Lead acid battery chemistry explained

Lead acid battery chemistry explained

Lead-acid batteries can be first described by type or construction:

Sealed Valve Regulated or Starved Electrolyte batteries

Sealed Valve Regulated Lead-acid (VRLA) or starved electrolyte AGM or GEL types use a solution of sulfuric acid and water completely suspended into a gel-like material using silicate additives or absorbed into a woven glass fibre mat (AGM). There is no excess electrolyte to leak out even if tipped or turned upside down. This sealed nonspillable characteristic is a product of the construction and chemistry of the battery design.

Sealed maintenance-free and accessible maintenance-free flooded batteries

Sealed maintenance-free flooded and accessible maintenance-free flooded types use a solution of sulfuric acid and water that can spill out of the battery if tipped. Even though the sealed maintenance-free flooded batteries are not accessible, electrolytes will eventually leak out through the central degassing manifold vents if tipped. Some maintenance-free flooded batteries have removable filler caps making the battery accessible.

Maintenance required batteries

These 2V, 6V or 12V industrial, commercial, general-purpose deep-cycle and hybrid batteries use a solution of sulfuric acid and water that can spill out of the battery if tipped. These batteries generally require high levels of watering and maintenance.

Lead-acid battery chemistry

A battery can be described by the chemistry of the alloys used in the production of the batteries" grids or plates:

Lead-acid battery applications

Batteries can be referred to by the application they were designed for. These applications will range from pure starting to pure cycling or deep cycling and float service or standby/backup power (many application requirements are somewhere in between).

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