LLSE CONTAINERS

Inverter voltage waveform clipping

Overview

What is inverter clipping?

Inverter clipping, or “inverter saturation,” occurs when DC power from a PV array exceeds an inverter’s maximum input rating. The inverter may adjust the DC voltage to reduce input power, increasing voltage and reducing DC current. Alternatively, the inverter may restrict or throttle the inverter’s AC output.

Should a PV inverter be clipped?

It is commonly assumed that cleaning photovoltaic (PV) modules is unnecessary when the inverter is undersized because clipping will suficiently mask the soiling losses. Clipping occurs when the inverter’s AC size is smaller than the overall modules’ DC capacity and leads to the conversion of only part of the PV-generated DC energy into AC.

Why do inverters clip?

The inverter may adjust the DC voltage to reduce input power, increasing voltage and reducing DC current. Alternatively, the inverter may restrict or throttle the inverter’s AC output. Inverter clipping is typically seen in PV systems that have high — for example, greater than 1.4:1 — DC/AC ratios. Why does it matter?

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How many kW can a inverter clip?

At one time indicated with no clipping, the PRactual = 89 kW/100 kW or 0.89, but when the power exceeds 100 kW, the inverter clipping limits to that value, and the PRmasked = 99.5 kW/100 kW = 0.995. Clipping frequencies vary in time and space. Generally, clipping patterns are higher in the middle of the day (Fig. 4).

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