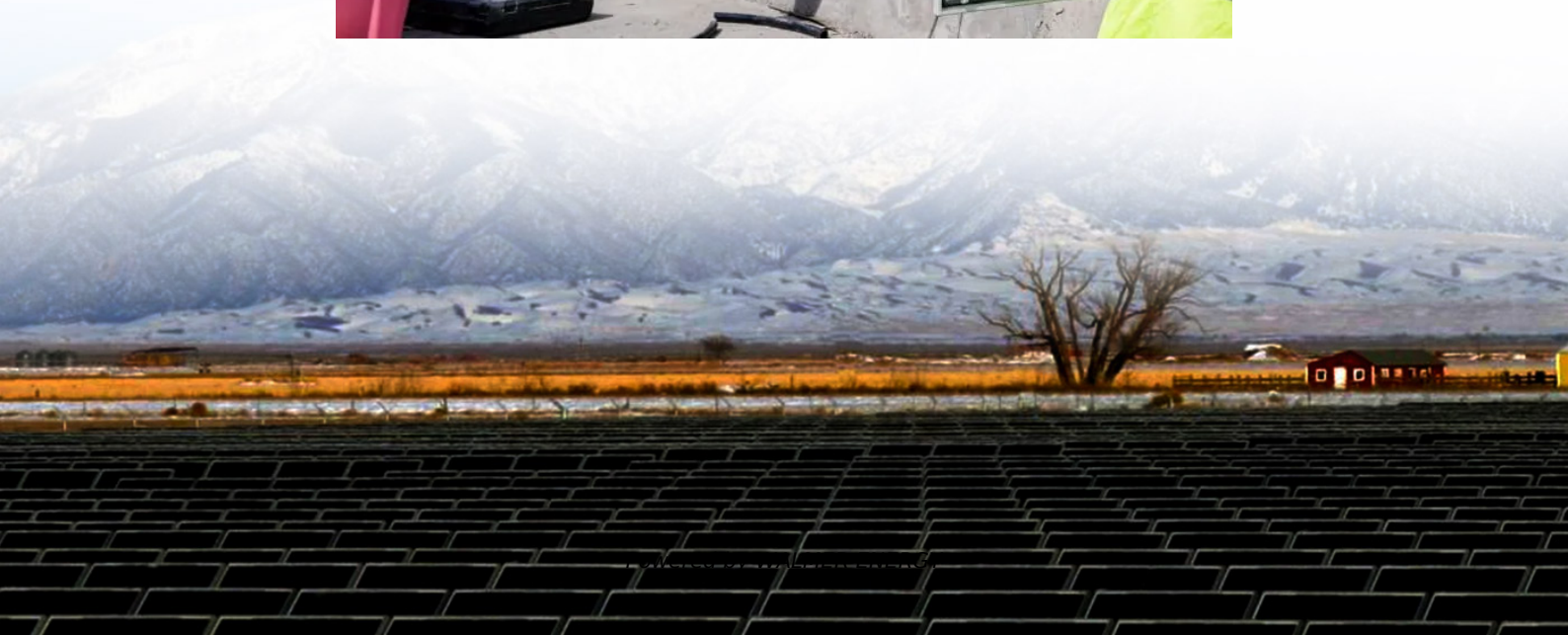


Inverter self-recovery voltage





Overview

Do grid-forming inverters prevent fault recovery?

Grid-forming (GFM) inverters are required to operate robustly against grid faults. However, due to the limited over-current capability of inverters, current-limiting controls are usually applied to protect these semiconductor devices, which may prevent GFM inverters from a successful fault recovery. To understand this phenomenon, this study analyzes.

What happens if a fault is cleared in an inverter?

This limitation persists even after fault clearance, causing the inverter to operate abnormally with larger output voltage and output current values. A self-recovery strategy for exiting the current limitation was proposed in [1], which is devoted to the recovery to a normal state after the fault is cleared.

Why does a reactive power control loop keep the inverter in current limitation?

Although it adjusts the active power reference during faults to extend the critical clearing time, the current increase caused by the reactive power control loop keeps the inverter in current limitation. This limitation persists even after fault clearance, causing the inverter to operate abnormally with larger output voltage and output current values.

What is a self protection over voltage (SPOV) mechanism?

These mechanisms, referred to as Self Protection Over-Voltage (SPOV) mechanisms, have the added benefit of causing the inverter to cease to energize when the circuit voltage exceeds certain limits. The SPOV mechanisms thus can mitigate both ground-fault overvoltage (GFOV), and load-rejection overvoltage (LROV).



Inverter self-recovery voltage

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