Solar Energy South Africa

Wind power generation wind measurement test

Overview

Are wind tunnel tests a useful tool for studying wind turbines?

Consequently, wind tunnel tests, which served as a powerful tool for studying wind turbines, call for a systematic and updated review. The remaining part of this paper is organized as follows. In Section 2, the main aspects concerning model WTs and experimental setups are discussed.

What is the hybrid testing methodology for wind turbine nacelles?

The conclusion can be found in Sect. 6. The proposed hybrid testing methodology for wind turbine nacelles is elaborated in Fig. 1 (represented inside the blue box). First, full-scale physical tests are conducted on a nacelle test bench at partial loads that are achievable within the load application capability of the test bench.

What is the large wind turbine drivetrain testing facility?

The Large Wind Turbine Drivetrain Testing facility will let the U.S., expand domestic development and testing of large-scale wind turbine drivetrains. Wind turbines have increased with each new generation, and, according to the Department, have outgrown the capacity of existing U.S. drivetrain testing facilities.

Can nacelle test benches be used to test a multi-megawatt wind turbine?

This contribution presents a new testing approach to tackle some of the aforementioned challenges faced by existing nacelle test benches. The method is demonstrated in a case study involving experimental measurements and simulations of a multi-megawatt wind turbine drivetrain recently tested at the DyNaLab of Fraunhofer IWES.

What is power performance testing?

Testing performance is essential to ensuring that turbine and plant performance meet expectations and contractual obligations. Put simply,

power performance testing is measuring wind speed, measuring a turbine’s power output, then plotting the power versus wind speed and comparing that to the warranted power curve.

Which nacelle tests are available for wind turbine nacelles?

From the list of nacelle tests mentioned in Table 1, the parasitic load tests have been chosen. The DyNaLab offers electrical and mechanical tests for a wind turbine nacelle of up to 10 MW power with the capability to apply up to 20 MNm bending moments and 2 MN forces at the hub interface.

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Key steps for wind turbine power performance testing

By plotting the power generated against the wind speed, the power curve compares actual on-site results to the warranted power curve in order to identify any deviations or anomalies, which are then analyzed to ...

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Wind turbine power performance testing

Power performance testing (PPT) is the independent measurement of wind speed at site along with the wind turbine generators (WTG) power output, to compare against the warranted power curve. Power curve measurements offer a ...

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