

Optimal control of wind power generation system





Overview

Which controllers are used in small wind energy conversion systems?

The conventional controllers are the most commonly used in small wind energy conversion systems. These usually consists of a PID/PI controller for rotor speed and generated power control. These controllers are more suitable for small WT systems.

Why are control systems incorporated into wind turbines?

Control systems are incorporated into WTs to enhance the ability of the WTs to cope with the variability of wind in producing energy in a cost effective and reliable manner. Fig. 1. Installed global wind capacity.

What variables can be used to control a wind turbine?

Variables such as rotor speed, output torque, wind speed, pitch angle and terminal voltage or a combination of these can be used as the input variable to the controller. ANN is suitable for WT control in situations where the aim is optimization of power at wind speeds above the rated wind speed.

Why are wind energy systems important?

Wind energy systems are important in the transition towards a clean energy economy. Research into wind turbine systems has therefore attracted great interest, focusing on aspects such as design, control, optimization, storage and performance analysis 1, 2, 3, 4, 5.



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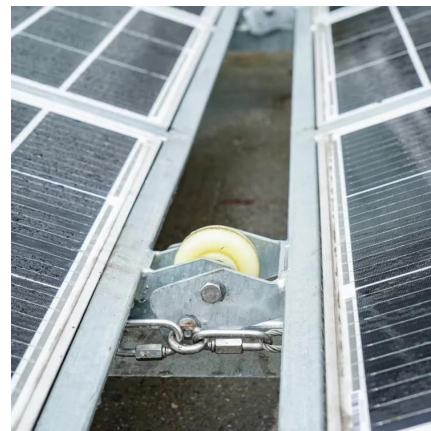
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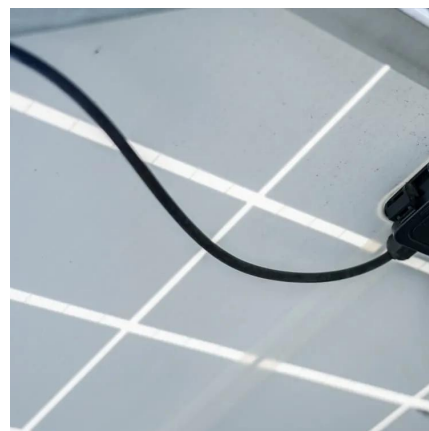


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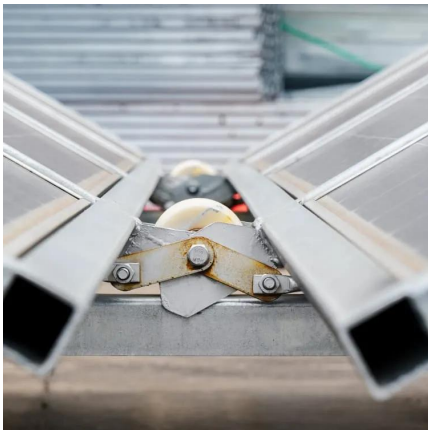
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