

SolarTech Power Solutions

Stop wind power generation system



Overview

What are advanced wind turbine controls?

Advanced wind turbine controls can reduce the loads on wind turbine components while capturing more wind energy and converting it into electricity. NREL is researching new control methodologies for both land-based wind turbines and offshore wind turbines.

What is a wind turbine control?

At the National Wind Technology Center, researchers design, implement, and test advanced wind turbine controls to maximize energy extraction and reduce structural dynamic loads. These control designs are based on linear models of the turbine that are simulated using specialized modeling software.

How are advanced control algorithms used in wind turbines?

The resulting advanced controls algorithms are field tested on the NWTC's Controls Advanced Research Turbines (CARTs). Researchers are also studying blade pitch and generator torque, and employing advanced sensors to optimize power capture and reduce wind turbine loads.

Why is wind energy important?

Wind energy plays a crucial role as a renewable source for electricity generation, especially in remote or isolated regions without access to the main power grid. The intermittent characteristics of wind energy make it essential to incorporate energy storage solutions to guarantee a consistent power supply.

How does the Integrated wind power system work?

The integrated WPS operates in both motor and generator modes, depending on the excess or shortfall of generated wind energy relative to load demand. In generator mode, the WPS supplements power when wind speeds are insufficient, while in motor mode, it stores excess energy by pumping water to

an upper reservoir.

Is wind power a viable alternative to electricity?

Wind power has become one of the most sought-after renewable resources for electricity generation, used both in isolated locations and as an additional source of energy for interconnected grids 16, 17. It is a viable alternative that is helping to reduce the world's growing demand for electricity.

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