BLADED 4.6

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New Advanced Hydrodynamics module

It is extremely important to establish an account of diffraction and radiation effects on large offshore support structures. Our new advanced Hydrodynamics module allows these effects to be calculated using Boundary Element Method hydrodynamics:

- First order hydrodynamic loading is calculated from hydrodynamic body properties using a boundary element method flow solver code.
- Diffraction and radiation effects calculated.
- Hydrostatic force calculated according to the structure geometry supplied as a mesh.
- Single hydrodynamic body or multiple bodies connected using a flexible modal frame.
- Viscous drag calculated using Morison.
- Tool for importing flow solver properties from WAMIT, AQUA and WADAM.

Offshore Support Structure module

- A new moorings pre-processor allows quasi-static force-displacement surfaces to be calculated for mooring lines of any configuration, including multiple segments, floats, weights etc. The pre-processor makes use of a full dynamic mooring line model and the resulting force tables are then applied to the turbine model at simulation time.
- A new option allows foundation definitions to be entered in a local coordinate system and then rotated into the global coordinate system.
- Improvement to the modelling of foundation mass: it no longer attracts gravity loads.
- Offshore code checking: added support for modelling non-axisymmetric members when using the link to SACS.

Base module

- Chaining of external controllers to allow more than one external controller DLL to be called in sequence.
- A comprehensive list of measured signals is now available to the controller, including 1st or 2nd order transducer properties, sampling period, discretisation and noise. A variety of faults such as miscalibration, increased noise, harmonic interference, specified failure values and incorrect installation are also measured.
- Additional columns on the batch tool to help identify executables used for runs.
- Improvement to structural dynamics "geometric stiffness" calculation for flexible components: linear acceleration terms are now included in the calculation of geometric stiffness.
- Modification to the aerodynamic tip-loss model to improve the calculation of tangential induction in inboard stations as well as improving the prediction of energy capture at low wind speeds.