

The value of High-Voltage Hybrid Inverter systems

High-Voltage inverters and batteries have always offered benefits such as better response to high loads when there is a grid failure, faster charging of batteries and thinner diameter cables due to the high voltage requiring lower current. The cost of high-voltage systems has historically been higher than “conventional” 48 Volt systems, hence the popularity of 48 Volt inverters and batteries in residential systems. Heavy industries with machinery such as pumps, motors etc. have used HV systems as a necessity for this type of machinery to work.



Fox 10.5kW inverter & 12.3kWh battery

In recent years the higher demand for inverters and batteries has seen scales of economies bring more pricing parity between low and high voltage systems resulting in many manufacturers bringing HV systems, typically 380V-450V, to market. According to PV magazine, High-Voltage inverters are on average 18% more efficient than their Low-Voltage counterparts.

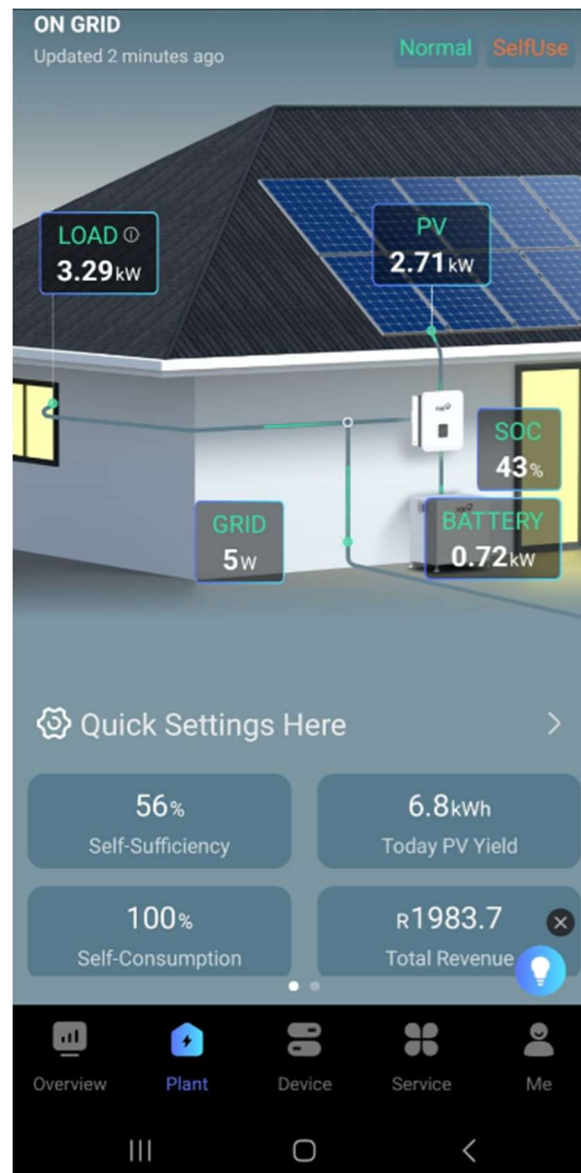
Anecdotally, I use a 10kW-48V inverter system in my home with a 15kWh lithium-ion battery, so even with Stage 6 loadshedding, we could carry on as normal. The system is about 5 years old and at that time, HV was still quite pricey and not that readily available.

For the past year or so, we have exclusively installed HV systems from Fox ESS, including in three homes in the estate where I live. Recently, we had a 42-hour power outage due to a transformer failure. About 20 hours into the outage, my 15kWh battery gave up the ghost and we had to wait for sunlight to start the recharging process via PV.

Many of my neighbours also have 48 Volt systems and they too ran out of charge at some point, depending on their battery size. Unsurprisingly, the three customers who have High Voltage systems, experienced no outage at all for the whole 42 hours. The ability of the HV inverter/battery combination to rapidly recharge the batteries and the overall efficiency the DC to AC conversion.

So, while my 48V inverter and 7.2kWp PV array was only able to charge the battery to 72% throughout the entire day, my HV customers had fully charged batteries by about midday. Their true-hybrid systems continued to blend the power from the battery and the PV and they went into dark with 100% battery.

As a supplier, this was very gratifying to see and the most important part was that I was able to monitor/manage all of my customers via the Fox ESS Cloud app.



Fox ESS Cloud App