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Wind energy - Shaking and rattling wind turbines

Test Centre for Support Structures tests masts and foundations

Manufacturers are offering ever larger and more powerful wind turbines for utilising wind power. Especially when these are installed offshore in the sea, extreme forces tug on the rotor blades, towers and foundations. The BINE-Projektinfo brochure "Testing towers and foundations" (05/2015) presents the Test Centre for Support Structures in Hanover. Here large-scale models and components are subjected to an advance time-lapse endurance test. The results will make it easier in future to design the supporting structures of wind turbines in accordance with needs.

The new centre has two large test rigs: the foundation test pit and the clamping field. In the 10-metre-deep pit filled with sand, large models of the support and foundation structures for offshore foundations can be mechanically loaded and investigated. Components and models are clamped in the clamping field. Tensile, shear and torsional forces act on the object from different directions. The data obtained provides information on the extent and course of the material fatigue. In addition there is also a climate chamber and several specialist laboratories for conducting detailed analyses of concrete or the breakpoints of components that have failed during experiments.

Leibniz Universität Hannover operates the Hanover Test Centre for Support Structures together with the Fraunhofer Institute for Wind Energy and Energy System Technology, IWES, as its cooperation partner. In addition to this centre, the German Federal Ministry for Economic Affairs and Energy has spent a total of almost 50 million euros on further facilities for testing wind turbine nacelles and rotor blades as part of its energy research programme.

The BINE Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and two additional images can be downloaded from this web portal in the press section.

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