Atlas Batteries

Glossary of useful terms

A

[Active Material] This refers to the positive and negative plate pastes that provide energy from a battery when it is discharged. For a lead-acid battery, the positive active material, or PAM, is lead dioxide; the negative active material, or NAM, is sponge lead.

[Ampere-hour] The value is used to define the capacity of the battery. It is current in amperes, multiplied by the time in hours, during which current flows from the battery.

[Available Capacity] The capacity available from the battery based on its state of charge, rate of discharge, ambient temperature and specified cut-off voltage.

C

[Capacity] The electrical energy available from a cell or battery expressed in ampere-hours. It refers to the discharge of a constant current in a specified time to a specified cut-off voltage (normally 1.75V /2V cell) at a specified temperature.

[Capacity Recovery] Also called recoverable capacity. This is the discharge capacity that can be restored to a cell or battery through various treatments when it has dropped to very low capacity levels.

[Cell] The minimum unit of the battery. The nominal voltage of a cell of the Lead-Acid Battery is 2.0V. Most batteries are made of 2 or more cells. Typically 3 cells for a 6Volt, and 6 cells for a 12Volt battery.

[Charge] The process of restoring electrical energy to a cell or battery, in the process increasing the cell voltage.

[Charge Efficiency] Ratio of the ampere-hours delivered during discharge divided by the ampere-hours put into the battery during recharge.

[Constant Voltage Charge] One of the charge methods which uses voltage limitation. When the discharged battery is charged by this way, the charge current is reduced automatically according to the state of charge. This is the most recommended charge method for VRLA batteries.

DIESEL WORLD LTD.
Atlas Batteries
Atlas Building, 100, Royal Road, Coromandel
Tel: 233-0697 | Fax: 233-0090
Email: sanjayj@dieselworldltd.com | Web: www.dieselworldltd.com

[Constant Current Charge] One of the charge methods which uses current limitation. According to the charge time, some fixed amount of capacity is charged. Therefore this charge method requires the presence of devices which prevent overcharge such as a timer etc., for VRLA battery.

[Cut-off Voltage] The final voltage of a cell or battery at the end of charge or discharge.

[Cycle] A single charge and discharge of a cell or battery.

[Cycle Life] The number of cycles a cell or battery provides before failure.

[Cycle Use] A method of using a secondary battery repeatedly by charging and discharging.

D
[Deep Discharge] The discharge of a cell or battery to 80-100% of its rated capacity.

[Depth of Discharge] Frequently expressed as a percentage. It is the amount of capacity removed
from a cell or battery during discharge.

[Discharge] The function of removing current from a cell or battery.

[Discharge Rate] Normally expressed as a fraction of C: it is the rate at which current is taken from a cell or battery.

[Discharge Voltage] The closed circuit voltage of a battery during discharge.

E
[Electrode] The positive or negative plate holding the active materials in the cell.

[Electrolyte] Conducts ions in the cell. Lead-Acid Batteries use sulfuric acid solution.

F
[Float] Maintains full capacity in a cell or battery by applying a continuous charge. In this instance, the load is connected to the battery and current is provided from the charger.

G
[Gelled Electrolyte] Refers to a type of VRLA cell or battery where the electrolyte is immobilized in a gel made from fumed silica, said gel then contained within a coarse glass mat or microporous separator matrix. This gel mat serves as the separator in the VRLA cell in place of the more common glass microfiber material.

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H

[High-rate Charge/Discharge] Charge / discharge processes that are carried out at relatively high current densities, with the multiple of C rate depending upon the battery design.

I

[Internal Impedance/Resistance]A measure of a cell's electrical resistance to current flow, resulting in small or large voltage drops and some level of resistive heating. Impedance (AC) and resistance (DC) values are proportional but different, resulting from differences in measurement methodology.

[Internal Short Circuit]Positive plates and negative plates touch inside of the cell.

L

[Life] The maximum time period battery can longer be used before it loses its characteristics.

[Load] A device or mechanism external to a battery, and which is powered by the battery. The resistance of the load and the battery voltage dictate the current flow rate, and thus the run time for the battery.

M

[Maintenance-Free] Secondary cells that are not sealed require periodic addition of water. Sealed Lead-Acid Batteries do not require such maintenance. Therefore they are called "maintenance free".

N

[Nominal Voltage] A nominal value to be used to indicate the battery voltage; for the Sealed Lead-Acid Battery; the nominal voltage is 2V / cell.

O

[Open-Circuit Voltage] The measured voltage of the cell or battery without a load attached.

[Overcharge] The continuous charging of a cell after it achieves 100% of capacity. The battery life is reduced by prolonged over charge.

[Overcharge Current] The charge current supplied during overcharge. Batteries can accept continuous overcharge at recommended rates and temperatures.

Q

[Quick Rechargeability] The ability of quick charge acceptance of the batteries. Quick recharge requires not only good charge acceptability but also safety devices such as thermostat, timers, etc.

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R

[Rated Capacity] The manufacture's rated capacity of the cell (see capacity).

[Refresh Charge] A recovery charge which is done periodically for recovering the lost capacity of batteries due to self discharge.

S

[Secondary Battery] A battery that can be charged and discharged repeatedly. Example: Lead-Acid Batteries, Nickel Cadmium batteries.

[Self-Discharge] The loss of capacity by a battery while in the stored or unused condition. The rate of self-discharge is affected by ambient temperature.

[Separator] The material separating the electrodes. Used to hold the electrolyte. Normally glass fiber is used.

[Shelf Life] The life of a battery when stored in the unused condition.

[Stand-by Use] A method of using secondary batteries in which the battery is constantly charged so that it is always ready for use.

U

[UL] Term for Underwriters' Laboratories, a standards and testing agency for batteries that may be used in consumer applications in the U.S. There are a large number of standards for various consumer devices and anyone wishing to have batteries in these devices must first obtain UL approval.

[UPS] Uninterruptible Power Supply.

[Undercharging] This is a situation where the charge put back into a battery after a discharge is not sufficient to fully charge it , given a certain amount of overcharge necessary for the product. It leads to rapid loss of capacity in cyclic duty and on float using too low a charge voltage can actually result in partial discharge of one or both plates during charge. Because of the tendency to treat them too delicately, undercharging is a common source of VRLA battery failure.

V

[Valve-regulated (Cell or Battery)] Term for a lead-acid battery employing oxygen recombination technology, either glass mat or gelled electrolyte, and which contains a pressure-relief valve to vent gases, primarily on overcharge. Common usage acronym is "VRLA", standing for Valve-Regulated Lead-Acid. Formerly called sealed lead-acid, SLA.

[Vent] Pressure-relief valve in a cell or battery that allows for the escape of gases at some release pressure but does not allow any level of gas ingress.

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[VRLA] Valve Regulated Lead-Acid .

Car battery : A car battery is a plastic box divided into six cells that is filled with an electrically conductive sulfuric acid solution called an electrolyte. This chemical interacts with the battery's electrodes, or metal plates containing lead and lead oxide, to produce 12 volts of electricity.

The car battery has three basic tasks. First, it provides the initial power to start the engine of a car. Second, it keeps itself recharged and generates power when the car's engine is not running. Lastly, it can maintain a low current to power the lights, horn and other electrical devices for a short period.

CCA====The rating used to define a battery's ability to start an engine in cold temperatures is called Cold Cranking Amperage (CCA). The CCA of an auto battery is the amount of current a given battery can deliver for 30 seconds at 0 °F (-18 °C) without dropping below 7.2 volts for a 12 volt battery. To find the power of a car battery we multiply the CCA number by 7.2 volts. For example,

P = IV
P = (600 A)(7.2 V)
P = 4320 W

Most modern cars require relatively low cold cranking amps that range from 400 to 600. Sports cars and light trucks require higher cranking amps ranging from 700 to 1000 A

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