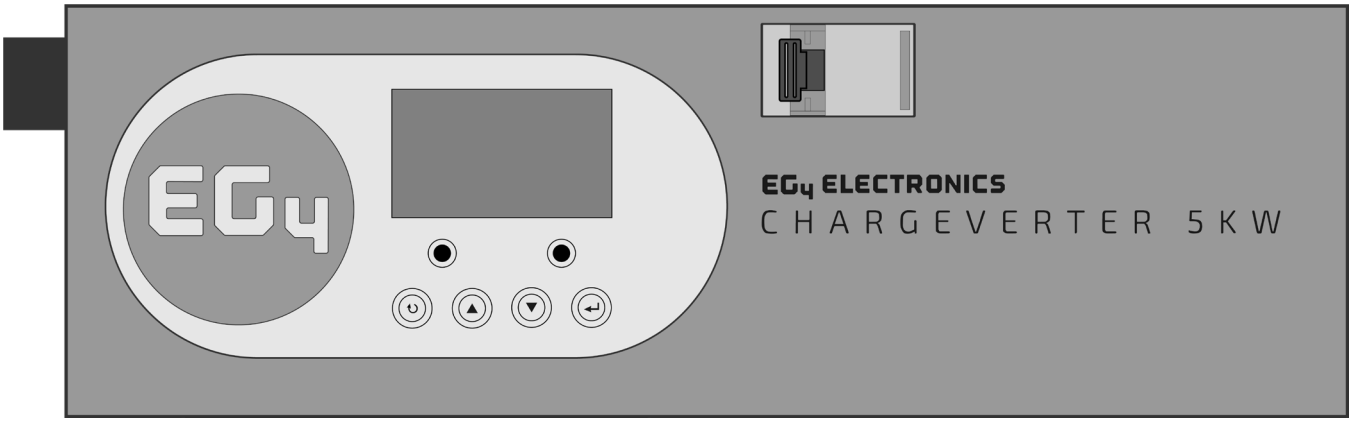
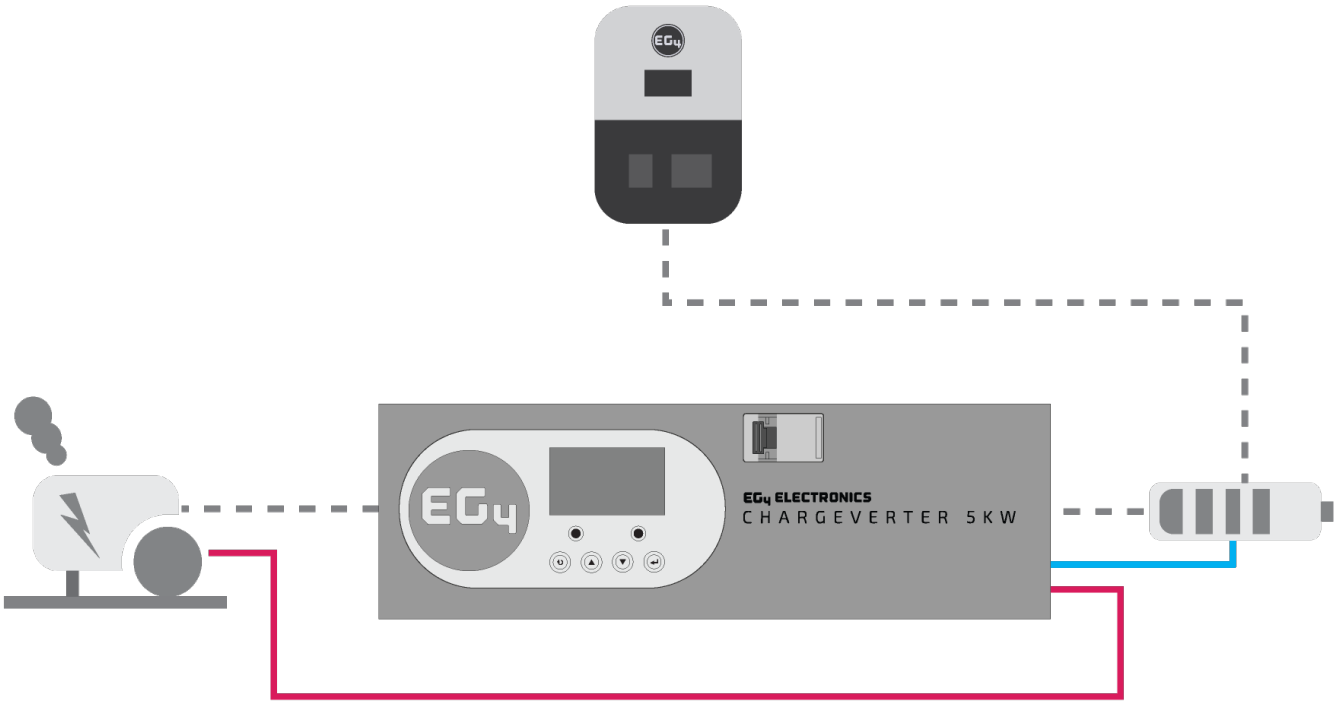
EG4® CHARGEVERTER-GC

USE-CASE SCENARIOS



The purpose of this document is to inform the end-user of just a few different use-case scenarios when coupling the Chargeverter-GC with EG4 batteries. There are a multitude of other use-cases than the ones listed in this document, but these are some of the most common examples.

OFF-GRID SYSTEM



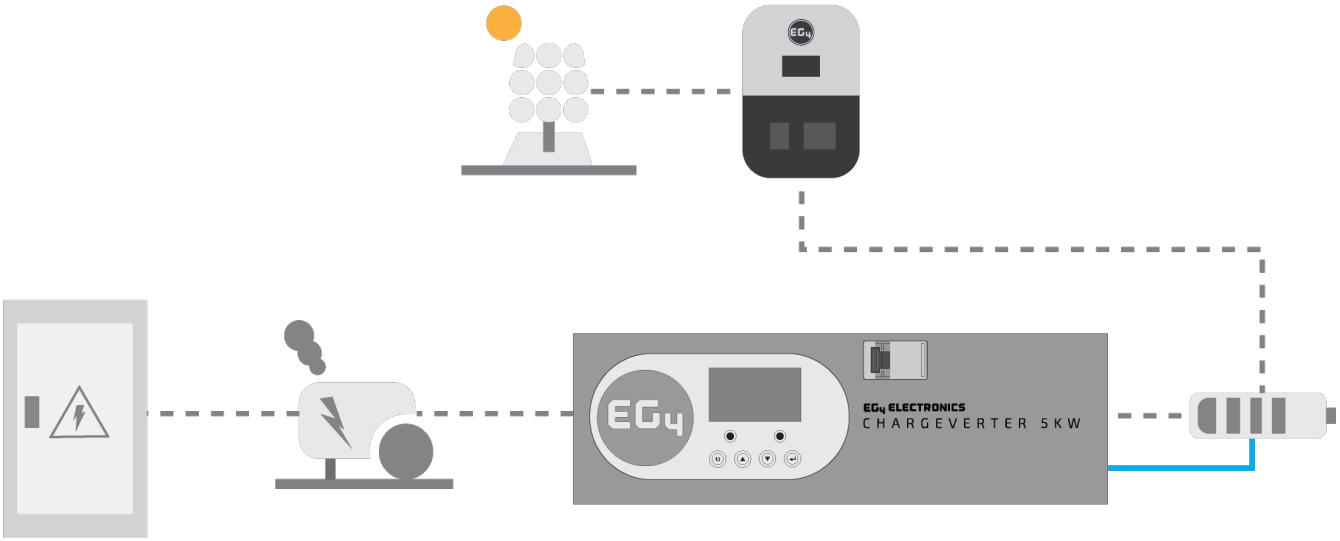
IMPORTANT: In this example, the inverter is not powering any loads. The inverter is configured in such a way to only allow battery charging.

This customer's off-grid system has been powering home loads throughout the night. The battery bank has also reached the low threshold of 20% state of charge (SOC), as set by the customer on the Chargeverter-GC. The system in question has solar panels that are not yet generating solar power (early morning) and this specific system has no grid input coming into the inverter. Consequently, the customer faces a challenge: how to recharge the batteries.

Enter the Chargeverter-GC. In this scenario, the customer ensures that the inverter is not supplying power to any loads. They then connect the Chargeverter to the generator using the two-wire start mechanism (indicated by the red line in the image above). Closed-loop communications are established between the charger and the battery bank (as represented by the blue line in the image). The generator then activates and begins charging the battery bank.

As the sun rises, the inverter supplements the battery charging process by drawing power from the solar panels. Once the battery bank reaches the predefined SOC threshold (configured by the customer), the charger sends a stop signal to the generator, shutting it down.

GRID ASSIST



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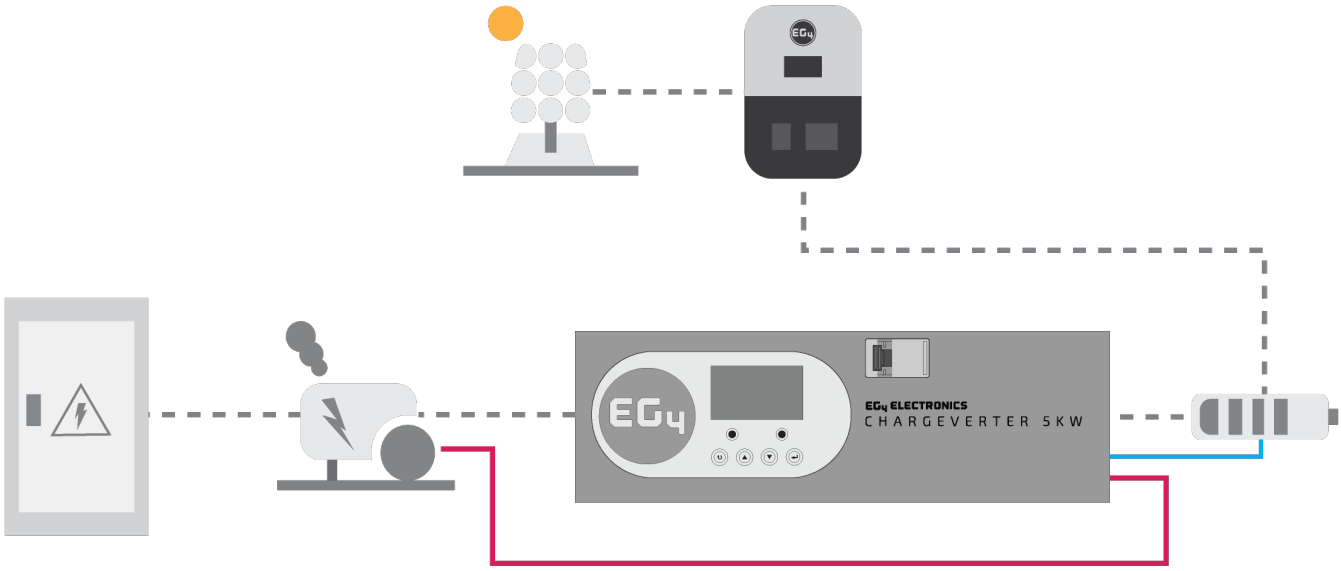
In this scenario, the customer operates a full solar Energy Storage System (ESS). They rely on supplemental grid charging throughout the night due to having a small battery bank. The inverter has connections to both PV panels and the AC grid. Initially, the battery bank was fully charged to kick off the night. However, unfortunately for this customer the grid went down unexpectedly.

This customer was awakened in the middle of the night due to lack of power. Undeterred, the customer made the call to utilize the Chargeverter-GC. The customer manually turned on the generator due to not having installed the AGS (Auto-Generator Start) circuit. The Chargeverter is powered on by the generator and will then pull the required voltage/current to charge the bank. When the battery bank reaches the high threshold SOC% cut-off of 100% (set by the user), the Chargeverter will shut down.

FULL ESS

W/ GENERATOR BACKUP



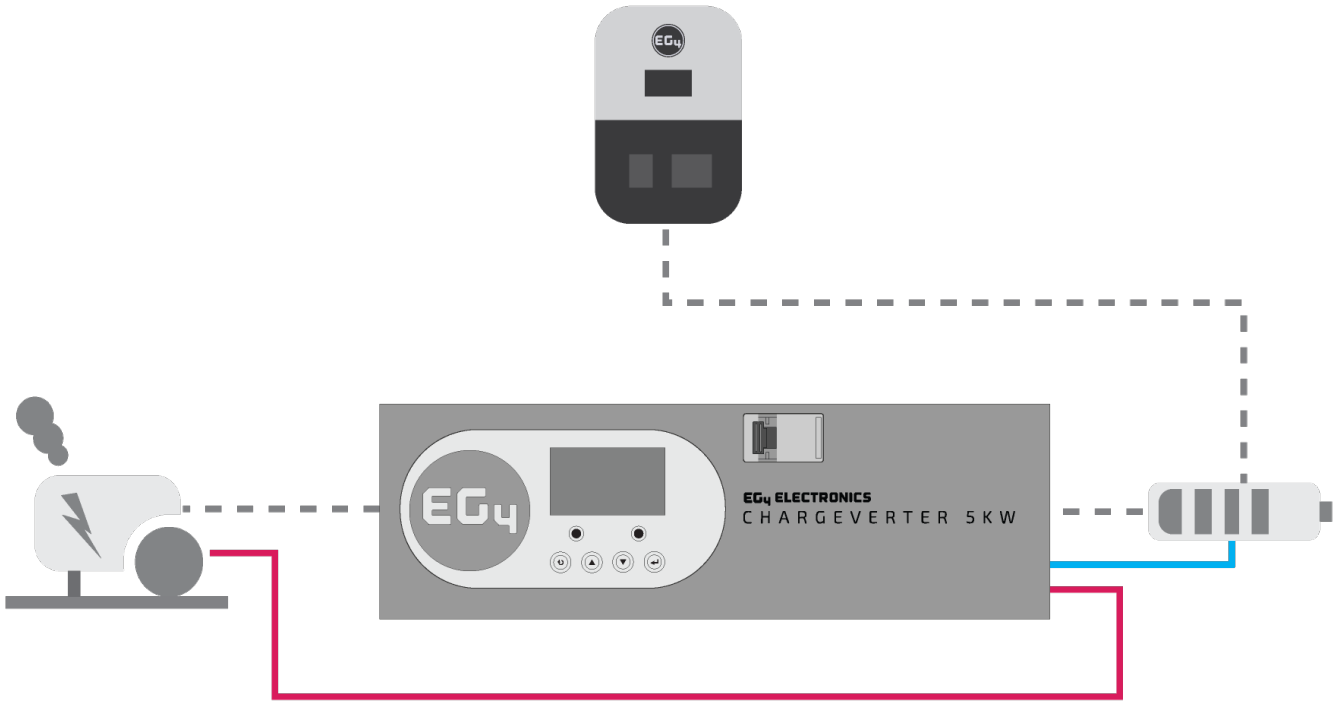
IMPORTANT: In this example, the inverter is not powering any loads.

This customer is using an off-grid inverter with grid assist. This means that the inverter has connections to both PV panels and the AC grid. As the sun begins to set and loads continue to draw power the battery bank begins to lose its SOC%. At this specific location, electricity rates soar during peak hours of operation.

To mitigate these charges, the customer may leverage the Chargeverter-GC connected to a generator via the charger's Auto Generator Start (AGS). The customer has configured the charger to begin charging at 20% SOC. Upon reaching that value, the Chargeverter will send a start signal to the generator. The charger will then pull the required voltage/current to charge the bank.
When the battery bank reaches the high threshold SOC% cut-off of 100% (set by the user), the charger will send a stop signal to the generator to complete the charging cycle.

This solution not only optimizes energy usage but also helps avoid costly peak-demand charges.

INCOMPLETE INSTALLATION



IMPORTANT: In this example, the inverter is not powering any loads. The inverter is configured in such a way to only allow battery charging.

In the example above, the customer operates a partial system setup within a fully off-grid scenario. Although the solar panels are yet to be installed, the customer takes proactive steps to maintain the battery's SOC. How? By installing the Chargeverter-GC with direct connections from the generator to the charger's AGS terminals. This customer can now safely keep the SOC% of the batteries topped off while still finalizing the commissioning of the system.

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