

Solar PV Systems

Storage batteries cycle life

Solar PV Systems, are pleased to be able to offer help and assistance in obtaining the most from deep cycle battery storage equipment. Within this link you will find relevant information that will assist you in understanding the complexities involved in choosing the correct solar battery.

STORAGE BATTERIES

Solar batteries are available in many different formats; these are designed to allow the most convenient method of absorbing and distributing energy. The power that is generated needs to have a stable format in which to hold the energy for uses as and when are required by the specific task or need.

Batteries are designed to hold Amp hours in storage. The amp is the measurement that signifies power, so the higher the Ah capacity of a battery then the greater capacity that battery has to deliver. Batteries are calculated to discharge at a percentage of the capacity, therefore if this is exceeded the battery state will become reduced to a level that could damage the cells. Temperatures and age also reduce the capacity to hold energy sufficiently. Therefore the battery specification should when considering a suitable product, allow for temperature fluctuations high and low. It should be within the limits of charge control equipment and solar generators. This is then the initial calculation before allocating any make or battery type.

CYCLE LIFE

All batteries are measured in cycle life rather than years, this can be equated to years only if you can measure exactly and on which days the full cycle of a battery has been used. This is referred to as DOD or depth of discharge. You will find that different battery types, makeup's and manufacturers offer many different variations of the life. So by recharging your battery before it reaches 50% DOD will enable a much greater life,

CHARGE REGULATION

Batteries need to be regulated from over voltages caused by over charging. This creates problems with the internal makeup of batteries creating damage to cell structure. Ultimately distorting the internals, as this can also be identified when taking a battery below the minimum charge capacity. Caused by excessive discharge can render the battery to no longer hold its charge. It is therefore advisable to only use any battery with adequate charge and discharge regulation. In many cases every month the battery should be fully charged to equalise the voltage within.

solar-pv-systems.com

sales@solar-pv-systems.com

telephone: 01646 600151

BATTERY CONDITION

A battery is only as good as its surroundings. Batteries are designed to operate within certain boundaries. These include working temperature and purpose. To enable the battery to work correctly you should consider the size by at least 10% more as batteries are rarely 100% efficient due to the chemical within the electrolyte. Never let the battery fully discharge and sit without recharging sufficiently.

BATTERY BALANCE

As batteries should always be matched to avoid voltage drops, it is important to use same manufacturers and type. As well as this it is necessary to keep the Ah size of batteries the same. This will avoid one or more of the connected batteries being reduced to a lower level with the mismatch. If a battery has lost its equalisation, it can be measured by using a hydrometer. This is a device for interpreting the state of charge. If batteries are to be measured daily it is ideal to connect battery meters to provide a greater degree of accuracy.

BATTERY TYPES

General purpose batteries are often used in renewable energy storage. Unfortunately these are not designed for heavy discharging routines. Deep cycle batteries are used to preserve the cycle life of the battery. These are available in 2v, 6v, 12v & 24v. These contain lead internals that produce stored energy through a chemical process involving sulphuric acid. They require constant maintenance; this is done through adding distilled water level to the correct height on regular occasions. Other similar styles AGM batteries (asbestos glass mat) are also deep cycle and may contain a gel; these are sealed and will not require the same levels of maintenance during their life span. Most sealed battery types will not reach the same life cycles as lead acid batteries. Lithium ion batteries are becoming a much more desirable battery. This is down to the fact that they can on average last up to six times longer duration than other batteries. They offer a greater efficiency over a standard deep cycle battery, with much larger capacities of an equal size. These are lighter and have a much deeper duty cycle, delivering a much greater depth of discharge with higher performance in charging times.

Lead acid



AGM



Lithium ion

