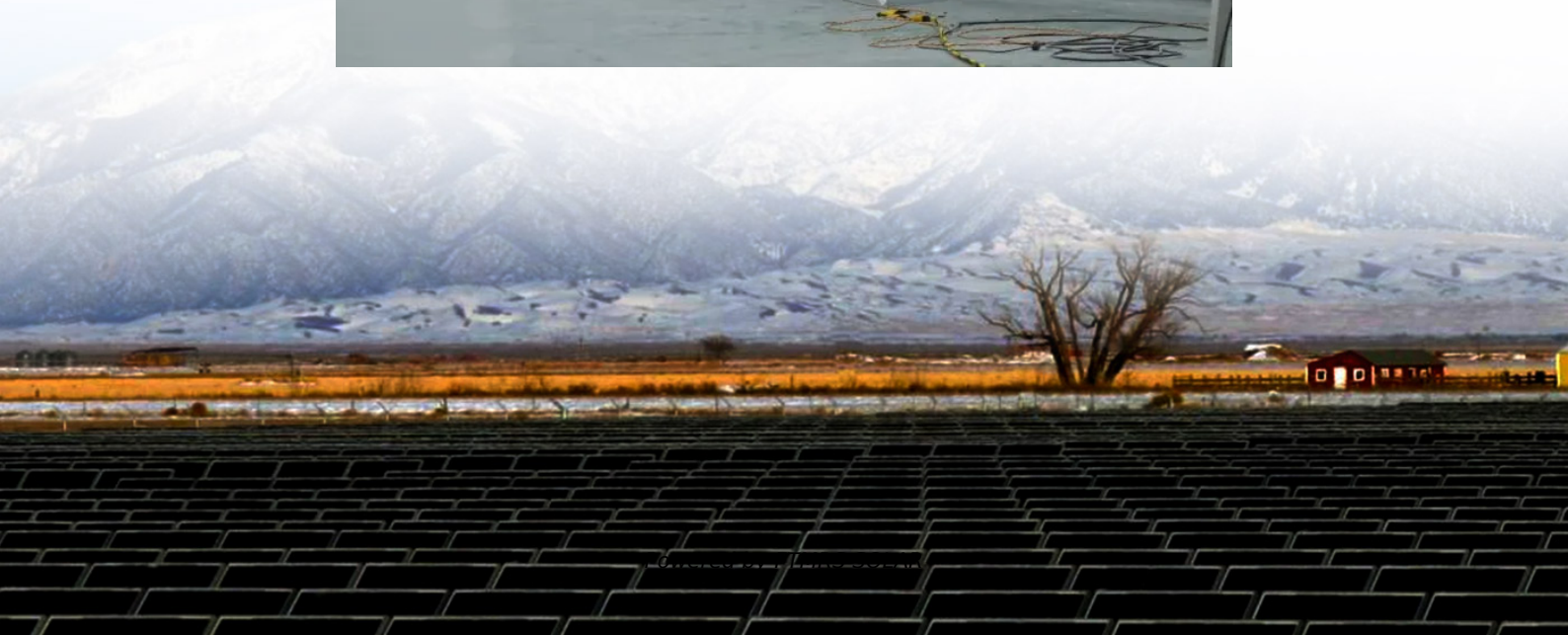


Bus voltage drops when inverter is overloaded





Overview

Why do inverters trip if DC bus voltage exceeds a threshold?

Some inverters will trip or issue an overvoltage fault if the DC bus exceeds a threshold (e.g., 800 V on a 400 V-class inverter). In multi-inverter systems sharing a DC bus, regeneration from one unit can affect others. Solar or battery-connected inverters may have intentionally higher DC bus voltages for MPPT or efficiency reasons.

What happens if a DC BUS is overloaded?

So the DC voltage on the DC bus will be $1.414 \times$ the RMS reading of your incoming AC voltage. If your incoming power is overloaded slightly, your peak to peak incoming voltage will dip slightly. This will have a very small change on your RMS meter reading, but a more significant change on the DC bus voltage.

What is a DC BUS overvoltage fault?

A DC bus overvoltage fault simply means that the DC bus voltage exceeded the threshold for which the drive is rated. It is an instantaneous fault, meaning as soon as the voltage crosses this level, the control system detects this and trips the drive into a fault condition, disabling the drive's output. This is to protect the VFD from damage.

What causes a DC bus voltage to rise?

If it is undersized, disconnected, or faulty, the inverter cannot dump excess energy, causing the DC bus voltage to rise. The rectifier stage of the inverter converts AC line voltage to DC. If the input AC voltage is higher than nominal, the resulting DC bus voltage will also be higher.



Bus voltage drops when inverter is overloaded

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