Certifications: ISO 9001, 14001, 45001, 45003

CASE STUDY

Weather-resilient construction of the Moray East Offshore Wind Farm

CLIENT:

Ocean Winds
A joint venture by ENGIE and EDPR, and their Moray East Offshore Wind Farm construction.

DELIVERABLE:

Implement a co-designed operational weather service and consultancy to ensure safe and efficient operations throughout the construction process.

OUTCOMES:

The service helped maintain the timeline of construction, reduced excess costs, and kept the construction teams safe.

> *"Throughout offshore construction WeatherQuest provided forecasts that would help determine whether conditions were within limits for work to proceed, making them fundamental to maintaining the safety of all personnel, and efficient operations. The accuracy of their forecasts was key as installation vessel day rate costs were into the hundreds of thousands of pounds per day, regardless of whether the decision was made to proceed with works or to hold back due to forecasted conditions being unsafe."*
>
> **Alice Malvaldi, Ocean Winds**

The challenge

The UK government target of achieving net zero emissions by the year 2050 has further emphasized the need for rapid expansion of renewable energy to deliver the energy transition. This is especially the case for offshore wind with its target contribution of at least 1/3 of the 30GW of energy required by 2030 to maintain progress towards the ambitious net zero goal. The construction of Offshore Wind Farms around the UK has ramped up to meet this demand. One of the main targets, as with any such energy infrastructure, is maintaining its development timeline to begin producing energy as quickly as possible – benefitting both the UK government in its net zero goal and the developer shareholders. Poor weather is one of many obstacles that can delay construction. In adverse weather, the construction team cannot operate safely, and if these conditions persist then project budgets and timelines can be severely affected. All opportunities to progress the work – weather windows – must be advised and capitalised on through agile project management. Having a reliable weather service, keeping marine coordinators aware of all weather-related risks and opportunities at all times, ensures that safety and productivity are carefully managed throughout the project timeline, faced with ever changing wind, wave and lightning hazards.

WindQuest

Our main service for the wind energy industry is ***WindQuest***, which comprises PDF Forecast Reports, Daily Briefings, Pro-Active Warnings, especially for lightning, and an Online Forecast Web Portal. Each of these service elements has been co-designed with our clients to ensure the usefulness and usability of the service. Our highly-skilled forecasters constantly monitor each of our client's wind farms and issue warnings should any client-based thresholds be exceeded, maintaining safety at all times.

WeatherQuest
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The outcomes

"We appreciate the morning briefing over the phone to go through the weather for the next two days. This is not something we had with other forecast providers."
Marine Coordination Team, Ocean Winds

Other service features the Moray East Team liked:

- All users who had direct contact with the WeatherQuest team found them to be personable, helpful, open to ideas, willing to adapt to needs and keen to enhance the user experience.
- They also praised the speed of our response, providing clear and concise answers to any questions raised, and rapid actioning of all requests.

Installing 100 turbines, 3 offshore substations and 105 cables, the construction extended over 29 months, inevitably leading to a range of weather challenges being faced during this period. Through winter windstorms and summer thunderstorms, our service helped ensure the decisions to sail were made with high confidence. To help achieve this, live metocean data from the Moray East wind farm location was used to verify the accuracy of our forecasts and calibrate our forecast models where needed. This led to an ever-improving accuracy and precision in our forecasts, ultimately reducing the amount of construction downtime, especially during periods of weather just below the safe operation thresholds set by Ocean Winds. In addition, our forecasters proactively contacted marine coordinators whenever there was an impactful change in the forecast or when lightning had been detected nearby. The service was highly appreciated by the Ocean Winds team and helped keep the construction timeline on track. The Moray East construction was completed in September 2021 and the electricity generated is capable of powering the equivalent of more than 1 million homes.

Following completion of the Moray East construction phase, Ocean Winds maintained contact with WeatherQuest, subsequently inviting a weather forecast service tender for their next construction project, Moray West Wind Farm. A contract was duly awarded, in recognition of our highly valued service and support. Our ***WindQuest*** service is now supporting the Moray West construction phase, which began in February 2023, with a target of being fully operational in early 2025.

For more information, please see the WindQuest section of our website:
https://weatherquest.co.uk/industry/energy/