

Deploying uncrewed surface vessels for subsea inspection and survey in offshore wind farm O&M

Leading the charge

Fugro is a pioneer in the field of remote inspection and survey through the development and deployment of our uncrewed surface vessels (USVs) and electric remotely operated vehicles (eROVs).

We apply these solutions on offshore wind farms around the world, controlled 24/7 from our global network of remote operations centres (ROCs) onshore.



Blue Essence® USV inspecting offshore wind farm in North Sea

Blue Essence® (equipped with Blue Volta® eROV)

12 metre USV

Transit speed: max 7 knots

Survey speed: max 2-4 knots

Endurance: 7-10 days

5 Blue Essence® USVs operational globally

Category 0 certified by UK Maritime Coastguard Agency

Blue Volta®

Depth rate: 300 MWS

Speed: 1-2 knots

Varied asset inspection techniques and sensors

Blue Eclipse® (equipped with Blue Amp® eROV)

18 metre USV to be released in early 2025

Better weather capability

Higher transit speed

Greater endurance



Our remote operations team deliver real-time data to allow for quick decision making

Benefits

- Reduced HSSE exposure and risk
- Increased sustainability by reducing fuel consumption by up to 95% compared to conventional vessels
- Real-time insights, faster data-processing and data delivery, leading to more efficient decision-making

Challenges

- Technical challenges – weather/transit issues, managing repairs and having redundancies in place
- Meeting regulatory requirements or changing policies
- Advocating for new technology against conventional methods

Case study

Blue Essence® USV, equipped with Blue Volta® eROV, successfully completed a remote inspection at the world's first subsidy-free offshore wind farm. The client required an integrated, sustainable, and cost-efficient solution to assess 140 wind turbine generators, 2 offshore substations, and 260 cable protection systems, ensuring long-term success and environmental integrity.

The inspection involved multibeam echosounder surveys and ROV-based visual inspections, covering 142 km² and operating over 179 hours to assess asset integrity. The USV achieved a 95% reduction in CO₂ emissions compared to traditional survey vessels and consumed only 5% of the fuel. By eliminating the need for offshore personnel, the project saved 35,000 offshore work hours, reducing risks to people and the environment.

Real-time data analysis from the ROC enabled quick decision-making throughout the project. This innovative approach highlights the significant environmental and operational benefits of using USVs and eROVs for offshore wind farm maintenance.

Following the completion of the project, we have continued our work on other offshore wind farms with multiple wind farm operators in the region.

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