



Maintenance Inspection Scope of Work

Uninterruptible Power Supply (UPS) – Three Phase Systems

Semi-Annual Service Includes:

- Perform a temperature scan on all breakers, power connections, fuses and associated controls. Repair and/or report all abnormal readings.
- Perform a complete visual inspection of the equipment including subassemblies, wiring harnesses, contacts, cables and major components. Check air filters for cleanliness; clean or replace if necessary.
- Check module(s) completely for the following (if applicable):
 - Rectifier and inverter snubber boards for discoloration.
 - Power capacitors for swelling or leaking of oil.
 - DC capacitor vent caps.
- Check and evaluate alarm history activity.
- Record all voltage and current panel meter readings on the module control or the system control cabinet.
- Measure and record DC bus voltage, ripple voltage and ripple current.
- Measure and record harmonic trap filter currents.
- Inspect for proper cooling fan operation.
- Verify remote monitoring operation, if installed.
- Inspect general condition of battery plant if not specifically covered under the Maintenance Agreement.

Annual Service Includes Above, Plus:

- Check the inverter and rectifier circuits for burned or broken wires.
- Check all nuts, bolts, screws and connectors for tightness and heat discoloration.
- Check fuses on the DC capacitor deck for continuity (if applicable).
- Calibrate and record all electronic control circuits to system specifications.
- Measure and record all low-voltage power supply levels.
- Check operation of secondary power supply, if applicable.
- Adjust power supply output levels as required.
- Remove dust from circuit cards and other sensitive components and vacuum dust and/or debris from inside the system cabinet.
- With **client approval**, perform operational test of the system by transferring the critical load to bypass mode.
- With **client approval**, perform operational test of the system by removing input power to the UPS to discharge batteries.

Inspection Notes:

1. *Maintenance procedures may require the load to be transferred to Bypass mode.*
2. *Not all maintenance procedures above are applicable to each UPS brand/model.*
3. *It is recommended that the Annual Service be performed during the client's approved maintenance window.*
4. *An inspection service report will be posted to the client web portal within 72 hours of the inspections and reviewed with client. Urgent recommendations will be reported to the client immediately.*



Maintenance Scope of Work

Stationary Sealed VRLA Battery Systems

Semi-Annual or Quarterly Service Includes:

- Inspect the appearance and cleanliness of the batteries and the battery room. Clean normal dirt accumulation on cell tops.
- Measure and record the total battery float voltage and charging current.
- Visually inspect the jars and covers for cracks and leakage.
- Visually inspect for evidence of corrosion.
- Measure and record the ambient temperature.
- Verify the condition of the ventilation equipment.
- Verify the integrity of the battery rack/cabinet.
- Measure and record representative cell temperatures.
- Measure and record the float voltage of all cells.
- Measure and record the internal conductance on all units
- Check the tightness of 10% of the inter-unit connectors, when unit can be taken off-line.

Annual Service Includes Above, Plus:

- Re-torque all battery connections to the battery manufacturer's specifications.
- Measure and record all battery connection resistance in micro-ohms, if applicable.

Corrective Service Performed as Required:

- Refurbish cell connections as deemed necessary by the detailed inspection report.
- Clean all battery terminals and jumpers as necessary.

Inspection Notes:

1. *Annual and Corrective Service procedures may require the battery string to be disconnected from UPS with critical load unprotected if only a single string exist.*
2. *Not all maintenance procedures above are applicable to each battery system or brand*
3. *An inspection service report will be posted to the client web portal within 72 hours of the inspections and reviewed with client. Urgent recommendations will be reported to the client immediately.*