

General Information

Powerguard MS Systems are complete standby systems. They are designed to automatically provide electrical power when the utility mains supply fails.

The MS System incorporates a charger, inverter, battery pack and control system. The charger keeps the battery pack fully charged. The inverter converts the power from the battery pack into 230 VAC similar to the normal mains supply.

The control monitors the mains power supply and when it fails the inverter is started and powers the load.

Threat To Electricity Supplies

Unfortunately it has become a real threat that the electricity supply will be cut off during periods of high demand. Either because there is not enough electrical power available or because the infrastructure is not up to the demand. In either case the user suffers the inconvenience of having their power cut off for hours at a time with very little or even no notice.

Recently in parts of London the electricity was cut off for two 4 hour periods during the normal working day. This causes major problems and a serious loss of business.

Guarantee The Supply

The usual way to guarantee the availability of power is by using an engine driven generator as a standby. However this is not always possible because of the difficulty of finding a suitable place to install it. Some of the problems are as follows: -

- **VENTILATION** - a 10kW generator gives off approximately 20kW of heat. The required ventilation can significantly increase the installation cost.
- **FUEL STORAGE** - diesel fuel gives off odorous fumes and will require special storage measures because of the risk of leakage and fire. If a petrol engine is used the problems of fuel storage are exacerbated.
- **NOISE** - This can cause upset even when the generator is enclosed in a sound attenuating canopy.

- **RUGGED & RELIABLE**
- **LONG LIFE**
- **EASY TO OPERATE**
- **SAFE OPERATION**
- **VERY EFFICIENT**
- **REDUCES COST**
- **SAVES MAINTENANCE**
- **USER TRANSPARENT**
- **LOW RUNNING COST**
- **VIRTUALLY SILENT**
- **NO FUMES OR SMELL**

■ **COST** - even though generators are competitively priced the installation can be expensive. This is because of the special siting requirements and the fact that they often have to be sited away from the load.

■ **SITING** - Although Powerguard have sited generators on roofs, in basements and in other more difficult places it is sometimes impossible to accommodate a generator in any circumstances.

Powerguard MS Systems are a viable alternative to an engine driven generator in many applications. They are rugged and reliable and will give a long trouble free service.

The load can be supported economically for a period of 4 hours or longer if required. This will cater for virtually all of the likely mains power failures and will in any event give a substantial extra time for normal working.

The price of purchasing a Powerguard MS System will sometimes exceed the price of an engine driven generator but the cost of the installation and the on-going maintenance costs will normally be much lower.

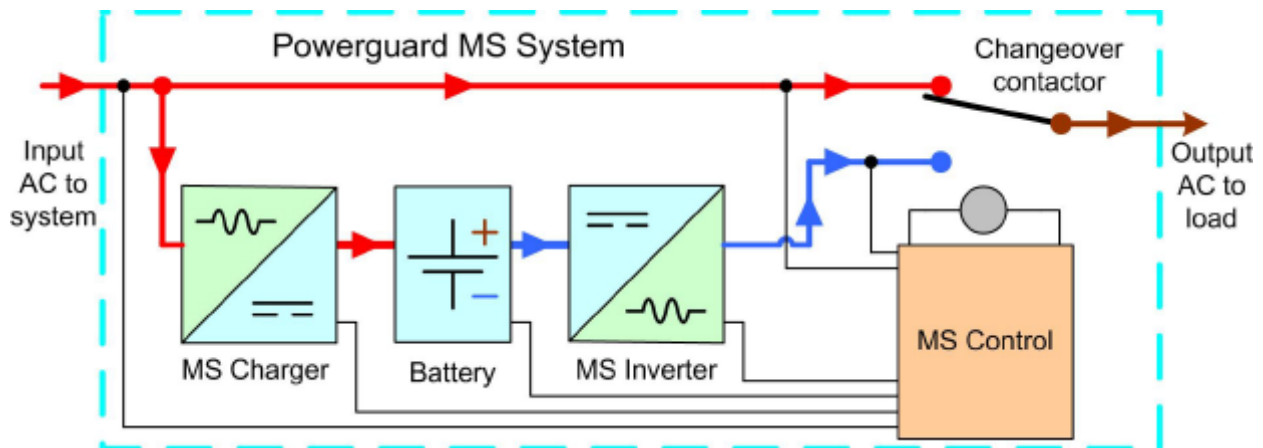
The system has a 25 year service life with minimal maintenance. The battery also requires minimum maintenance and has a service life of up to 20 years.

Emergency Lighting

Powerguard are the largest OEM manufacturer of static inverter emergency lighting systems in the UK. These systems have to be very rugged and reliable because they are used in critical applications where safety is the paramount concern. They are installed in hospitals, theatres, cinemas, office blocks, factories

and many other public buildings.

Powerguard MS Systems are based on our emergency lighting systems using the same inverters, chargers and batteries. The operation is very similar but the Powerguard MS Systems are optimised as mains standby systems and have a lower cost. They are over 98% efficient - a typical 10kW system only consumes 128W of power during normal operation.



Sketch showing a typical MS System block diagram

System Operation

The above sketch shows a typical MS System block diagram. The utility 230 VAC mains supply is fed into the system and feeds the changeover contactor and the charger. The path is shown by the red arrows. During normal operation the changeover contactor feeds the mains supply through to the load.

At the same time the charger is powered keeping the batteries fully charged.

If the incoming mains supply fails the control will operate the changeover contactor and start the inverter. The load will be fed with 230 VAC from the inverter which in turn takes its power from the battery. The path is shown by the blue arrows.

When the utility mains supply returns to normal the control operates the changeover contactor feeding the mains supply to the load. The inverter is switched off and the charger recharges the battery.

In the event of a complete discharge the control will shut the system down and disconnect the battery. This prevents damage to the battery caused by over discharge.

The microprocessor control monitors all of the system parameters and drives a comprehensive display on the front panel. Operation is completely automatic and does not require any operator action.

Charger & Inverter

The battery charger is designed to recharge a discharged battery up to 80% of its full capacity within 12 hours. This is important to give the level of protection required by our customers.

The charger is temperature compensated and is designed to ensure the batteries give long and reliable service.

The inverter is a well proven design with a large installed base. They are giving rugged and reliable service in many critical applications. The output can be short circuited for more than 5 seconds without shutting down and when the short is removed the load will power up as normal.

Powerguard MS Systems Range

MS Systems are available with power ratings from 100VA to 30kVA single phase and 3kVA to 100kVA three phase

The battery voltage is determined by the power rating of the system. Standard battery voltages are 24, 48, 108 and 216 VDC