

Ventilation of Lead acid Batteries

Introduction



Ventilation is most important part of Lead acid battery before installation. Because when we used battery, it is very important to maintain its surrounded environment temperature and humidity and air quality.

- **Health safety** – The air must be free of pollutants that could be toxic, corrosive, and poisonous. And if there is no ventilation for passing the air it will affect our body and overall health. So, the ventilation plays important role in human health in the term of lead acid battery.
- **Fire safety** – The system must prevent and safely remove the accumulation of gasses that could be flammable or explosive. When battery getting heated it will generate lot of pressure and gas so that there is big risk of blast. That is why fire safety also necessary for safety purpose in lead acid battery.
- **Equipment reliability and safety** – The system must provide an environment that optimizes the performance of equipment (including both batteries and electronic equipment) and maximizes their life expectancy. When we use the equipment, it is important that instrument is properly maintained in working condition.
- **Human comfort** – It is very important where we are working the environment is clean and safe. When there is proper source of air ventilation in the surrounded environment then it is easy to work there.

There are mainly two different types of battery:

1. **Vented lead Acid Battery** are commonly called “flooded cell” or “wet cell” batteries because of their use of liquid electrolyte. As the name implies, this type of battery “vents” hydrogen continuously during normal float operation. The electrolyte is sulfuric acid diluted in water. Vented batteries are usually installed on open racks in dedicated battery rooms that have dedicated ventilation systems to prevent mixing with ventilation systems for the rest of the building.
2. **Valve Regulated lead Acid battery (VRLA):** As we know from the Valve regulated lead acid battery are famous for their long life and high efficiency. In VRLA battery there is no need to top up or maintain the cell gravity. In VRLA battery there is small crack or holes onto to the vent plug for passes the gassing. This kind of battery in the maintenance free lead acid battery.

There are different steps which following into the lead Acid Battery:

- **Charging:** Charging is the main part of Lead acid battery. During charging there is in large amount hydrogen gas will be releases due to recombination of electrolyte. More current we given it releases more hydrogen gas. So due to excess release of heat and hydrogen there we need proper ventilation in the room.
- **Discharge:** Batteries vent little or no gas during a discharge. High ambient temperature will cause more chemical reaction and longer run times, whereas low ambient temperature does the opposite. The battery generates little heat. However, the power electronics supported by the battery might run slightly hotter during a discharge. But there are no gas releases during discharging. To maintain the room temperature there is ventilation is very necessary.

Conclusion



In any space, hydrogen should not be allowed to accumulate to greater than two percent concentration of the total air volume in the space. Most regulations a maximum concentration of only one percent. The lower explosive level of hydrogen [The point at which hydrogen can combust] is four percent. (By comparison, the natural concentration of hydrogen in the atmosphere is 0.01%). Battery manufacturers should be able to provide exact gassing rate, charging voltage and charging currents for the type of battery installed.

(Note that gassing rates can vary significantly depending upon voltage applied to the battery, temperature, and atmospheric pressure).