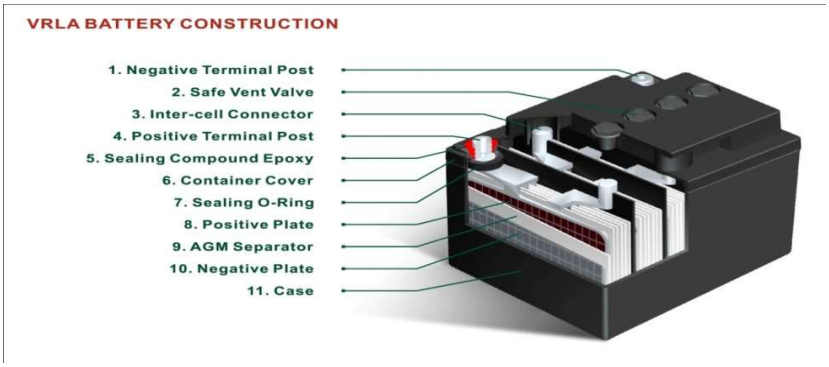
VRLA Battery

A VRLA battery (valve-regulated lead–acid battery), more commonly known as a sealed battery or maintenance free battery, is a type of lead–acid rechargeable battery.



Types of VRLA Batteries

Gel Cell - silica dust is added to the electrolyte, forming a thick putty-like gel. AGM Cell - "Absorbed Glass Matt", forces fiber glass mesh between the battery plates. *Both Batteries have deep discharge resiliency*

Principle of VRLA Battery

"Oxygen Recombination and Acid Starvation"

Under typical charging conditions, at positive plate oxygen is evovled and reduced before evolving of hydrogen from the negative plate. This action prevents the water loss. The Acid content present in VRLA battery is much lesser when compared to conventional Lead Acid battery.

Important checks to be carried out on VRLA Battery

a) **Effect on Temperature on VRLA Batteries**

The ideal storage and operating temperature of VRLA Battery is between 27·c to 32·c. If the temperature is more, the corrosion rate at positive grid increases. Every 10· C rise in temperature will reduce 50% life of the battery.

b) Storage Interval

Due to self discharge, the capacity of the fully charged battery will be reduced when at stored for long duration. Acid Stratification also takes place.

S.No	Temeperature	Maximum Storage Interval
1.	32'c	6 Months
2.	42'c	3 Months

If the battery is stored more than this period, the battery should be charged.

c) Battery Charger Setup

The charging method of VRLA battery is constant voltage charging method. The ideal parameters to be setup in the VRLA battery chargers.

S.No	Item	Nominal Required Value
1.	Float Charging Voltage	2.25 V X No. of Cell (2.25V X 24 Cell) = 54V
2.	Normal Battery Charging Current	10% of AH
3.	Maximum Battery Charging Current	20% of AH
4.	High Voltage tripping	2.37 V X No. of Cell (2.37 V X 24 Cell) = 57V
5.	Low Voltage tripping	1.75 V X No. of Cell (1.75 V X 24 Cell) = 42 V

Reasons for Pre-Mature Battery Failure

1. Excessive Cycling
2. Improper Charging Methods
3. Poor Temperature Control
4. Operational Errors
5. Manufacturing Deficiencies
6. Installation Errors

Do's and Don'ts

Do's

1. Store and Install the batteries in cool and dry location.
2. Check the tightness of the terminals periodically.
3. Check the parameters of battery charger charging setup regularly.
4. Monitor the temperature of room condition.
5. After discharge, charge the battery immediately.
6. If battery is stored for long duration, it should be charged after 6 months.
7. Maintain the service record as per instructions.

Don'ts

1. Don't exceed the charging voltage.
2. Don't expose the battery in Rain or sunlight.
3. Don't attempt to dismantle the battery in working condition.
4. Don't open the battery valve.
5. Don't install the battery in varying room temperature.
6. Don't install different AH capacity of the battery.
7. Don't make tap connections.
8. Don't over tighten the terminals.

1) **Record the following Parameters of VRLA Battery at Lab.**

Maintenance Chart of VRLA Battery (As per Lr.No.SG.99/I dt.27.7.12 by CCE/MAS).

Station Name: Date:

Input AC Switch OFF Time:-

Discharge Hours :- 3 Hours

Battery	Cell -1	Cell – 2	Cell -3	Cell -4	Cell -5	Cell – 6	Battery Voltage
I							
II							
III							
IV							
Total Voltage after Discharge							

Any Cell Voltage below 1.8VDC :-

Input AC Switch ON Time:-

Charging Hours :- 1 Hour

Total Bank Voltage after Charging one Hour :-

Battery Charger Testing:-

a) Input AC Voltage :- _____
b) Battery Charging Current :- _____
c) Load Current :-_____
d) SMR I :- _____A/_____VDC
e) SMR II :- _____A/_____VDC
f) Float Charging Voltage Setting :-_____
g) High Voltage Disconnect :-_____
h) Low Voltage Disconnect :-_____
i) Room Temperature :- _____
j) Any Alarm indication :-_____

2) Constant Voltage Method of charging used in VRLA Battery
3) SMPS Charger to be provided and charger setting to be done.
4) Three Stage system consisting of fuse, GD Tube and MOVR shall be provided in the input power supply side for equipment protection.