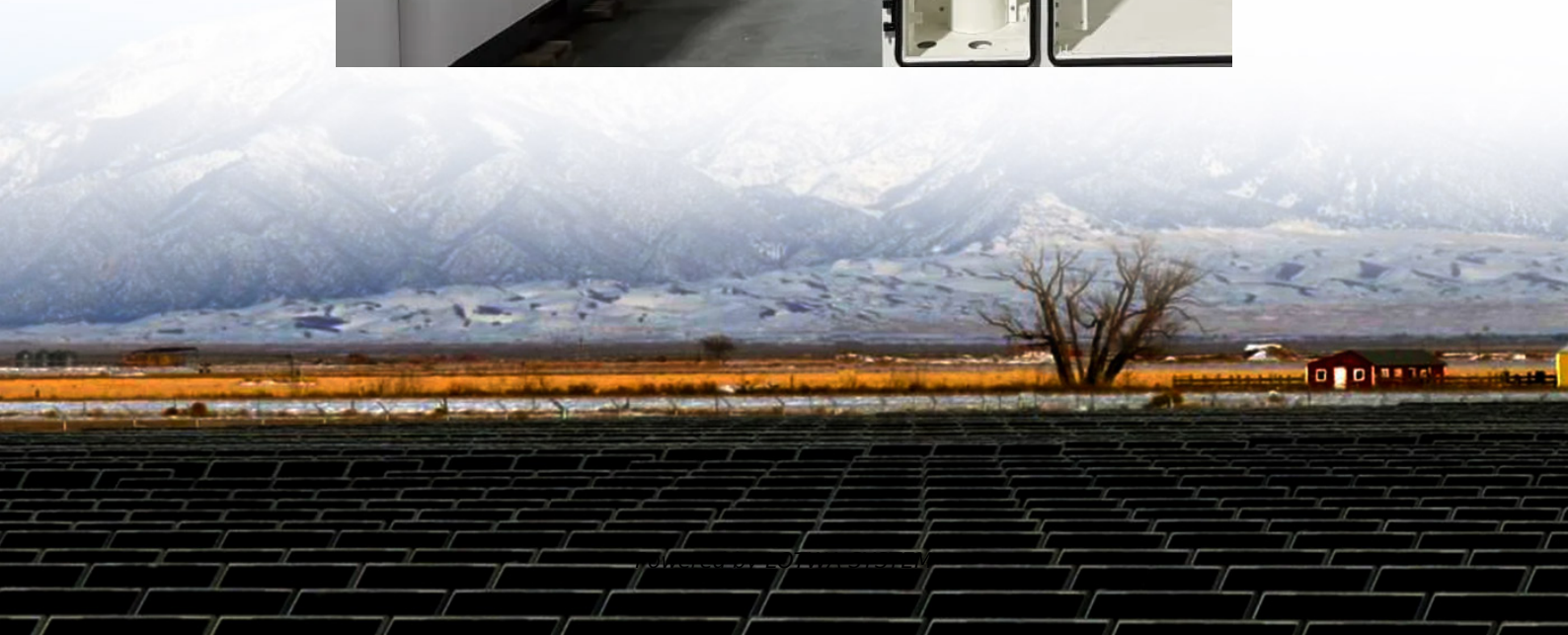


Direct drive wind power generation system





Overview

What is the topology of direct-drive wind power generation systems?

The topology of the direct-drive wind power generation systems connected to the weak power grid is illustrated in Fig. 1, including the wind turbine, Permanent Magnet Synchronous Generator (PMSG), machine-side converter (MSC), DC capacitor, grid-side converter (GSC), filter inductors, and the AC power grid.

What is a new direct-drive generator for wind turbines?

A new direct-drive generator for wind turbines has been proposed in [1]. The fundamental idea of the machine - the NewGen (see Fig. 4-2-7) is to reduce the stiffness demand by removing the load path from the stator or by putting the bearing.

What is the structure of a direct drive wind generator?

3.1.1. Conventional Structure
Traditionally the rotor of generator is connected to a shaft mounted on bearings that enable the rotation in the stator as shown in Fig. 23. The structure of Fig. 24(a) is widely used on the wind turbine market by Enercon GmbH, whose world market share was about 30%.

How does a weak grid affect direct-drive wind power generation?

The interaction between the direct-drive wind power generation system and the weak grid involves multiple time scales with overlapping interactions. The main reason for instability is that the introduction of loops 2 and 3 by the weak grid reduces the bandwidth of the current loop, causing frequency band overlap.



Direct drive wind power generation system

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a ...

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