precision

The integration of WMT700 sensors has greatly enhanced the reliability and accuracy of Navis Engineering's DP systems, delivering key benefits to their clients. Accurate wind data ensures improved safety and stability, allowing vessels to maintain position even in challenging conditions – driving operational efficiency, reducing fuel consumption and environmental impact by minimizing course deviations.

Precision wind measurements have become indispensable in the growing Dynamic Positioning market for supporting renewable energy projects like offshore wind farms, where reliable DP systems are essential for installation and maintenance. The market is poised for significant expansion, fueled by clean energy initiatives and the continued importance of maritime transportation and resource exploration.

Why Vaisala?

Weather and environmental insights are the greatest catalysts for successful maritime operations— from sensors to systems and digital services, Vaisala provides actionable insights that empower stakeholders to confidently meet challenges and harness new opportunities.

Our globally trusted maritime weather solutions enable remarkable efficiency gains, digital transformation, the protection of people and investments while supporting sustainable and responsible operations.

We are scientists and explorers driven by passion, relentless curiosity, and the desire to create a better world. Backed by nearly 90 years of unmatched scientific leadership, our solutions increase maritime weather awareness and drive innovation.

