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Guide to GivEnergy Systems



Scope

This guide is aimed at homeowners interested in installing Tesla Powerwall 2.

The guide has been produced by Spirit Energy and is available for download from www.spiritenergy.co.uk.

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Additional Resources

You may also be interested in the following resources, available for download from www.spiritenergy.co.uk:

- Comparison **of the different systems we offer**

Visit:

[Residential Storage Overview - Spirit Energy](#)

You can also [download this comparison as a PDF](#).

- **Guide to Residential Storage**

This is an in depth guide to battery storage, with a focus on the economics and on the technical aspects of storage.

- **Online Calculators**

Our online calculators will allow you to do some rough modelling to see if solar, battery storage and indeed a different electricity tariff would make sense for you:

Solar PV Calculator: Works out how many panels can fit on a given roof or in a given space, estimates the system cost and evaluates the lifetime benefits.

www.spiritenergy.co.uk/solar-pv-calculator

Battery Storage Calculator: Evaluates the likely economic benefits of installing different battery storage systems (with and without solar) and of switching to a different type of electricity tariff. Allows you to model electric car usage and also heat pump usage.

www.spiritenergy.co.uk/solar-battery-storage-uk-calculator



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1. Introduction

GivEnergy Ltd is a UK company, incorporated in September 2018. It is a relatively new but fast growing player in the battery storage market.

We have installed their products since 2022, and have included them in our range in order to cater to domestic customers looking for an entry level product, with a storage capacity starting at around 3.0kWh.

We also install their large commercial systems.

2. Residential Energy Storage Systems

The domestic offering is aimed at homeowners with a standard single phase (230V) electricity supply. If you are a homeowner with a three phase (400V) supply, we recommend you look at Victron systems.

At the time of writing (January 2023), GivEnergy does not offer an 'all-in-one' unit combining the battery and inverter/charger into one unit (like the Tesla Powerwall or MyEnergi 'libbi'). Having said that, their website (givenergy.co.uk) does indicate that they have a 13.5kWh 'all-in-one' unit, similar to the Powerwall, in the pipeline so 'watch this space'.

At present, GivEnergy offers separate inverter/chargers and battery units, thereby adopting a flexible mix and match strategy to enable the customer to build the system of their choice:

Inverters

Choice of:

- **AC Coupled 3.0kW** inverter-charger, ideal for 'retro-fitting' storage to an existing solar system;
- **Hybrid 3.6kW or 5.0kW** Inverter-charger, allowing the connection of solar and battery storage to one unit, making them suitable for new solar systems, or extension systems. These hybrid inverters have recently been updated; thus they are called 'generation 2'.

It is worth noting:

- Unlike some systems (e.g. Victron, Powerwall), you can only connect one **hybrid inverter** on a single phase (230V supply) – you cannot ramp up the system size by connecting two units.





- In theory you can connect up to three AC coupled 3.0kW unit per phase, to increase power output, but we would recommend using a different system altogether if you want a bigger power output from your storage system.
- The GivEnergy **hybrid system should not be retro-fitted to an existing PV system** because it will be unable to monitor the output of that system, thus compromising the core functionality (see below for core functionality). If you want to add **additional solar panels and battery storage** to an **existing** solar system, we recommend you use MyEnergi or Victron.

Batteries

Connect **up to five battery units** together; choose from a range of unit sizes:

- 2.6kWh / 51Ah
- 5.2kWh / 102 Ah
- 9.5 kWh / 186 Ah



Note that the capacities shown are nominal capacities. The **usable capacity is 80% of the nominal capacity**. The batteries are lithium ferro phosphate, which typically offers 5000 – 10000 life cycles. GivEnergy gives a 10 year warranty.

Note that the batteries can go outside, but the inverter chargers are better off inside (or if installed outside, they need to have a canopy installed above them to protect them from rain and direct sunlight).

GivEnergy also offers a **power diverter** (to divert excess solar generation to the hot water tank), and a **voltage optimisation** unit. An **EV charger** will soon be added to the range.

The **main drawback** of the GivEnergy systems is that they only offer limited power in a powercut, as described below (see section Key System Functionality).

Further, with the non-hybrid inverter (Giv-AC 3.0), even though some power is available from the battery in a power cut, the solar PV cannot function in a power cut.

In addition, emergency loads (i.e. those loads that need to function in a power cut), need to be wired to a separate fuseboard, thus slightly increasing installation cost.

GivEnergy appears to be addressing this limitation by **developing the 13.5 kWh 'all-in-one' system which will offer 'whole house' backup** (subject to DNO (e.g. SSE) permission). This will cater to customers that want a whole house emergency power offering which, when retro-fitted to an existing solar PV system, will allow that PV system to function in a power cut.



3. Key System Functionality

3.1 Core functionality

GivEnergy systems offer the same core functionality as most storage systems:

- **Self consumption mode:** discharge the battery as soon as the solar is insufficient to meet the loads of the property, and charge the battery with excess solar.
- **Timed charge / discharge:** set up specific time windows (based on grid tariff) specifying when the battery can be charged and discharged.

Note that GivEnergy has created an automated platform that is compatible with various multi rate tariffs, such as Octopus Agile. With variable half-hourly energy rates, tied to wholesale prices, Agile Octopus rewards its customers for using less energy at peak times.

- **Power cut reserve:** Specify a % of battery capacity to be reserved for back-up.

3.2 What happens in a Power cut?

As mentioned above, at present the GivEnergy systems **provide limited power** in a power-cut. The specifics are as follows:

3.2.1 Hybrid inverters (3.6kW or 5.0kW)

The power from the hybrid inverters is limited:

Battery only mode (i.e solar panels not active): Both sizes of hybrid inverter can provide up to 2.6kW. Note that this will be further restricted to 1.3kW if the system has the small 2.6kWh battery only, since lithium ferro phosphate batteries should not be discharged in under 2 hours – thus a 2.6kWh battery cannot be discharged at a rate exceeding 1.3kW).

From battery + solar: Both sizes of hybrid inverter can provide up to 16A at 230V in a power cut, so 3.6 kW.

The solar panels connected to the hybrid inverter will function in a power cut as long as there is a minimum 50A load on the system.

Note that most domestic properties have a 100A, 230V supply from the grid (i.e. around 23kW), which far exceeds the throughput of the GivEnergy system. Thus a separate fuse board needs to be set up with emergency loads on it, and the system wired such that these are the only active loads in a power cut. Whilst this promotes good 'power cut discipline', it does increase the upfront cost of the installation.

3.2.2 AC Coupled Battery Inverter (3.0kW)

It is important to note that with the AC coupled system, the **solar will not work in a power cut.**



The AC coupled system will provide up to 2.5kW power in a power cut, subject to the battery capacity (lithium ferro phosphate batteries can't be discharged in less than 2 hours, thus a 2.6kWh battery could only be discharged at a rate of 1.3kW).

Note that, as with the hybrid inverter, a separate fuse board needs to be set up with emergency loads on it, and the system wired such that these are the only active loads in a power cut.

4. Monitoring

GivEnergy offers both a monitoring portal and an App. The monitoring portal gives current and historic data, with an easy-to-use dashboard, charts, and the ability to amend system settings remotely. The App provides more basic information.

You can view the demo dashboard for the monitoring system here:

[SIMULATE05 - General | givenergy.cloud](https://www.givenergy.cloud/SIMULATE05-General)



5. Warranty

The inverters come with a 5 year warranty, which can be extended to 10 years at additional cost.

The batteries come with a 10 year warranty. It is worth reading the fine print of any battery warranty before purchasing (you can download the warranty on our website at this link):

[GivEnergy Battery Systems - Spirit Energy](#)

All batteries have some capacity degradation over time. GivEnergy guarantees that each battery pack will retain 70% of its capacity for the lower of

- 5000 cycles (one cycle being full charge and discharge);
- 10 years from the installation date.



6. Commercial Systems (Three Phase)



GivEnergy manufactures large scale systems, aimed at high energy users with a three phase grid connection.

The systems are modular, allowing the combination of various inverter sizes (30kW, 50kW, 100kW, 150kW, 250kW, 500kW) with batteries which increase in increments of 64kWh.

As with the domestic offering, the battery chemistry is lithium ferro phosphate, using prismatic cell technology.

The system can be monitored and controlled using the energy management system (EMS) on the GivEnergy platform with additional monitoring points available to integrate to give more specific data e.g. renewable energy generation on site.

We have recently installed a couple of their large commercial batteries **(100kW / 192kWh storage capacity)**, for a large commercial energy user.

Please download the datasheet from our site, or contact us for further information on these systems.

