

OFFSHORE WIND

Harvest the power of wind from anywhere on earth



By applying sophisticated tools and proprietary data sets to qualify and quantify wind potential, our wind engineers and climate specialists guide wind farm operators and wind turbine designers on how to maximize wind energy at offshore sites.

team of meteorologists, wind engineers and climate specialists, as well as our recognized industry partners, RWDI offers:

- Weather forecasts and modeling for wind, gusts, power, waves, and wake effect
- Technical met-ocean support for feasibility studies, construction, maintenance and dismantling of windpower infrastructure, identifying optimal windows for shipping equipment to turbine sites and safe operations
- Climate change studies for optimal siting, storm frequency trends, and implications on design criteria
- Wind-loading analysis and damping solutions for standing and floating turbines
- Noise and vibration assessments, monitoring and solutions to mitigate impacts

To effectively plan, develop and manage a successful offshore wind operation requires specialized consulting services to optimize performance and long-term sustainability. With our experienced



FULL LIFE-CYCLE PROJECT SUPPORT

From the early stages of conception and feasibility exploration through to the operation, maintenance and decommissioning of offshore wind sites, we offer informed expertise, including:

- masterplanning
- feasibility studies
- regulatory guidance
- resource assessment
- resilience assessment
- environmental impact
- operational metocean support
- expert testimony
- decommissioning

RWDI services for offshore and coastal wind farms

Wind power and weather forecasting

All weather data are not created equal. Receiving high-quality, targeted data at the right time, supports informed decision making at all stages of the project life cycle. With customized, site-specific power and wind forecasts, produced by our dedicated professional meteorologists, we apply high performance computing and proprietary analysis techniques specific to your offshore operation. Wind power mapping and frequency analyses help optimize locations of turbines from an energy, wind load and maintenance perspective. Accurate and reliable weather forecasting enables effective grid-load management, identifies weather risks early, and supports proactive mitigation strategies to minimize operational risks.

Wind-loading analysis

Understanding exactly how wind affects structures has been a primary focus of our work at RWDI for almost five decades. From wind-tunnel testing of physical models, analysis of computational models and desktop-based assessments, we collect hundreds of force, pressure and/or velocity measurements to inform our assessments. Combined with local wind climate data, we can predict wind-induced responses and develop solutions to optimally engineer turbines and harvest wind power.

Wind and wave forecasting

Combining years of unique expertise, RWDI and BAIRD have developed a one-of-a-kind, high-resolution weather and wave forecasting system to deliver critical site-specific information. In the planning, developing and monitoring of offshore wind farms, this system provides highly reliable wave and weather forecast information at multiple scales. Based on some of the most advanced numerical models available, the system can assess phenomena such as wave focusing, high winds, thunderstorm potential, and impact on nearby shipping channels.

Supplemental damping systems

Adverse weather, wind and seismic activity are of significant concern for offshore sites. Supplemental damping systems are an effective means to offset any structural motion caused by these conditions. The Motioneering team at RWDI has specifically engineered a tuned mass damper (TMD) system that offers a compact design, especially suited to structures where space is limited. This cost-effective damping solution is less restrictive than others, enhancing the safety of innovative structures, and very tall wind turbines.

Software development

RWDI's Envision platform generates invaluable forecasting insights, with clear, concise reports customized for your operations in your specific region. Our customised platform offers the perfect combination of power and usability, with accurate, site-specific data to support informed decisions and actions. From meteorology, to power time series and animations, to advanced wind warning alerts, live video feeds and more. This cloud and web-based technology ensures that decision makers have what they need in the format they prefer.

