Making Advances in Offshore Wind

Reduce Risk, Boost Productivity, and Improve Asset Efficiency

Challenges in **Offshore Wind Projects**

The offshore wind energy industry is constantly searching for ways to reduce risk, increase productivity, and increase asset efficiency. But on the path to reaching these goals, companies face several challenges, including:

1. Limited communication between disciplines due to working in silos.

2. Analysis and design processes are not consolidated.

3. Increasing project costs.

4. Poor project deliverables.

5. Difficulty dealing with change.

Thankfully, there is a way to overcome these challenges.

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To deal with these challenges, many offshore wind professionals from around the world have chosen Bentley's OpenWindPower offshore structural analysis and design software. With OpenWindPower, you can:

1.
Integrate Multidiscipline Collaboration

2.
Streamline Your Analysis and Design Process

3.
Reduce Project Costs

4.
Improve Project Deliverables

5.
Adapt to Change

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1. Integrate Multidiscipline Collaboration

OpenWindPower interoperates with other geotechnical and structural analysis and design applications. The software's interoperability automates data exchange workflows among disciplines to minimize design and operation risk.

OpenWindPower's smooth integration with industry-standard aeroelastic solvers, such as GH Bladed and FAST, ensures fully coupled analysis for a comprehensive fatigue and strength design.

For turbine monopile foundation design, the software integrates with PLAXIS Monopile Designer using the PISA 2 design approach, which provides up to 20% higher design capacity and a potential 30% to 40% savings in material costs.

And for suction bucket jacket foundation design, integration with PLAXIS 3D geotechnical analysis software generates nonlinear and/or linearized soil reaction curves for integrated analysis and design of the jacket and suction bucket structure.

The comprehensive interface to Bentley's ProjectWise application enables users to collaborate on projects from multiple locations.

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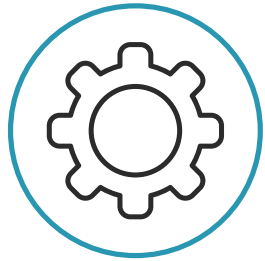
2. Streamline Your Analysis and Design Process

OpenWindPower provides intuitive modeling and analysis workflows optimized for offshore structures, offshore-specific analysis methods, comprehensive design codes, and integration with third-party, industry-standard aeroelastic solvers.

Take advantage of full lifecycle applications for wind turbine platforms from fabrication, installation, and in-place condition through to decommissioning.

Integration with iTwin Services enables organizations to create, visualize, and analyze digital twins of infrastructure projects and assets. Users can envision and collaborate on the 3D wind turbine model, check design status, perform analysis and risk mitigation, and generate insights.

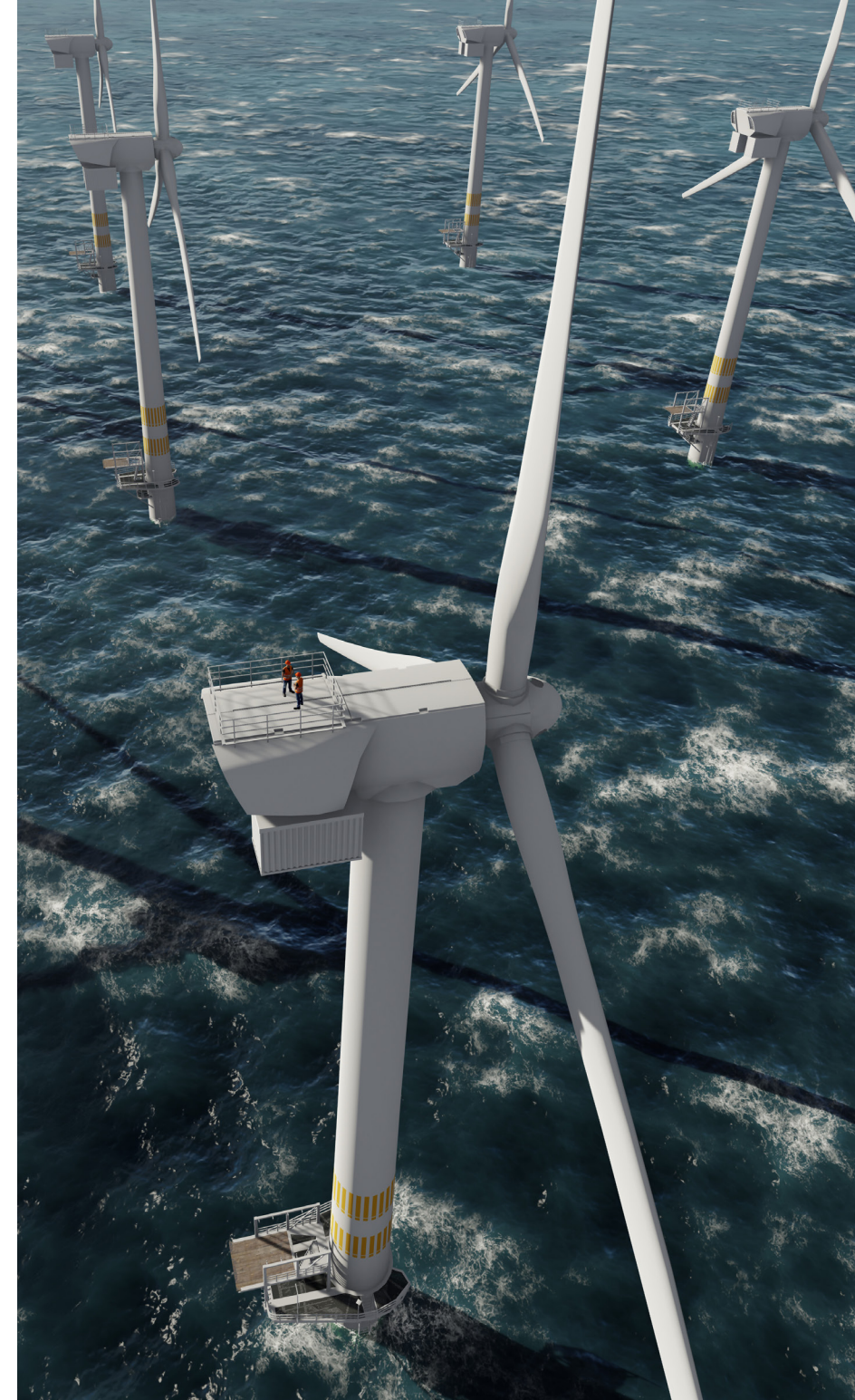# Advances in **Offshore Wind**

3. Reduce Project Costs

OpenWindPower helps you quickly optimize designs using parallel processing, streamline workflows, and evaluate multiple scenarios simultaneously for substantial time and money savings. Imagine trimming design time by 50% and reducing project costs by 40% or more.

Evaluate multiple scenarios simultaneously with OpenWindPower. It is proven to save time and money thanks to quickly optimized designs and streamlined workflows.

In some cases, by leveraging the powerful modeling and analysis features in OpenWindPower, users could complete construction periods six months ahead of schedule and reduce iterative design periods by up to 50%.

OpenWindPower has been used on the world's largest offshore wind projects. Our users say that OpenWindPower allowed them to shorten the overall design cycle. They were able to effectively solve the problem of significant design margins resulting in a reduced cost of offshore wind power development.

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4. Improve Project Deliverables

With OpenWindPower, you can produce optimized models and other data needed for today's requirements, and its automatic code compliance lets you stop worrying about design oversights.

OpenWindPower Fixed Foundation improves project deliverables by efficiently producing multiple optimized design options. Predict the behavior of a jacket or monopile structure with comprehensive analyses, including full nonlinear dynamic ship impact analysis. Use integrated modules to model pile-soil interaction and apply wind, wave, seismic, ship impact, dropped object, and blast loads.

OpenWindPower Floating Platform Model enables you to analyze and design floating wind turbine platforms. It allows you to automatically generate complex hull structures using parametric modeling tools. Perform integrated hydrodynamic analyses of the floating structure with an integrated aeroelastic solver while also accounting for mooring analysis and clashing checks. You can then use the resulting time history panel pressures derived from the diffraction analysis for structural analysis and post-processing in MOSES.

Optimize design and configuration for compliance to numerous current and past international codes, including API, AISC, EC, ISO, DNV, and Norsok, and deliver compliance documentation.

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5. Adapt to Change

OpenWindPower enables you to dynamically update edits throughout your project workflow.

Using a model-centric approach, designs are dynamically updated throughout the model, guaranteeing that the current design is up-to-date and readily available for all team members. This approach not only removes the frustrating and tedious work for the designer, but it also positively impacts your organization's return on investment.

With OpenWindPower, you will easily, effectively, and dynamically manage design changes without project delays and the risk of mistakes. As a result, you will eliminate error-prone manual changes and oversights.

Choose **OpenWindPower**

You can reduce risk, increase productivity, and improve asset efficiency by choosing Bentley for your offshore structural analysis and design.

OpenWindPower has been used on the world's largest offshore wind projects. Check out this e-book to read the case studies for a variety of renewable energy sources: [The Future of Green Energy Is Now](#).

See for yourself how you can deliver compliant, reliable designs on time while overcoming the unique challenges of offshore wind turbine analysis.

To learn more or to chat with an offshore expert,

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