VariPower

Variable speed generator combined with a highly efficient lithium battery bank

VariPower

Variable Speed Hybrid Generator

ENERGY SOLUTIONS

www.hybridpower.co.uk

VariPower – The Benefits

The benefits of a variable speed hybrid generator

Less Noise

The generator is much quieter when running at lower levels such as 900 rpm – reducing noise considerably. When only the batteries are supplying power the unit is silent.

Fuel Saving

The generator is only running at the level needed therefore it only uses the fuel needed for that power demand – there is no waste and costs are significantly reduced.

Reduced Servicing

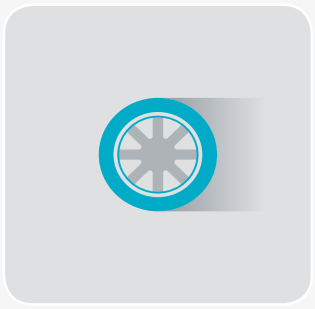
Because the generator only runs at the level needed, not at one constant high rate, it will not get to its service points as quickly – which will reduce overall maintenance and service costs.

Lower Emissions

Because the batteries can power low loads (for example at night time) there are periods when the generator does not need to run at all – reducing carbon emissions.

Flexibility

The unit can be used in a multitude of different environments with any demands – making it an ideal rental unit.



Transportable

Integral forklift pockets mean the VariPower can be easily placed on a trailer or lorry and delivered to site. It is also available pre-mounted on a twin axle trailer.

Intelligent

Built in intelligence means the generator automatically adjusts the engine RPMs to match any loads – no manual intervention required.

Savings

Overall the unit can reduce costs on average by 56%[1] compared to a standard 1500 RPM generator.

Call 01634 290772 or email hybrid@energy-solutions.co.uk for your quotation

VariPower – An Overview

Variable speed hybrid generator

VariPower is a variable speed generator combined with a highly efficient battery bank. Developed, designed and manufactured in the UK. The unit provides transportable, instant power for temporary, back-up and off grid situations in any environment.

Unlike traditional generators which only run at one speed whatever the load demands, the variable speed generator combines the latest control technology and PMG alternator and will run at the most efficient RPM (between 900 – 2000) dependent on the energy requirement; providing just enough power for the load and to charge/top up the batteries without any waste.

When demands are low the generator will run at just 900 RPM, producing very low noise, using less fuel, and less CO2 and NOX. For times when a higher load is demanded the generator can move up in speed to anything up to 2000RPM; delivering higher amounts of power, quickly and efficiently.

The batteries within each unit act as an energy store; so at times of very low demand, or when completely silent power is required, the batteries alone can run the load, the generator will not need to start at all. At this point no fuel is used and emissions are at zero.

The built in intelligence of the system means the VariPower provides power in the most efficient way possible without the need for user intervention.

VariPower – the unit

- Powder coated steel enclosure - resistant to wind, sun and rain. Suitable for extreme environments.
- Renewables – the units have an option to be linked to a solar array thereby reducing costs and emissions even further.
- Built in fuel tank with 110 litre capacity means reduced refuelling requirements. External fuel tank connectors are also fitted as standard.
- Easy access – one side opens up for easy engine servicing, fuelling and electrical connections, making it convenient and accessible even on busy sites.
- Lockable and secure – gives peace of mind to owners.
- Forklift pockets, central lifting hook, strapping points make moving the units easy and secure.

VariPower – Range of Applications

Perfect for a range of applications

The VariPower unit has been designed to address a range of markets, from temporary sites to permanent off grid situations. It's efficiency and flexibility makes it suitable for:

- Temporary power
- Off Grid power
- Construction sites
- Rental applications
- Disaster relief
- Industrial backup
- Farms
- Telecom BTS sites
- Rail

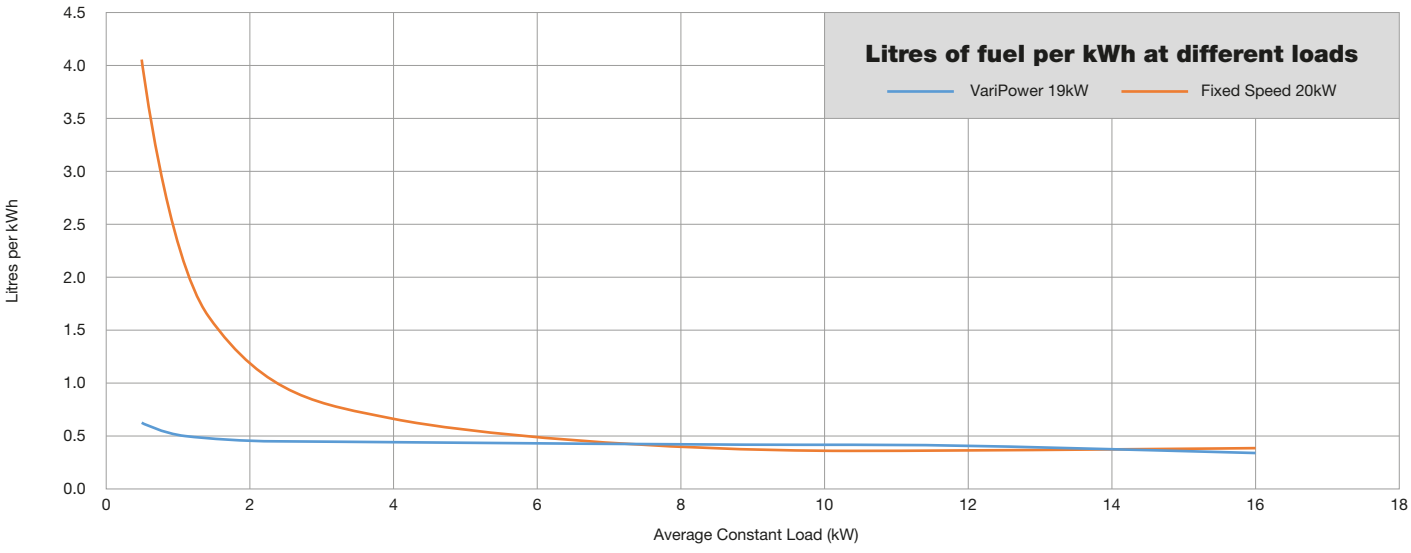
VariPower – Reducing Costs, Emissions & Noise

The graph illustrates how much fuel is burnt by both a fixed speed 20kW generator and a 19kW VariPower to supply power for different kW loads.

In terms of fuel consumed at 0.5kW. A VariPower unit would be able to deliver the power using just 7 litres of diesel per day, whereas a standard diesel generator would require 49 litres per day.

In addition there would be a substantial difference in emissions with the VariPower emitting only 19Kg CO2 per day, whilst the standard generator emits 131Kg CO^2 for the same load.

One of the major benefits for this level of power demand is the reduction in noise that a VariPower offers over a standard diesel generator. To deliver power a standard generator will need to run 24/7. The VariPower will only need to run 7.5% of the time, just under 2 hours of run time in 24 hours.



Call 01634 290772 or email hybrid@energy-solutions.co.uk for your quotation

VariPower – Contol and Monitoring

Control System

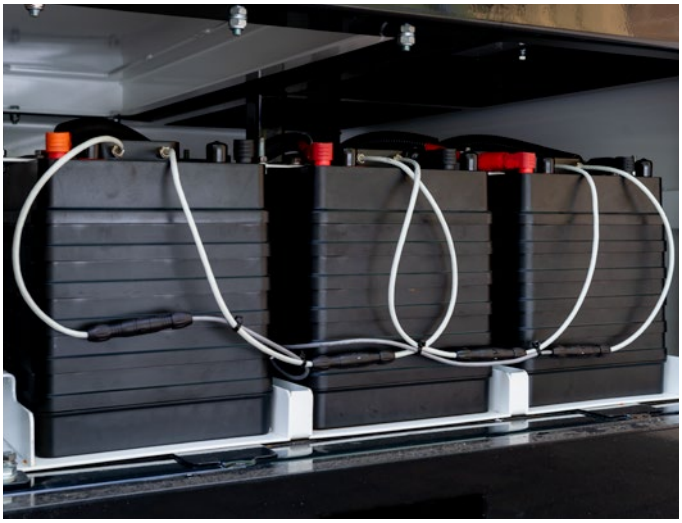
The proprietary control system offers a straightforward way to operate and control the VariPower.

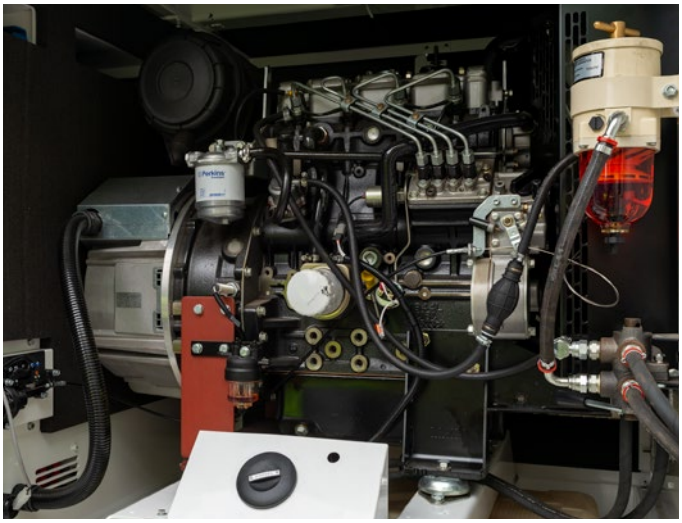
The display screen allows monitoring of all the relevant data from the engine, batteries and power electronics. This information can also be viewed remotely via an optional 3G internet connection allowing the reading to be seen on a tablet, PC or smart phone.

The simple design makes it perfect for use in fixed, rental and temporary environments, whilst the remote access gives the flexibility for owners to see the data from the unit wherever they are.

Customised screens are designed to show the information in a graphical format that is easy to read, ensuring critical decisions can be quickly made.

VariPower – Additional Features





Battery Storage

The standard unit comes with 15 kWh of battery storage (nominal) using the very latest lithium technology. These batteries have a superior performance which enables use at temperatures as low as -25ºC. The battery storage can be expanded up to 45 kWh (nominal) as an option.

Perkins Engine

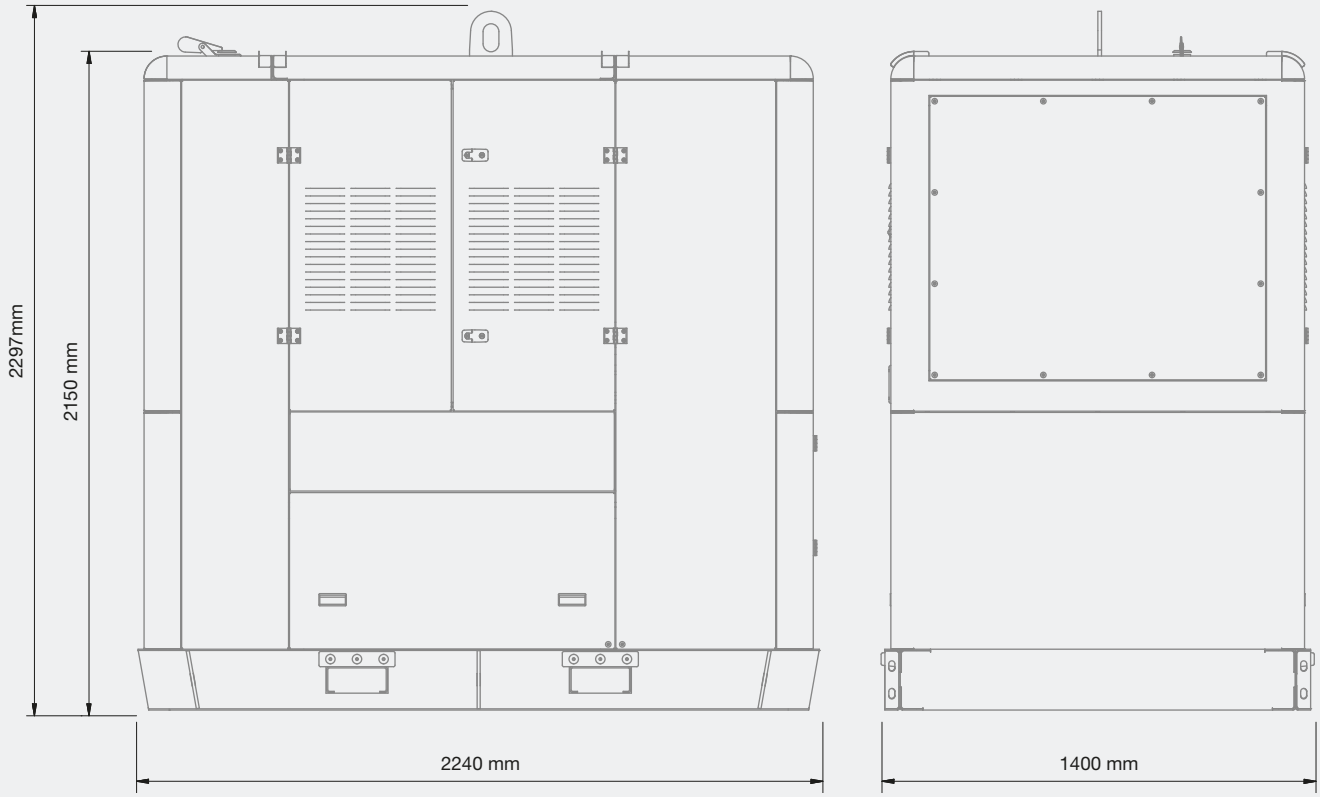
VariPower uses the Perkins 404D-22 – a powerful but quiet 2.2 litre naturally aspirated 4 cylinder compact engine designed to meet EU Stage IIIA/U.S. EPA Tier 4 interim emissions standards.

The 4 cylinder engine is designed to meet power generation needs in both unregulated territories where extreme conditions are likely, and higher regulated territories with more stringent emissions standards.

It was selected for the VariPower due to its power density, durability and fuel efficiency. The quiet operation makes it an excellent option as part of a unit designed to reduce noise to a minimum.

VariPower – Technical Information

DIMENSIONS & WEIGHT



Weight: 2400 kg

ELECTRICAL

Frequency (Hz)	Phases	Voltage	Prime kW	MCB Rating	Rated Speed (RPM)
50	3PH	230V / 400V	19	32	900 – 2000
50	1PH	230V	19	63	900 – 2000
DC	–	– 48VDC	19	Fused @ 375A Socket @ 63A	900 – 2000

Prime: This rating is for the supply of continuous electrical power, at variable load, in lieu of commercially purchased power.

Stage IIIa – VariPower emissions are compliant 50Hz Prime Power in accordance with 97 – 68EC.

ENGINE		
900 – 2000 RPM		
Output Rating (PRP)	kW	1 – 19
Manufacturer / Model		Perkins 404D-22
Fuel		Diesel
Injection		Direct
Aspiration		Natural
Cylinders		4
Bore and Stroke	mm	84 x 100
Displacement	L	2.2
Cooling		Water
Engine Oil Capacity	L	10.6
Coolant capacity	L	7.0
Electronic Speed Control		Linear Actuator
Air Filter		Single Paper Element

ELECTRICAL FEATURES	
Output RCD	✓
Preparation for Earth Spike	✓
Emergency Stop Button	✓
MPPT Solar Charge Controller	•
Lithium Batteries 48VDC 15kWh	✓
Battery upgrade additional 15 kWh	•
Mains Output 3PH	•
Mains Output 1PH	•

ALTERNATOR PMG	
Insulation	Class H

COMMUNICATION AND CONTROL	
DSE 3890	✓
Remote Monitoring (DSE Remote)	✓

STARTING SYSTEM		
Starter Motor	kW	2.20
Battery Capacity	Ah	70
Number of Batteries		1
Auxillary Voltage	V	12
Battery Isolator		Rotary
Alternator	A	65

FUEL SYSTEM	
Diesel Specification	EN590
Fuel Tank Capacity	134L
External Fuel Tank Valve	✓

CANOPY	
Lockable Maintenance Doors	✓
Fork Pockets	✓
Bunding	✓
High Density Retardent Foam	✓
White Paint	✓
Top Lift Point	✓
Customer Colour	•

CE PACK	
EMC Certification	✓
Hot Guards	✓
Belt & Fan Guards	✓
Sound Power Decal	✓
EU declaration for Engine Emissions	✓
Complete Machine Declaration of Conformity	✓

Standard: ✓ Optional: • Unavailable: ✗

[1] Based on Energy Solutions in house testing. [2] Optional extras incur additional cost.

Reference Standards

VariPower is CE certified and conforms to the following Directives (subject to a country requiring such standard)

- EN 12100, EN 13587, EN60204
- 2006/42/CE Machinery Safety
- 2006/95/EC Low Voltage
- 2004/108/CE Electromagnetic compatibility
- IEC 62040
- 97/68/ EC Emmissions (amended by 2002/88/EC & EC2004/26/EC)
- Power According to ISO 8528 and ISO 3046
- Based on standard specification equipment

Made in the UK

Designed and built in the UK by Energy Solutions – with over 25 years of electrical power experience, each unit is manufactured to the exacting standards required for standalone power sources.

Ref: July 2019

ENERGY SOLUTIONS

hybridpower

52 – 54 Riverside, Medway City Estate, Rochester, Kent ME2 4DP tel: 01634 290772 email: sales@energy-solutions.co.uk web: www.energy-solutions.co.uk