

Off Grid Systems

A Guide to 230v Power- Anywhere



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We are the Off Grid Specialists

We've been supplying and installing Off Grid Power systems since 2006. Over the years since, we have gained expertise in specific systems with peoples' specific requirements and will be happy to pass this advice on to our customers, creating them a reliable off grid source of power providing 24 hours a day, 365 days a year.

The system costs in this price list an estimated cost of system components and our installation works. Every situation is different, and we would need to know further details on the installation location, roof type for solar, etc.

The complete system component costs shown in the catalogue also indicate the amount of kilowatts (Kw) that the battery set can deliver each day.

Battery storage is stated in Kwh (kilowatt hours), which provides a reference to how many Kilowatts the battery can deliver in an hour until considered depleted. (n Lead Acid batteries, this is at 50% discharge. This Kwh rating can be extended over a 24 hour period, so that for example a 4Kwh storage battery set can deliver 50W per hour over a 24 hour period, ($24 \times 50W = 1200w$), or as another example, 120W per hour over a 10 hour period.



To work out your Off Grid system requirements, simply add up all your appliance and lighting wattage ratings and multiply by the amount of hours you will need to run each one every day. You will find a handy chart to fill in at the end of this catalogue.

Don't forget that when Off Grid, it is important that you use either LPG, oil or wood burning to heat space, heat water or cook. Using electricity from a battery bank to heat anything will take a huge amount of power and could potentially prematurely ruin the batteries.

All Solar based Off Grid battery systems will need supplementary charging help from a generator, typically during low sun Winter months. We can supply generators, and for a standard house or office we would suggest the Hyundai model listed toward the back of this guide. However, most petrol or diesel generators of 3kW or more will provide a waveform stable enough to run the sensitive charging circuits in Victron inverter chargers.

System Components



Victron Multiplus

The Victron MultiPlus Inverter/Charger is a powerful true sine wave inverter and sophisticated battery charger that features adaptive charge technology in a single compact enclosure.

The MultiPlus can prevent overload of a limited AC source and in the event of generator power being disconnected, the inverter within the Multi is automatically activated and takes over the supply to the connected loads making it ideal for Off Grid systems or other UPS applications.

The Multiplus range can be configured for AC systems from 800VA right up to 200kW if required.

Cost from £490 for 800VA to £1500 for a 5000VA Unit. Call or email for quote.

NSB 210FT Blue+ AGM battery



This is a Heavy Duty AGM battery ideal for the smaller Off Grid power system up to 6kWh storage. The combination of power and performance makes NSB Blue+ batteries perfect for a range of applications, including Off Grid, marine, commercial and Backup systems. Being AGM technology, they are sealed and spill proof as well as able take a higher charge rate than standard flooded Lead types. NSB Blue+ batteries have been designed to provide high current whilst maintaining a stable voltage. This is only possible if the internal resistance is very low. NSB batteries use thin pure lead plates for construction. Having thin plates means more can fit in a battery and more plates means more power. Each NSB battery holds 1kWh of available power when fully charged. These batteries are £350 + VAT each (carriage on top)



LG Chem RESU 6.4EX Lithium Battery.

Recently released onto the UK market, the LG Chem standard battery provides 6kWh of storage at a far smaller package size than any Lead based batteries. The LG Chem 6.4 has a 10 year warranty and can provide more than 6000 charge/discharge cycles, effectively meaning we can simply fit and forget this unit to *small to medium Off Grid systems*.

Also available are expansion packs to take the total stored size to 12kWh.

These offer the best value storage on the market right now, with prices starting at £3000 + VAT



Rolls 5000 series Flooded batteries

For large storage over 15kWh, one of the original batteries are still the big robust flooded Lead Acid batteries from Rolls.

These can easily give you 50 – 100kWh of storage if required.

These large lead acid batteries have a 10 year warranty and are robustly built. At the end of their life, the Rolls can be sold as scrap for a good price, thus part funding your new battery set.

However, they do need tending with water top-ups and consequently are high maintenance. Even so, they are a popular workhorse of the renewables world.

A 15kWh set of these start at £6000 + VAT

Aquion Battery

For people that would like a green energy option in battery storage, the new Aquion battery is proving to be a winner. Based on a salt water technology combined with other natural materials, the basic Aquion battery has 2kWh of storage. Though is not suitable for high current charge/discharge, Aquion's when stacked together, will normally provide great storage capability for the careful Off Grid house. The Aquion is recyclable at the end of their life, as it contain no harmful products and the saline contents can simply be emptied onto plant compost if desired.

A single 2kWh Aquion battery (as pictured) is £1000 + VAT. Larger quantities will drop the price per unit.



***NEW* BMZ 7.0 ESS Lithium**

We are always looking for new battery storage options, and are pleased to be one of the first installers in the UK offering the BMZ ESS 7.0 as a great priced Lithium Storage option.

Though similar in cost to the LG Chem RESU, for larger installations the BMZ units can be stacked to create up to 21kWh on single phase supplies and much higher with 3 phase Off Grid supplies.

Currently, the BMZ can be installed in multiple units only on Sunny Island systems, but we are hoping Victron will include them in their software soon.

The cost for a single BMZ 7.0 is £3000 + VAT



SMA Sunny Island Inverter/Charger.



The robust and IP rated Sunny Island unit has now come back to our attention with more options available at a far better cost than a few years ago. We have installed the Sunny Island on a number of occasions, providing the customer with an easy microgrid system that the Sunny Island is famed for.

Now configurable with a wide range of battery options, SMA are working at keeping the edge on their competition.

Sunny Island inverter/chargers are available in 2.2, 3.3, 4.6 and 6.0kW options and can be easily connected in parallel to provide more power if needed across a microgrid network.

Perfect for an estate or off grid village enabling power resources to be shared, as well as a standard single unit installation.

Cost for a 4.6kW unit is £2200 + VAT

Our Off Grid systems are designed to provide you with a constant 230vAC mains voltage when you have no Grid connection available, or if a grid connection is too expensive and out of your budget.

We provide systems that will charge from free sunlight during Spring, Summer and Autumn, needing only supplementary generator input during the darker winter months. Alternatively, for a basic installation that will keep the cost down, we also install systems without solar. The latter will be ideal for work/ live environments, where a generator will run during the working day to operate your workshop and charge the batteries. At the end of the day, the generator can be turned off and you will have quiet 230v mains power all night.

The versatility of the Victron Multiplus system allows us to configure your system in a number of ways. Even to ensure against Grid failures if you have mains grid available enabling you to have an auto backup system whenever you need it.

System on the right is a recent 5kVA Multiplus inverter, with colour display and 6kWh Lithium storage battery.

The prices below are outline full installation costs based on all the equipment being in one location. Contact us with your requirements to confirm the final costs.



Outline equipment installation costs:

To supply up to 2kW power a day

Parts: 1 @ Victron Multiplus inverter charger 24v 3000VA
2 @ NSB Blue+ 200Ah batteries

Complete with battery fuse, 2 metres of battery cable with lugs and links & Installation

(Ideal for use with 1 or 2kWp PV systems or just a generator)

£2800 + VAT

To Supply up to 4kW power a day

Parts: 1 @ Victron Multiplus inverter charger 24v 3000VA
4 @ NSB Blue+ 200Ah batteries

Complete with battery fuse, 2 metres of battery cable with lugs and links & Installation

(Ideal for use with 3kWp PV systems or just a generator)

£3600 + VAT

To Supply up to 6kW power a day

Parts: 1 @ Victron Multiplus inverter charger 24v 5000VA
6 @ NSB Blue+ 200Ah batteries

Complete with battery fuse, 2 metres of battery cable with lugs and links & Installation

(Ideal for use with 4kWp PV systems or just a generator)

£4625 + VAT

Caravan or Shed Package

Parts: 1 @ Victron 12v 800W inverter charger
1 @ NSB Blue+ 200Ah battery
1 @ 250Wp solar panel
1 @ Victron Blue solar charge controller
1 @ Generator input socket

Complete with battery fuse, 2 metres of battery cable with lugs and links plus solar panel mount frame & Installation

£2390 + VAT

Solar PV options to avoid need to run generator during the Summer months.

1kWp Solar PV system

Parts supplied:

4 @ 250Wp solar panels

1 @ 1kWp Solar Inverter (or DC solar MPPT charger)

1 @ Roof mount kit (roof to be specified)

1 @ Cable and connector kit

Cost: £2600 + VAT

2kWp Solar PV system

Parts supplied:

8 @ 250Wp solar panels

1 @ 2kWp Solar Inverter (or DC solar MPPT charger)

1 @ Roof mount kit (roof to be specified)

1 @ Cable and connector kit

Cost: £3500 + VAT

3kWp Solar PV system

Parts supplied:

12 @ 250Wp solar panels

1 @ 3kWp Solar Inverter (or DC solar MPPT Charger)

1 @ Roof mount kit (roof to be specified)

1 @ Cable and connector kit

Cost: £4100 + VAT

4kWp Solar PV system

Parts supplied:

16 @ 250Wp solar panels

1 @ 4kWp Solar Inverter

1 @ Roof mount kit (roof to be specified)

1 @ Cable and connector kit

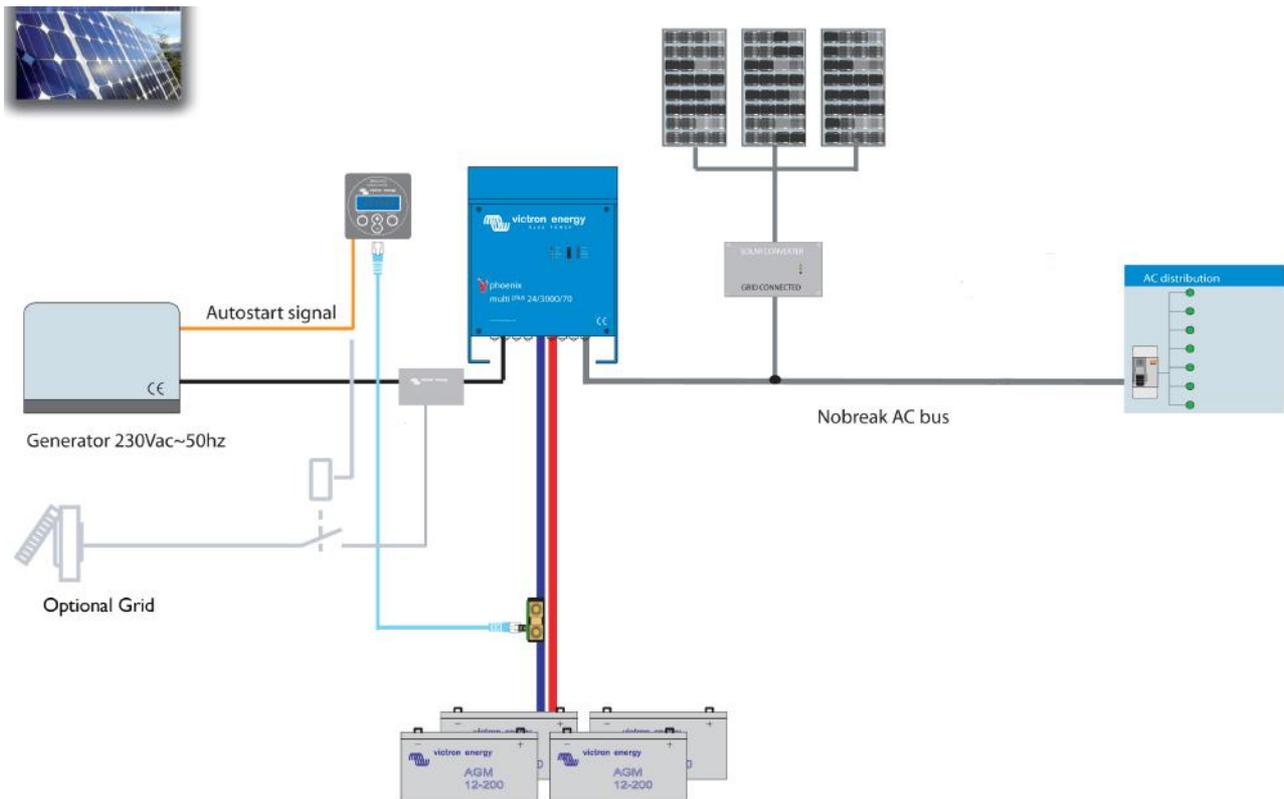
Cost: £4800 + VAT

All the costs above include Installation in the South West UK by ourselves.

Other areas, please contact us at info@offgridsystems.co.uk

Roof access scaffolding may be required in addition to the quoted cost

Typical Solar Off Grid system using AC bus connection.



On larger Solar arrays over 3kwp, it can be more economic to use a standard grid connected inverter such as Fronius or Sunny Boy on the AC output to charge batteries and supplement the Multiplus output.

With smaller Solar PV systems, it is more cost effective to connect a charge controller to the battery set and will reduce the losses involved in ac to dc transfer process.

Generator option cost from us: £1399 plus VAT

HYUNDAI

POWER EQUIPMENT

Hyundai DHY8000SELR



The DHY8000SELR is a new, larger output generator in the Hyundai range, and the next step up in terms of power from the DHY6000SELR. Like all other Hyundai's in the range, the DHY8000SELR comes as an ATS ready machine, with a specific port for connecting an Automatic Transfer Switch. Using the same silent casing of the DHY6000SELR, meaning no need for a larger or heavier unit, the DHY8000SELR remains a compact and 'silenced' machine, quiet running and very powerful. It comes with the same great features like the 30-litre fuel tank for longer running, the same reliable Hyundai 4-stroke OHV air cooled direct injection diesel engine and AVR to allow the running sensitive electronics and personal items without the risk of damage.

Specification:

- Max Output: 6.0kW
- Continuous Output: 5.5kW
- AC Frequency (Hz): 50
- AC Voltage (v): 110/230
- Alternator Type: AVR
- AC Power Factor: 1.0
- DC Output (w): 8.3
- DC Voltage (v): 12
- Engine Type: Hyundai Air-cooled, OHV, Diesel Engine
- Displacement: 453cc
- Engine Speed (rpm): 3000
- Power Output (hp): 12
- Starting System: Electric start with its own sealed battery and 12v charging system (remote start and ATS available)
- Lubrication Oil: SAE 10W/30 or 15W40 diesel engine oil, 1.75 litres
- Battery: 12v 36a/h
- Noise Level (db @ 7m): 65-70
- Long Run 30Lt Tank

www.hyundaipowerequipment.co.uk

