

# Wind power generation unit frequency conversion system





## Overview

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Should converter-interfaced wind power generators be regulated?

Expanding the role of converter-interfaced wind power generators in future power systems from passively following the power system to actively participating in its regulation offers frequency support functionality, which is beneficial for enhancing the frequency stability of power systems with high penetration of wind and low inertia.

What are wind energy conversion systems (WECS)?

Wind energy conversion systems (WECS) have been developing on a wide scale worldwide. The expansion of wind energy demand tends to produce high-quality output power in terms of grid integration. Due to the intermittent nature of wind energy, great challenges are found regarding WECS modeling, control, and grid integration.

What is a wind energy conversion system?

A wind energy conversion system (WECS) is used to produce electrical energy from wind in a reliable, controlled, and efficient way. Figure 1 b shows the layout of a WECS. The main components of a WECS can be generally categorised into electrical, mechanical and control systems.

What is the percentage of wind energy penetration?

References [26, 27, 28] present different levels of wind energy penetration: 33.3%, 42%, and 30%, respectively. Figure 1. Percentage of IBR generation vs. system size (modified from ). Nowadays, wind energy conversion systems (WECSs) feature many active and reactive power control systems to manage power system variations.



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