

# Battery Maintenance

Preventive and Predictive Maintenance

## Benefits

### Protect Your Power System

Industrial and commercial facilities and power plants depend on electrical power to drive operations. Reliable power depends on the availability of both the AC and DC power systems.

Your DC power system supports many critical applications within the AC power and protection and controls systems. It also supports emergency power, uninterruptible power supplies, local energy storage and telecommunications.

In the event of a power failure or outage, your electrical power system is only as strong as its weakest link and arguably, the DC system batteries are considered the most critical, yet vulnerable components in the electrical power distribution system. In fact, battery failures remain a leading cause of load loss. Still, many users do not have a regular preventive maintenance or predictive monitoring program in place for their battery systems.

A comprehensive battery maintenance program with regular inspections, coupled with battery capacity testing and continuous monitoring, helps maximize your total system reliability while extending the useful life of your batteries.

### Benefits

- Maximize system reliability
- Identify weaknesses in advance of failure
- Increase battery service life
- Improve mean time between failures (MTBF)
- Comply with regulatory requirements



## Ensure optimum electrical power system reliability and compliance with a comprehensive battery maintenance program

DC system batteries need to be maintained properly. The failure of a single cell in a string can compromise your entire power protection system causing significant damage, as well as loss in productivity and profits. Routine maintenance services help minimize your risk of downtime and ensure business-critical continuity. Battery maintenance services provide cost-effective solutions for inspecting, assessing, and maintaining the health of your batteries.

High Voltage Maintenance (HVM) has a highly qualified team of DC power specialists and technicians certified by the InterNational Electrical Testing Association (NETA). They have the knowledge and experience to coordinate a comprehensive DC power system maintenance program with your total power chain management plan.

As a NETA Accredited Company, we provide unbiased testing and maintenance services. We also assign you a dedicated team, outfitted with the latest test

equipment and proprietary data collection system, to safely and accurately deliver the highest level of quality service while working on your DC system batteries. Our technicians are well-versed in today's complex regulatory requirements from the Institute of Electrical and Electronics Engineers (IEEE), the North American Electric Reliability Corporation (NERC) and NETA. We design battery maintenance plans that meet or exceed those requirements.

Our comprehensive battery maintenance services include:

- Inspections
- Maintenance testing
- Battery charger maintenance
- Capacity testing
- Battery monitoring
- Mobile DC power services

## Preventive Maintenance Services

A comprehensive preventive maintenance program for your batteries is one of the most important investments you can make to ensure the reliability of your power system and prevent costly downtime. An effective program should include regular inspections, thorough and well-documented testing, and proactive replacement planning to ensure your batteries are capable of supporting your critical operations when needed.

### Inspections

To meet your specific needs and ensure compliance with IEEE and NERC requirements, HVM conducts monthly, quarterly, and annual preventive maintenance inspections for all battery types, including valve-regulated lead-acid (VRLA or sealed), vented lead-acid (VLA or flooded), nickel cadmium (NiCad), and lithium-ion (Li-ion). Our DC battery specialists will recommend the ideal maintenance frequency for your system based on your battery type, environment, and the number of strings in your facility. Each inspection is designed to assess cell and string state of health, and to identify weak or failing batteries that need to be replaced.

### Maintenance Testing

Proper battery maintenance not only prevents unexpected failures, but can also extend battery service life to reduce the frequency or increase the interval between required replacements. Our battery maintenance services validate the condition of the battery and include resistance testing on battery strings and individual cells, a recording of float voltage measurements and gravity readings, and adjustment to connections and fluid levels as needed.

## Battery Charger Maintenance

As part of a complete battery solution, our technicians maintain your batteries, as well as the equipment that keeps your batteries working as intended. Our technicians will perform regular equipment inspections to ensure your batteries maintain the appropriate level of charge at all times. We examine interconnection cables, cell connectors, and other conductors for wear, contamination, corrosion and discoloration. Our battery charger maintenance service also includes inspecting racks for corrosion, cleanliness, and structural integrity.

## Predictive Maintenance Services

A predictive maintenance approach combines regular maintenance with capacity testing and monitoring, which is the best strategy for eliminating the risk of battery failure.

### Capacity Testing

Capacity testing is the most effective method available for determining a battery's ability to provide a reliable power source and to support the required load for a specific period of time. Our trained battery specialists perform all capacity tests per IEEE standards and manufacturer specifications. Tests include load testing with individual cell monitoring to check battery bank capacity. Test results identify when battery reserve is low, so you know when to replace a battery.

### Battery Monitoring

Using the Albér® monitoring system and qualified battery monitoring specialists to assess your battery strings around the clock increases mean time before failure (MTBF) by more than double when compared to preventive maintenance alone. Our 24x7 remote monitoring services help you detect and diagnose problems that may

otherwise go undetected such as leaking water, failing batteries, and more. Our services also include emergency service for rapid incident response, as well as monthly trending and reporting for better battery management.

### Mobile DC Power Services Unit

When facilities can't afford to compromise critical power, a mobile power solution that is safe and secure is ideal for performing DC system maintenance and capacity testing. With our Mobile DC Power Services Unit, our DC power specialists can confidently perform all required battery inspections, tests, and replacement services without risk of power dips or load drops.

## Summary

Your AC and DC power systems play an interconnected and equally critical role in ensuring the overall reliability of your electrical power system. Proper functioning DC system batteries are your last line of defense when it comes to protection and controls, and emergency and uninterrupted power for critical equipment. A properly functioning DC power system depends on a preventive and predictive battery maintenance program for extending battery service life and ensuring total system availability.

### Experts in Reliability

HVM's DC Power team offers unparalleled expertise in DC power system maintenance, providing consistent quality service while keeping you safe and compliant.

### Order Information

To learn more about HVM's Battery Maintenance services, please contact us at 1-866-HVM-TEAM or visit [HVMcorp.com](http://HVMcorp.com).