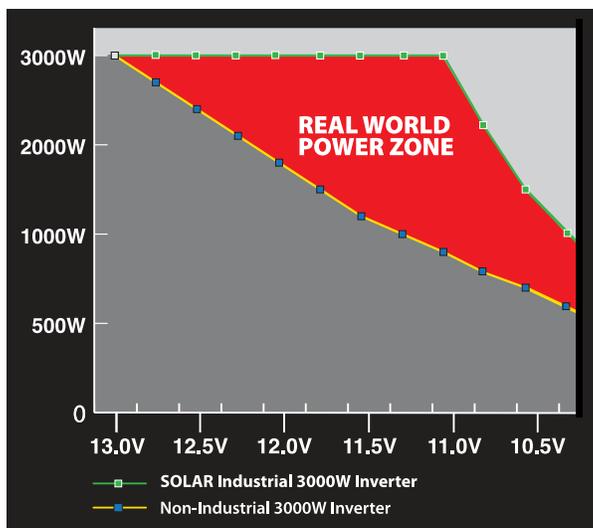


# DEEP DIVE

In-depth Product Analysis



We continue our **DEEP DIVE** series with a look at power inverters – specifically, do different power inverters deliver AC power differently, and if so, how do they differ? The answer is yes on numerous fronts, but today we are going to zoom in on one specific aspect of power delivery, which is how much power is actually delivered.



There's a dirty little secret that many power inverter brands/manufacturers don't really want you to know when it comes to the output ratings of their product. Many power inverters are rated for their output based on an impossible to achieve input voltage, such as 13.0VDC. Unless your DC power source is being charged, it will never be at 13.0V State of Charge (SoC). A fully charged 12VDC power source will have an effective open circuit voltage (after any surface charge has been removed) of 12.8VDC at best.

In the real world, where your DC power source is not connected to charging current and you are powering devices from your power inverter, it will continuously discharge from a full state of charge (~12.8VDC) to a discharged state of charge (11.5VDC, or 10% SoC). This is where work gets done – the accumulated power of the DC power source is transferred to the devices being powered during the working cycle of the system. But, what never happens is delivery of power from a DC power source at 13.0VDC. Literally. Not. Ever.

So, an output rating based on input voltage of 13.0VDC (or higher) is a rating that will never be achieved. And, what we have seen in these cases is that the output of such products declines rapidly as the 12V power source discharges. For instance, at 12.4VDC (~75% SoC), these products typically deliver only 60% of their rated output and fall off a cliff from there. This could mean that a power inverter rated at 2000W is actually delivering 750W when in use. We refer to this as *The Real World Power Gap* resulting from underperformance due to false expectations based on unrealistic input ratings.

This is not the case with **SOLAR** Industrial Grade Power Inverters. Our power inverter products are design to deliver the rated output until the DC power source discharges to 11.0VDC. That means, as the DC power supply driving the inverter discharges from full charge (~12.8V) to a discharged state (~11.0V), we keep powering your applications, allowing you to get the power you need, longer and better than most competitive models. That's what we call *The Real World Power Advantage* and it's what you get from every **SOLAR** Industrial Grade Power Inverter.

