



Flexcom Wind

Taking a new approach to structural analysis for renewables

Flexcom Wind is Wood Group's modelling software in development for offshore wind turbines. At the heart of the development is Flexcom, trusted for over 30 years to deliver advanced modelling capabilities to simulate the most complex structures in the harshest offshore environments. Its versatile application and proven track record has much to offer the offshore renewable energy sector.

Developing a new solution

In response to the increasing number of offshore wind projects and the demand for suitable analysis tools, Wood Group established a technical advisory group with industry partners to guide the development of Flexcom Wind. Version 1.0, due for release in April 2017, will feature a fully coupled interface with NREL-FAST. It will be possible to manage all analysis from a single user interface that has been designed from the ground up to facilitate rapid model building, analysis and post-processing.

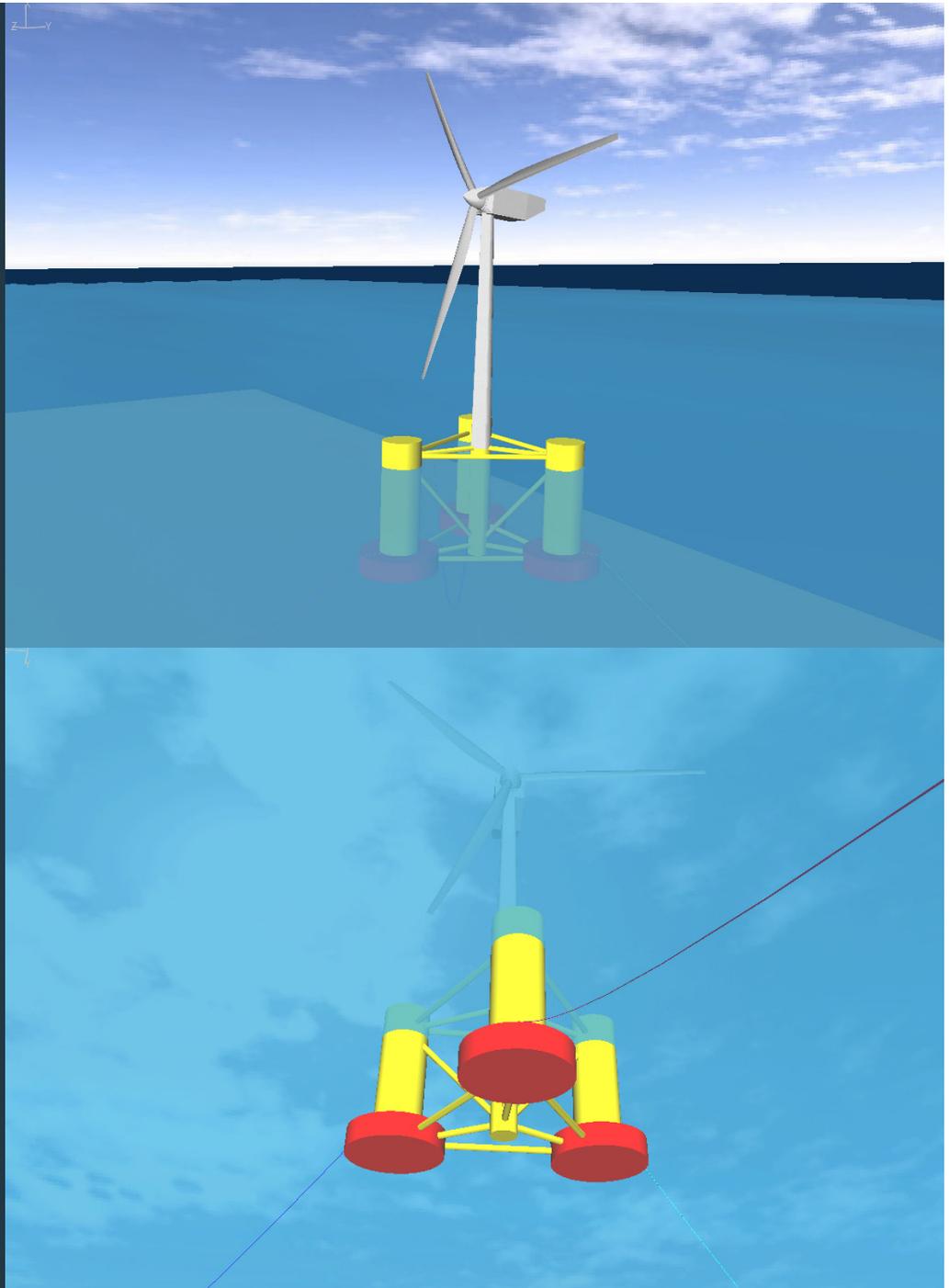
Key features

Flexcom Wind will provide a unique combination; an advanced technical solution with a user-friendly experience and flexible licensing options. Our vision includes:

- State-of-the-art aerodynamic modelling, delivered via a fully integrated coupling with industry-recognised NREL-FAST software
- Renowned finite element formulation, facilitating highly detailed structural analysis of subsea components such as mooring lines and dynamic cables
- Enhanced user experience delivered through Flexcom's modern interface
- Inputs defined in engineering terms and logically grouped into familiar components, such as blade, tower, floater, etc.
- Comprehensive hydrodynamic modelling of the floating structure, including high and low frequency wave forces, frequency dependent added mass and radiation damping
- Fully validated technical solution, including test cases sourced from the international benchmark project OC4
- Automated post-processing presents key results such as power generation, platform motions, and stresses in dynamic cables and mooring lines
- Affordable cost structure and flexible licensing options, ensuring the software is readily accessible to all device designers, including fledgling start-ups and early concept developers

Benefits of using Flexcom Wind:

- Highly intuitive, easy-to-use interface
- Detailed models may be created quickly and easily, allowing the user to concentrate on the engineering design
- Suitable for all stages of device design, from conceptual prototypes right through to full scale versions
- Bolstered by a premium technical support service, with over 90% of queries on our existing Flexcom software fully resolved within one working day
- World leading consultancy services available through our wider Wood Group capability



Structural and aerodynamic solver coupling

Simulation accuracy is assured through this fully coupled solution between the structural and aerodynamic models. At each time step, Flexcom Wind passes all information pertaining to the blades and tower to AeroDyn, FAST's aerodynamic simulation module. AeroDyn then computes the instantaneous aerodynamic loads using blade element momentum theory, and passes this data back to Flexcom, where it is incorporated into the global finite element model of the floating system.

Updated structural positions and wind loads are exchanged in an iterative manner between the two solvers until numerical convergence is achieved. Fluid forces on the floating body are based on potential flow theory, including incident, diffraction and radiation potentials. The effects of viscous damping are also considered. This unique combination of established simulation techniques provides high levels of confidence in the engineering design.

Find out more

User feedback is an essential part of our software development process. We would welcome the opportunity to meet with you, introduce you to Flexcom Wind and offer you a free trial version of the software to facilitate your own personal evaluation. Insight gained from experienced engineers will help to ensure that our software is fully tailored to offshore wind industry requirements.

For more information contact the **Flexcom** team at:

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