

VRLA BATTERIES

A VRLA battery (valve-regulated lead-acid battery) is a low-maintenance, lead-acid rechargeable battery.

Because of their construction, VRLA batteries do not require regular addition of water to the cells.

They are further classified as:

- Absorbent Glass Mat Battery (AGM) (The electrolyte is absorbed into a mat of fine glass fibres.)
- Gel Battery (The electrolyte has been turned into a “gel” through the addition of Silica Gel and the antimony in the lead plates is replaced by calcium.)

They are colloquially known as sealed lead-acid batteries, but they always include a safety pressure relief valve, hence the name.

A VRLA battery cannot spill its electrolyte if it is inverted or broken.

Because VRLA batteries use much less electrolyte (battery acid) than traditional lead-acid batteries, they are also occasionally referred to as an "acid-starved" design.

They are recombinant batteries. This means that the oxygen evolved at the positive plates will largely recombine with the hydrogen ready to evolve on the negative plates, creating water and so preventing water loss.

The valve is a safety feature in case the rate of hydrogen evolution becomes dangerously high. In flooded cells, the gases escape before they have a chance to recombine, so water must be periodically added.

VRLA Batteries cannot be fast charged, but this is not usually a problem with renewable energy systems. In standby use they should be used with an electronic charge controller to prevent overcharge and possible damage to the battery.

AGM and GEL batteries for renewable energy systems

Batteries are a key component in a grid-tie with back-up or a stand-alone renewable energy system.

Both GEL and AGM batteries have low self discharge and do not degrade as easily as the common lead acid (wet cell) battery and they do not experience corrosion.

Because of the type of material used as the electrolyte, there is very little chance of hydrogen gas build up that can lead to an explosion. . They can be transported easily and safely and they can be mounted on their side or end and are extremely vibration resistant.

They are very safe batteries and are therefore ideally suited to solar PV, wind turbine or marine installations.

Outdo – Solar Collect Long Life GEL batteries

These are designed for use in daily cyclic renewable PV Solar energy applications in remote areas where reliable dependable electricity storage applications are required.

Their design life is in excess of 7 years and up to 10 years can be expected with proper use.

At least 3 days of storage capacity is recommended. Thus, if the daily use were 50 Ah, for a maximum discharge of 50%, a battery with a capacity of at least 300 Ah would be required.

It is recommended that the PV array be capable of recharging the system in one day.