

## Flooded Cell Battery Maintenance Statement of Work – Monthly PMs

### SCOPE OF WORK

GE Zenith Controls, Inc. – Power Quality Services will provide a field service engineer to perform “Scheduled Battery Maintenance Services” to assist Customer in the care and maintenance of stationary batteries used and operated in conjunction with an uninterruptible power system (UPS) or battery charger system.

### TERM

Provisions of this Statement of Work shall remain in effect for the period indicated on Appendix I of this Agreement. Battery maintenance does require the Customer to remain active in the day-to-day routines recommended by the battery manufacturer.

### CUSTOMER GUIDELINES

Once a month, check and record the following conditions:

- a. General appearance of battery cells.
- b. Cracked or leaking cells.
- c. Any signs of corrosion at the terminals and/or connectors.
- d. Ambient temperature of room.
- e. Record of power failures, shutdown and / or other uses of batteries and time and load run.

### SITE ACCESSIBILITY

The GEZ-PQS field service engineer shall have reasonable access to the site and to all Customer battery maintenance records.

### LIMITATIONS

By performance of battery maintenance as set forth in the terms of this Agreement, GEZ-PQS makes no additional or extended guarantees, warranty or representation either expressed or implied with respect to the batteries, the quality of the material, equipment, or workmanship in the products in connection with any guarantee, warranty or representation as may have been applied in favor of the Customer at any time or otherwise by the battery manufacturer.

Replacement of cells, parts such as inter-cell connecting hardware, straps, cables and/or corrective maintenance shall be resolved under the applicable terms and conditions of the battery manufacturer’s warranty provisions related to defects in materials and workmanship. Any applicable cell and parts removal and installation, and/or corrective maintenance performed by GEZ-PQS will be billed in addition to the Agreement price on a time and materials basis unless otherwise stipulated under Appendix I, Equipment Service Schedule.

**EQUIPMENT COVERAGE: SEE APPENDIX I**

**ANNUAL CHARGE: SEE APPENDIX I**



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### SCHEDULE MAINTENANCE PROCEDURES

The following battery maintenance tasks will be performed by GEZ-PQS.

1. Review Customer battery maintenance logs and make entries into customer logs.
2. Safety Checks:
  - a. Warning / hazard labels.
  - b. Operational information, placards, and labels for operation.
  - c. Eye wash and deluge shower.
  - d. Goggles, gloves and apron.
3. Provide inspection report with recommendations to Customer for any additional maintenance.
4. **Once a month**, check and record the following conditions:
  - a. General appearance of battery cells.
  - b. Cracked or leaking cells.
  - c. Any signs of corrosion at the terminals and/or connectors.
  - d. Ambient temperature of room.
  - e. Record of power failures, shutdown and/or other uses of batteries and time and load run.
  - f. Review battery maintenance logs and make entries into customer logs.
  - g. Safety Checks:
  - h. Warning / hazard labels.
  - i. Operational information, placards, and labels for operation.
  - j. Eyewash and deluge shower.
  - k. Goggles, gloves and apron.
  - l. Measure and record the total battery float voltages.
  - m. Measure and record the pilot cell voltage, specific gravity and temperature of at least one cell per tier.
5. Perform **quarterly** preventive maintenance inspections as follows:
  - a. Measure and record each cell float voltage and total battery voltage using a calibrated digital voltmeter with a minimum four (4) decimal place reference.
  - b. Measure and record specific gravity (corrected to 77 degrees F) on all cells.
  - c. Record electrolyte temperature on every 10<sup>th</sup> cell and monitor the same cells over a one (1) year period.
- d. Visually inspect conditions and appearance of the following:
  1. Cell electrolyte levels.
  2. Connection terminals, intercell unit connectors, cables and associated hardware.
  3. Cell elements.
  4. Cell covers, containers, post seals, gravity tubes, safety vents, and flash arrestors.
  5. Battery racks.
6. In addition to the above maintenance the **annual** inspection will include the following:
  - a. Measure and record each intercell terminal and cable connection using a micro-ohmmeter to verify that the connection resistances are within 20% of the average contact resistance.
  - b. Re-torque all battery electrical connections to manufacturer's recommendations.
  - c. Clean and neutralize all accessible cell surfaces and add battery manufacturer's approved water to the battery cells as required to maintain electrolyte levels between high and low level marks.
  - d. Verify the integrity of the battery rack hardware.
  - e. Measure and record or check the following:
    1. Measure and record every cell terminal voltage.
    2. Measure and record total voltage per cabinet/rack.
    3. Measure and record ambient room temperature.
    4. Measure and record charger current and voltage output.
    5. Check jar and cover for signs of leakage.
    6. Check for corrosion on terminal post or connector.
    7. Check for general appearance and cleanliness of battery room.

### BATTERY DISCONNECT:

1. Verify the amp rated Battery disconnect.
2. Verify from the rectifier systems what is the incoming amps going to the Battery disconnect.



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