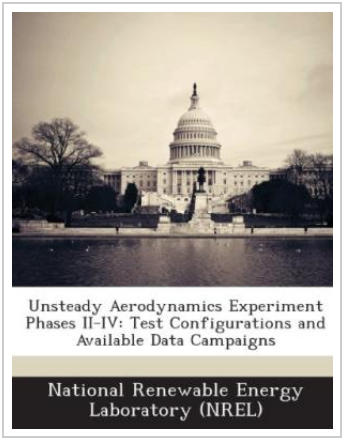

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Unsteady Aerodynamics Experiment Phases II-IV: Test Configurations and Available Data Campaigns

By National Renewable Energy Laboratory (NREL)

Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.The main objective of the Unsteady Aerodynamics Experiment is to provide information needed to quantify the full-scale three-dimensional behavior of horizontal axis wind turbines. To accomplish this, an experimental wind turbine configured to meet specific research objectives was assembled and operated at the National Renewable Energy Laboratory (NREL). The turbine was instrumented to characterize rotating blade aerodynamic performance, machine structural responses, and atmospheric inflow conditions. Comprehensive tests were conducted with the turbine operating in an outdoor field environment under diverse conditions. Resulting data are used to validate aerodynamic and structural dynamics models which are an important part of wind turbine design and engineering codes. Improvements in these models are needed to better characterize aerodynamic response in both the steady-state post-stall and dynamic stall regimes. Much of the effort in the earlier phase of the Unsteady Aerodynamics Experiment focused on developing required data acquisition systems. Complex instrumentation and equipment was needed to meet stringent data requirements while operating under the harsh environmental conditions of a wind turbine rotor. Once the data systems were developed, subsequent phases of experiments were...

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