Sealed Lead Acid (AGM) Battery Questions and Answers

Q. What is an AGM Battery?

A sealed non-spillable maintenance free valve regulated battery uses "Absorbed Glass Mats", or AGM separators between the plates. This is a very fine fiber Boron-Silicate glass mat. This type of battery has all the advantages of gel batteries, but can take much more abuse. Sealed AGM Batteries will not leak.

Q. What is sulfation?

Sulfation is the formation or deposit of lead sulfate on the surface and in the pores of the active material of the batteries' lead plates. If the sulfate becomes excessive and forms large crystals on the plates, the battery will not operate efficiently and may not work at all. Common causes of battery sulfate are standing a long time in a discharged condition, operating at excessive temperatures, and prolonged under or over charging.

Q. What causes sulfation?

1. Inadequate first charge or long interruption of charging.
2. Not charging the battery for a significant period of time.
3. Excessive charging or deep discharge with a small current.
4. Electrolyte density or temperature is too high therefore lead sulfate forms.
5. Electrolyte is not pure.
6. Internal short-circuit caused by the water on the surface of battery.
7. Plates become partially sulfated because of low level of electrolyte liquid surface.

Q. What is an amp-hour rating?

This is a unit of measurement for battery capacity, obtained by multiplying a current flow in amperes by the time in hours of discharge. (Example: A battery which delivers 5 amperes for 20 hours delivers 5 amperes times 20 hours, or 100 ampere-hours.)

Manufacturers use different discharge periods to yield a different amp-hour rating for the same capacity batteries, therefore, the amp-hour rating has little significance unless qualified by the number of hours the battery is discharged. For this reason amp-hour ratings are only a general method of evaluating a battery's capacity for selection purposes. The quality of internal components and technical construction within the battery will generate different desired characteristics without affecting its amp-hour rating. For instance, there are 150 amp-hour batteries that will not support an electrical load overnight and if called upon to do so repetitively, will fail early in their life. Conversely, there are 150 amp-hour batteries that will operate an electrical load for several days before needing recharging and will do so for years.

Q. What does the reserve capacity Rating mean and how does it apply to deep cycle Batteries?

Reserve capacity is the number of minutes a battery can maintain a useful voltage under a 25 ampere discharge. The higher the minute rating, the greater the battery's ability to run lights, pumps, inverters, and electronics for a longer period before recharging is necessary. The 25 amp reserve capacity rating is more realistic than amp-hour or CCA as a measurement of capacity for deep cycle service. Batteries promoted on their high cold cranking ratings are easy and inexpensive to build. The market is flooded with them, however their reserve capacity, cycle life (the number of discharges and charges the battery can deliver) and service life are poor. Reserve capacity is difficult and costly to engineer into a battery and requires higher quality cell materials.

Q. What is Battery Cycle Life?

One cycle of a battery is the discharge from full charge to full discharge and a return to full charge again. The total number of cycles a battery can perform before failure is called its cycle life. Please note that batteries designed for starting applications (cranking batteries) are not designed to be used in deep cycle applications.

Q. What is discharge efficiency?

Discharge efficiency refers to the ratio of actual power to nominal capacity when a battery discharges at the ending voltage in certain discharge conditions. It is mainly affected by factors such as discharge rate, environmental temperature and internal resistance. Generally, the higher the rate of discharge, the lower the discharge efficiency will be. The lower the temperature is, the lower the discharge efficiency will be.

Q. Does over discharging damage batteries?

Over discharging is a problem which originates from insufficient battery capacity causing the batteries to be over worked. Discharges deeper than 50% (in reality well below 12.0 volts or 1.200 specific gravity) significantly shorten the cycle life of a battery without increasing the usable depth of cycle. Infrequent or inadequate recharging can also cause over discharging symptoms called sulfation. Despite that charging equipment is regulating back properly, over discharging symptoms are displayed as loss of battery capacity and lower than normal specific gravity. Sulfation occurs when sulfur from the electrolyte combines with the lead on the plates and forms lead sulfate. Once this condition occurs, battery chargers will not remove the hardened sulfate.

Q. What determines the life of a VRLA battery?

Sealed lead acid battery life is determined by many factors. These includes temperature, depth and rate of discharge, and the number of charges and discharges (called cycles).

Q. What is the difference between Float and Cycle Applications?

A float application requires the battery to be on constant charge with an occasional discharge. Cycle applications charge and discharge the battery on a regular basis.

Q. What is the storage life of a VRLA battery?

All sealed lead acid batteries self-discharge. If the capacity loss due to self-discharge is not compensated for by recharging, the battery capacity may become unrecoverable. Temperature also plays a role in determining the shelf life of a battery. Batteries are best stored at 68°F (20°C). When batteries are stored in areas where the ambient temperature varies, self-discharge can be greatly increased. Check batteries at least every 6 months and charge if necessary.

Q. Are Sealed Lead Acid Batteries Recyclable?

All lead acid batteries are 100% recyclable. Lead is the most recycled metal in the world today. The plastic containers and covers of old batteries are neutralized, reground and used to manufacture new battery cases. The electrolyte can also be processed and cleaned and reprocessed and sold as battery grade electrolyte. In other instances, the sulfate content is removed as ammonia sulfate and used in fertilizers. The separators are often used as a fuel source for the recycling process.

To find out more about recycling, the applicable Federal and State laws and to locate battery recycling locations in your area, please visit the following websites:

https://earth911.com
By entering your zip code, this website will direct you to battery recycling locations in your area.

http://batterycouncil.org
This website will provide you with more information on the recycling process, and explain Federal and State recycling requirements and laws.