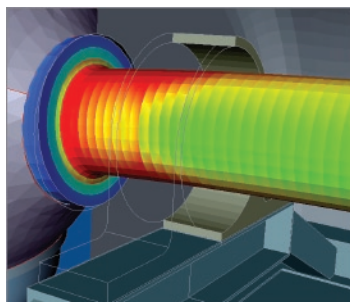


FEDEM Windpower - Simulation Software for Wind Turbines

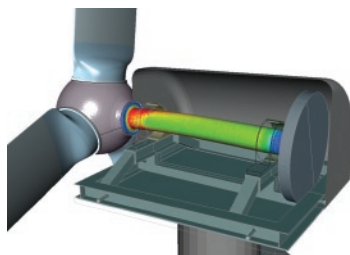
FEDEM Windpower is a powerful software for simulation of complete Wind Turbine systems. Wind loads, Control Systems, Structural FE-models, Fatigue solver and Hydrodynamic features all integrated in one software.



Integrated Wind Loads

FEDEM wind loads are generated by integration of the AeroDyn module from NREL (US) for calculation of resulting forces along the turbine blades.

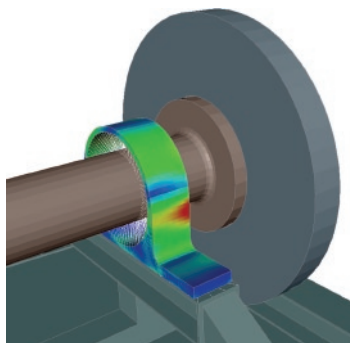
AeroDyn forces are applied at several nodal points along the blades. This method also accounts for the load changes due to large (non-linear) deformation of the blades.



Floating Wind Turbines

Regular or irregular waves with resulting hydrodynamic loads from drag, buoyancy and currents are standard features.

It is possible to do complete virtual testing of floating wind turbines in one single model with various wave and wind conditions.

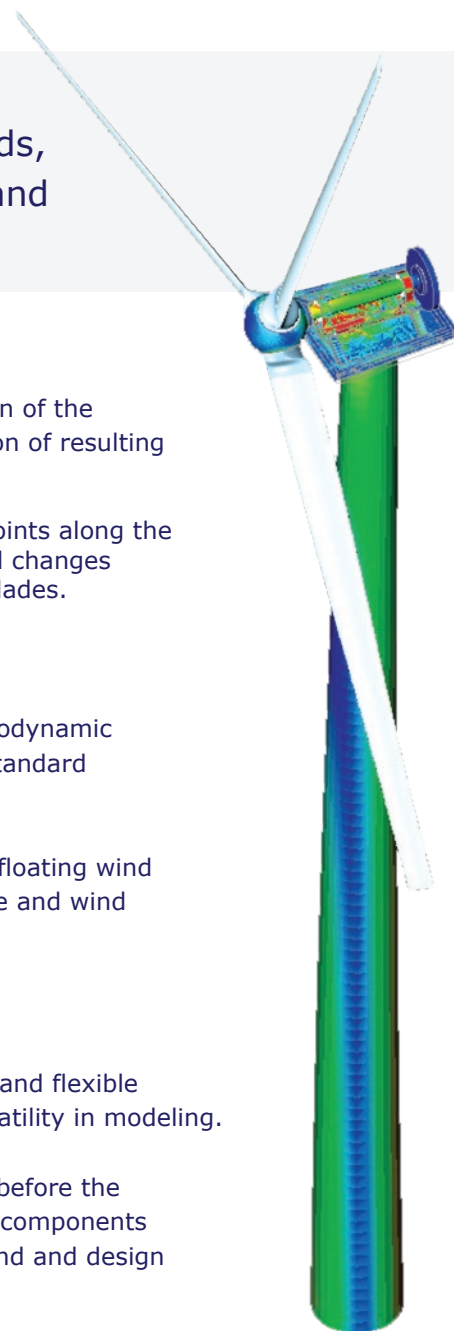


Early to late-stage design testing

Wind turbines can be modeled with both rigid and flexible (Finite Element) components which gives versatility in modeling.

Early in the design process of a wind turbine, before the components are developed, mainly rigid body components are used. At this stage the main loads are found and design parameters are optimized.

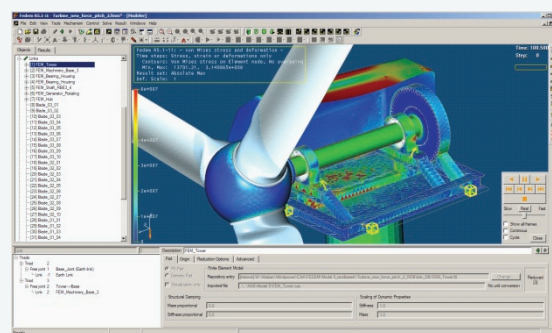
At later stages in the design process, components are improved by simply replacing the rigid parts with detailed FE-models. All conventional solid, shell and beam elements are supported.



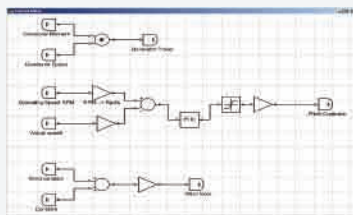
FEDEM - Proven technology

For more than 20 years FEDEM has been used in mechanical, marine and offshore industry for solving complex multibody simulations. With the new windpower module FEDEM Windpower becomes the strongest tool available for complete modelling and simulation of wind turbines in one package.

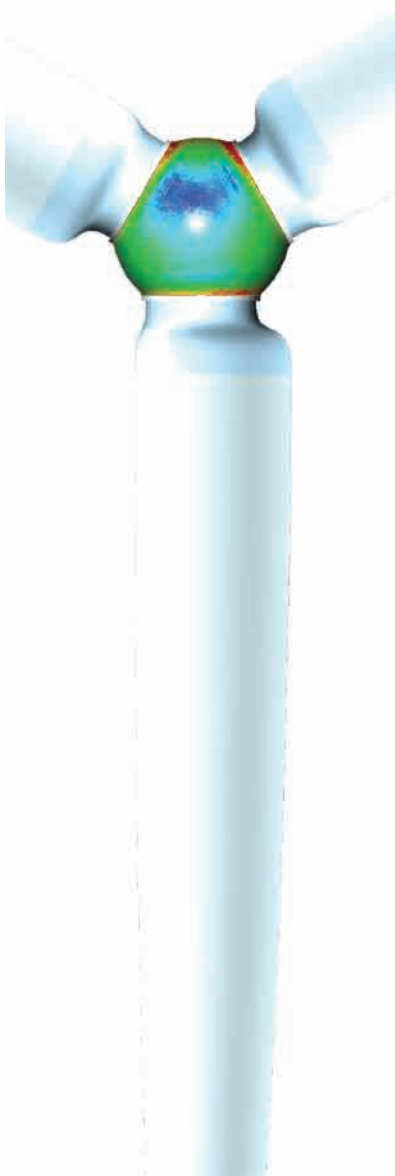
Fedem can thus handle simulations of long time series of large FE-assemblies at the speed of normal multi-body systems. This, together with our virtual strain gauges, makes FEDEM ideal for Fatigue assessments.



FEDEM Windpower - Simulation Software for Wind Turbines



Embedded graphical Control Systems editor and solver. Pitch and yaw control, events and subsystems can easily be modelled and edited.



Superelements

The excellent superelement reduction technology that is a core feature of FEDEM, allows for complete and detailed FE-models to be used in the model, with no increase of solution time – hence FEDEM do not need simplified structure modelling.

Multi-event fatigue

Multi-event set-up for efficient fatigue calculation taking into account various events and wind fields with weighted probabilities.

After set-up of a large number of events, solving and results collection is done in batch processing.

Applications of FEDEM Windpower

- ▶ Load reports
- ▶ Structural strenght
- ▶ Fatigue life
- ▶ Pre-active maintenance
- ▶ Understanding unexpected behavior/events
- ▶ Vibration analysis
- ▶ Concept evaluation
- ▶ Design optimization of turbine or components

What can we offer?

Fedem Technology is software and engineering company that has more than 15 years of experience in supplying software and engineering services for norwegian and international industry. We can provide consultancy services, software and software training – or combination of this.