

The Complete Off-grid Power System

Electricity Only or Combined Heat and Power (CHP)

Electricity • Hot Water • Space Heating



- Complete power system in a standard ISO container.
- Ideal for permanent, semi-permanent and temporary applications.
- Electrical power 24/7.
- Very cost effective.
- Easily installed.
- Easily transportable.
- Low Maintenance.
- Fully automatic, fully integrated, efficient and reliable.
- Reduces fuel costs dramatically.
- Reduces pollution and the production of greenhouse gasses.

The Complete Power System in a Container

There are two versions of the system available:

- 1) PS System supplying electrical power 24/7 with unbeatable fuel efficiency.
- 2) PS-CHP System supplying electrical power and hot water for basins, showers, baths, washing machines and space heating.

The 13kVA, 20kVA or 30kVA PS and PS-CHP systems are built into a standard ISO containers 10ft (3048mm) or 20ft (6096mm) long. Larger outputs are available in larger containers.

It is a compact, easily transportable and installed package.

It is extremely fuel efficient cutting operating costs and dramatically reducing pollution and greenhouse gasses.

The Powerguard PS System

The Powerguard PS System operates with any auto-start generator. In a typical installation the PS System controls the generator run-time to less than 8 hours per day. The generator supplies



PS SYSTEM & BATTERIES

power to the heavier loads and any spare capacity is used to charge the batteries. When the generator is stopped the lighter loads are powered from the batteries via the inverter.

The PS System controls the generator, battery, battery charger and inverter in a very efficient way - cutting fuel consumption, increasing the life of the generator and reducing maintenance.

When the PS System is added to a generator

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powering variable loads the increase in efficiency is dramatic. The PS System will provide the maximum amount of electrical power for every drop of fuel consumed with fully automatic operation giving electrical power all day every day.

Combined Heat and Power (CHP)

- Hot water for sinks showers and appliances.
- Hot water for space heating.
- Efficient and reliable.
- Recovers the waste heat that is a by-product of producing electricity.
- The recovered heat is already paid for.

The PS System can increase the efficiency of a generator dramatically during the 24 hour daily cycle. However engines still run hot and waste a lot of heat. For every 1kW of electrical power produced by a generator approximately 2kW is wasted in unused heat. 1kW carried by hot gasses through the exhaust pipe and 1kW into the water jacket dissipated by the fan cooled radiator.

If a large proportion of the wasted heat is recovered and used to provide hot water then the efficiency of the system can increase to more than 80%.

The recovered heat is a by-product of producing electricity and is already paid for. When the generator runs the recovered heat is used to heat water which is stored in a well insulated heat-store tank. The hot water is then available on demand through heat exchangers for space heating and hot water.

The 12kVA generator will produce about 22kW of hot water and the 18 kVA about 32kW.



HEAT DUMP & OUTPUT HEAT EXCHANGERS

Efficiency

The PS System is the most efficient generator control available providing electricity all day every day with the minimum of fuel consumption. The PS System integrated with the CHP option takes the efficiency up to another level cutting costs and reducing pollution. It is the most efficient and cost effective system available.

The PS System with the CHP option brings the cost of generating your own power off-grid significantly below the cost of electricity from a utility company.

Renewable Energy

The PS System has an input for renewable energy sources – wind turbines, solar PV and solar thermal. The control monitors the power coming from the renewable source and adjusts the engine run-time, reducing fuel consumption and pollution to an absolute minimum.

Power from the wind turbines and solar PV is used to recharge the system batteries.

When the batteries are charged the energy is diverted to special immersion heaters in the heat-store heating the water.

Heated water from the solar thermal is fed into the heat-store via a heat exchanger.



WIND TURBINE & CHP CONTROL

Powerguard On Site Facilities

The systems can be used with Powerguard on site facilities also housed in standard ISO containers comprising either standard or custom built:- canteen/rest rooms, toilets, showers, offices and meeting rooms. The facility blocks are placed adjacent to the power system and electrical and water connections are plugged in. Installation and removal is easy and straightforward.

The system is efficient and cuts fuel consumption and pollution.