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UPS SYSTEMS BATTERY MAINTENANCE TIPS

The weak link in a standby battery based emergency backup system is the battery. Storage battery failures cause more down time and service calls on UPS systems than any other component. Buying the best battery for your intended use is the first step to success, regular monitoring and preventative maintenance is the next step in making sure that backup power systems are ready and able to support today's mission critical environment when the need arises.

Quarterly Maintenance Tips

- Check battery water levels (wet cell).
- Listen for the "sizzle" discharge from the battery, this is not good.
- Look for corrosion on every connection.
- Inspect for post seal leaks, improper handling or unsupported cables can damage post seals.
- Look for any distortion in the battery cases, indicating possible melting from within.
- Check voltage readings on each cell, typically each cell should be reading 2.5 volts.
- Check total voltage for each string and verify that it is within specifications.
- Wet cells with low voltage readings (2.2 or less) should have their string put on an equalizing charge for 100 hours. After completing the charge verify that the batteries are up to proper voltage.

Periodic Maintenance Tips

- Check all buss connections for proper torque.
- Make sure your battery vendor provides you with a detailed report with readings and issues found along with corrective actions needed.

Battery Maintenance or Replacement

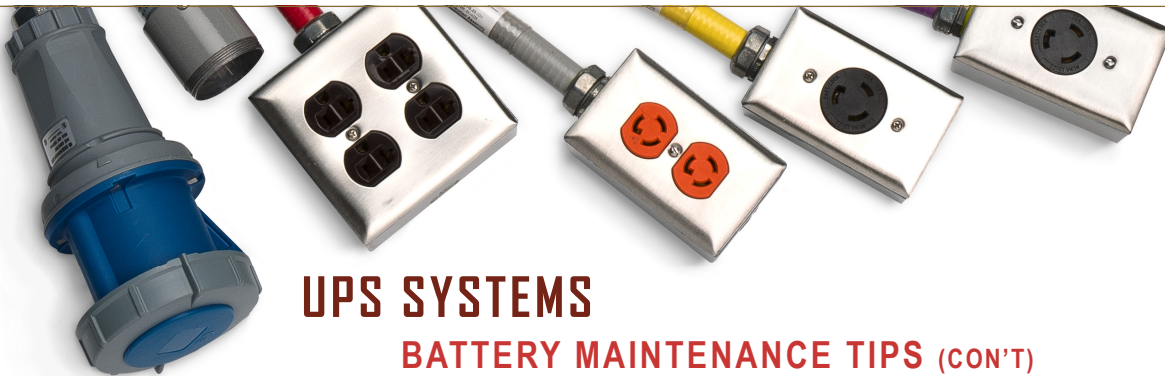
When you consider business disruption, lost revenue and the impact on user productivity associated with an unplanned outage, it's easy to understand how the average downtime event can cost a business thousands of dollars each minute of the occurrence. Even though batteries are expensive, when you consider the frequency of outages being caused by battery failure and the overall cost of downtime in a data center, monitoring, maintaining and replacing batteries is a cost effective method of guaranteeing uptime.

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UPS SYSTEMS

BATTERY MAINTENANCE TIPS (CON'T)

General Tips

- Batteries are sensitive to room temperature, with the optimum temperature of 77 degrees Fahrenheit. Keep several sensors in the room that report to a monitoring station if the room gets too hot or cold. A 15 degree change in temperature, either hotter or colder, will trim the batteries capacity by 10%.
- Keep an eye on battery discharge status, if a battery isn't recharged within 24-48 hours it can impact its service life.
- Overly discharging a battery could affect its ability to recharge and lead to permanent damage.
- Deeper discharges shorten battery life more than shallower discharges.
- Excessive discharge cycling as part of system testing can dramatically shorten a batteries life.
- Do not place batteries near radiant heat sources, or expose them to direct sunlight.
- Maintain and charge extra batteries on a separate rack, so when you find problem batteries you can replace them right away. It can take some time to get replacements.
- When buying new batteries, purchase extras from the same vintage, these will integrate into the string better.
- When buying a new UPS system have the UPS manufacturer purchase the batteries. UPS manufacturers recommend or certify battery manufacturers and battery types for their UPS systems. This way if a problem surfaces, there shouldn't be any finger pointing.



- Be aware that when you stack batteries on top of each other; each row will be at a progressively higher temperature than the row below it because the battery above is being heated by the battery beneath it.
- Use proper protective gear when handling batteries.
- Never lift or handle batteries by their posts.
- Be careful of the use of chemicals or solvents around batteries.
- Always use proper insulated tools when working with batteries.

Without proper preventative maintenance, a UPS system will deteriorate and expose a data center to possible outages and equipment failure. By performing regular preventative maintenance your UPS system should perform as intended and help to protect sensitive equipment and maintain uptime.

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Ken Koty, former data center facilities manager with over 30 years of hands-on experience shares management practices that made him a 12 year award recipient for continuous uptime from the Uptime Institute. PDU Cables does not guarantee the results of outcomes by using information contained in this document.