Dolfines

EXPERT REPORT

INDUSTRIALIZATION OF OFFSHORE WIND POWER

Feedback on 29 months of quality inspection at an offshore wind turbine nacelle manufacturing plant

Public limited company with capital of €3,364,778.20
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EXECUTIVE SUMMARY

As part of the global acceleration of the energy transition, the industrialization of offshore wind power is emerging as a strategic lever. Our client, a major player in the sector, has entered into a partnership with Dolfines to support the deployment of its offshore turbines in flagship projects such as Dogger Bank in the United Kingdom and Vineyard Wind in the United States.

This project, carried out from March 2023 to July 2025 at our client's factory, drew on Dolfines' technical and operational expertise to ensure quality control of 168 nacelles and nearly 340,000 inspection points.

Beyond operational performance, this mission is part of a strategy of continuous improvement, knowledge transfer, and direct contribution to the industrial growth of the offshore wind energy sector.

Note: *Due to the confidential nature of the project, no photos or documents relating to the factory will be included in this expert report.*

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Project context and challenges

Faced with the climate emergency and carbon neutrality targets, global demand for renewable energy is experiencing unprecedented growth. Offshore wind power, with its capacity to generate large amounts of carbon-free electricity, **is becoming a pillar of national energy strategies.**

In this context, our client has industrialized one of the most powerful turbines in the world (up to 15 MW), designed to equip the largest offshore wind farms.

In order to guarantee the reliability, compliance, and performance of this critical equipment, **our client entrusted Dolfines with a strategic quality inspection mission at its French production site.**

The objective was twofold :

- **Strengthen quality assurance throughout the entire manufacturing process,** from the end of the production line to the storage phase.
- **Accelerate the maturation of internal quality processes,** drawing on a network of experienced inspectors and a rigorous audit method.

An extraordinary turbine

Designed to meet the demands of complex marine environments, this turbine embodies the technological leap forward **in next-generation offshore wind power:**

- Total height : 260 meters
- Blade length : 107 meters
- Power : between 13 and 15 MW
- 730-ton nacelle
- Monopile foundation

It is the technological foundation for the **Dogger Bank** (3.6 GW in the United Kingdom) and **Vineyard Wind** (800 MW in the United States) projects, two pioneering programs for Europe and North America.

KEY FIGURES FOR THE PROJECT

29
Months of on-site presence (March 2023 - July 2025)

2
Inspection levels per machine: complete factory inspection (1,024 points) and counter-inspection in storage area (796 points)

168
Nacelles inspected, representing 100% of production for the Dogger Bank A and Vineyard projects, and approximately 10% for Dogger Bank B, totaling 67% of the nacelles for the three projects.

5
Quality inspectors mobilized.

41 189
Defects identified and classified according to a multi-criteria typology

340 000
Control points carried out

22 000
Hours worked completed

An industrialized and strcutured intervention model

Inspection methodology

The inspections were conducted according to a structured and tooled quality protocol based on the combined use of specialized software (TrueContext, SmartSheet, Quality Suite) and proprietary databases (Défauthèque, NC). Each turbine underwent two audits:

1. **Complete inspection at the station:** validation of the nacelle's compliance according to a grid of 1,024 criteria.
2. **External counter-inspection:** secondary check before logistics transfer (796 points checked).

Identified defect families

The defects were classified into nine broad categories :

- Mechanical
- Electrical
- Hydraulic
- Fibers/walls
- Clamping
- Sealing
- Wiring
- Painting/corrosion
- Ergonomics/accessibility

Each anomaly identified was recorded in a digital punch list, enabling dynamic tracking of non-compliance until resolution.

Quality management based on performance and continuous improvement

A team of four inspectors and one team leader was mobilized for this assignment.

Role of the Team Leader

Quality leadership was provided by a Dolfines representative, who ensured consistency in practices and alignment with the client's objectives. His tasks included:

- The creation of a unified quality checklist for PMO teams.
- Monitoring compliance KPIs by pallet before each shipment.
- Facilitating the closure process for critical non-conformities (CAT 1).
- Coordination with the customer's engineering, production, and HSE teams.
- Issuing daily, weekly, and post-delivery reports to stakeholders.

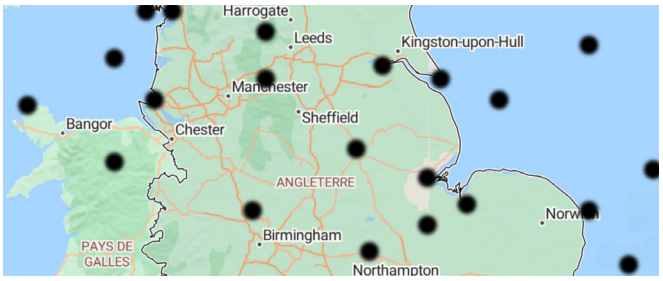
Role of the Quality Inspectors

Each of the Dolfines inspectors acted as an independent technical expert, with specific tasks:

- Visual and metrological inspection of components.
- Recording and tracking anomalies.
- Requests for technical improvements.
- Participation in meetings between our Client, end customers, and suppliers.
- Continuous updating of the database of observed defects.

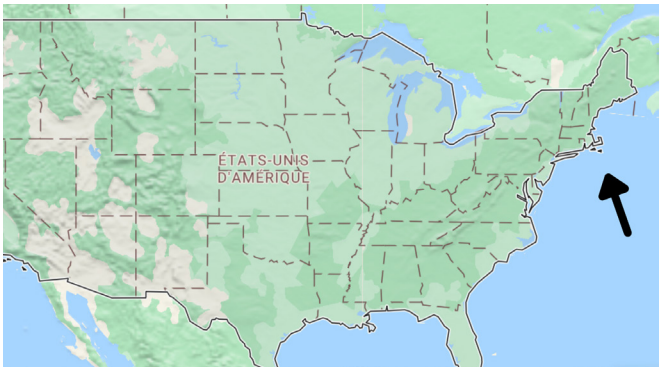
A tangible impact on our client's strategic projects

Dogger Bank (UK)



- **106 turbines inspected** (Sections A & B).
- Direct contribution to the compliance of a 3.6 GW wind farm, soon to be the largest offshore wind farm in the world.

Vineyard Wind (USA)



- **62 turbines inspected** for the first major commercial offshore project in the United States.
- Support for quality processes in a context of high regulatory and environmental expectations.

A level for industrial competitiveness in the sector

Beyond the operational results, this mission illustrates Dolfines' ability to structure an industrial approach to quality inspection on complex programs with high energy stakes.

It also demonstrates the importance of data-driven management, a rigorous culture of feedback, and close coordination between technical stakeholders.

In a rapidly growing sector, this experience serves as a benchmark for replicating this model at other production or assembly sites internationally.

Conclusion

The expertise provided by Dolfines to our client is fully in line with the industrial transformation of the energy sector. It validates the hypothesis that achieving operational excellence in offshore wind power depends as much on technological innovation as on rigorous quality processes.

With more than **340,000 checkpoints completed**, this mission illustrates the added value of a consulting/field approach in securing the energy transition on an industrial scale.

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