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Case Study

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Weather insights propel stronger offshore wind farm operations

How France is bolstering safety and efficiency while avoiding costly delays in offshore wind farms with reliable, real-time weather insights

Photo: DEME Offshore

The client:

Wärtsilä Voyage

Vaisala provided:

Vaisala Environmental Monitoring System

Wind farms—increasingly offshore—are one of the most important renewable energy sources. But offshore operations can be risky when the weather changes. Here's how Wärtsilä Voyage is helping their client stay ahead of the weather without compromising safety.

WÄRTSILÄ

Weather plays a critical role in the operations and maintenance of offshore wind farms, from crew transport, build-up and maintenance of the wind turbines to helicopter rescue operations. To guarantee safe and efficient operations while avoiding expensive delays, wind farm operators need real-time, reliable data on prevailing and near-term weather conditions.

Wärtsilä Voyage specializes in global, offshore ship and fleet operations solutions that include bridge infrastructure, digital data and electronic charts services, and applications for access to the real-time information.

The challenge: Reliable offshore weather measurements for a new substation

France is gearing up to be a major contributor to Europe's booming offshore wind energy industry. Wärtsilä's client was building their first offshore wind park substation installation for the 480 MW Saint-Nazaire — the first commercial offshore wind farm installed in French waters, developed by EDF Renouvelables and EIH S.à r.l, and scheduled to be operational in 2022.

Wärtsilä sought a complete Environmental Monitoring System to provide accurate and reliable environmental and weather parameters, enabling their client to stay ahead of changing weather conditions.

The solution: Real-time insights without compromise

Wärtsilä selected the Vaisala Environmental Monitoring System (EMS), consisting of the rack-mounted Vaisala Maritime Observation System AWS430 with associated sensors and Vaisala Helideck Monitoring Software for data reporting, alarms and display of weather and environmental data.

The high-quality AWS430 is purpose-built to provide accurate, dependable maritime weather measurements down to the last detail. The integrated solution combines several Vaisala sensors and measurement technologies. Two WINDCAP® WMT702 Ultrasonic Wind Sensors gather data on wind speed and direction. The Digital Barometer PTB330 measures barometric pressure for tracking the movement of local and regional weather fronts, while the Vaisala CL31 Ceilometer leverages pulsed diode lidar

technology and single lens optics to measure the ceiling and base height of cloud layers. In addition, wave height, wave period, tide and even wave direction are measured by a compact and maintenance-free wave measurement system.

The HUMICAP® Humidity and Temperature Probe HMP155 provides humidity and temperature measurement, and the Present Weather Detector PWD22 enables characterization of reduced visibility, precipitation type identification, precipitation accumulation and intensity measurement, and report formats.

The benefits: Safety and efficiency through any weather

The Vaisala EMS is providing the full spectrum of weather intelligence that helps Wärtsilä's client stay on schedule — safely.

Real-time weather insights are benefitting several users: Wind farm operators can make even more accurate wind measurement calculations on their energy production potential and compare figures with the real production; vessel operators can monitor sea conditions for ensuring safe crew transportation; helicopter pilots gain accurate weather insights in case of rescue activities or maintenance operations. The end result is safer, smoother offshore operations.

The offshore operations team also appreciates the solution's ruggedized design. The Vaisala EMS stands up to even the harshest weather conditions and won't give in to freezing, corrosion, vibration or shock. In addition, easy expandability makes room for future innovations, which provides even greater value through lower cost of ownership and long service life.

"Our goal is guaranteeing the safety of people and ensuring the most efficient offshore operations for our clients. Ruggedized, dependable and stable technology were the key elements that we were looking for. Vaisala's EMS delivers on all fronts and gives us even more confidence knowing we are delivering the best in the industry."

Artem Iadrikhinskii
Commercial Project Manager, Wärtsilä Voyage

About the offshore wind farm

The Parc Eolien en mer de Saint-Nazaire is the first offshore wind farm in France and also a key milestone in France's energy roadmap, targeting 32% renewables within its total energy consumption. The project's first offshore substation, including the Vaisala EMS, was installed in autumn of 2021 by a consortium including Atlantique Offshore Energy, the business unit of Chantiers de l'Atlantique dedicated to Renewable Marine Energies, GE Grid Solutions and DEME Group's French subsidiary SDI.

Photo courtesy Wärtsilä Voyage

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