

# GUIDEFORM SPECIFICATION FOR BATTERY MONITORING

The following specification is intended for use by consulting engineers to provide bidding specifications for products with the quality and performance characteristics provided by Power Systems & Controls' product listed above. The same specification can be used as a description of the listed Power Systems & Controls' product by substituting "provides" for "shall provide" or similar wording.

This specification is indexed according to the commercial standard instructions format and without this cover page has no reference to a particular vendor or product.

## **BATTERY MONITORING SYSTEM**

### ***A. General Requirements:***

Provide a Battery Monitoring System which shall monitor, display, and record the battery String Voltage, jar Voltage, battery discharge Current, Temperature both ambient and at the jar, Impedance, Ripple, Ground Fault, Hydrogen (Optional), and Discharge Events. An Alarm shall be provided for fault conditions.

### ***B. Applicable Documents - The following documents apply to the specified equipment to the extent defined herein***

1. National Electrical Code, NFPA 70-1993
2. American National Standards Institute (ANSI)
3. NEMA Publications Number PB-1 and MG-1
4. IEEE Standards 45
5. Occupational Safety & Health Act (OSHA)
6. Local Codes & Authorities having jurisdiction for this installation

### ***C. Related Work - The System shall be installed in accordance with the manufacturer's recommendations***

### ***D. System Description***

System shall include a controller capable of setting all parameters without any additional equipment. Unit shall also be capable of ethernet connection for central monitoring and controlling the system.

Controller:

- Controller shall allow the following without any additional equipment:
- a. Assignment of a unique ID for each unit
  - b. Network connection to a PC or Local control only
  - c. Module Display on/off

- d. Modules Display changes between off, voltage, ID, jar temperature and current
- e. View details of Discharge events
- f. High and Low jar Temperature, Voltage and Milliamps reading
- g. Ripple reading
- h. Ground Fault reading
- i. Number of Events with details
- j. Adjustment of all parameters for warnings and faults

**Module:**

Unit shall include a module for each jar with a display capable of showing the jar Voltage, Millivolt, and/or jar Temperature. Each module shall be capable of showing colors indicating the set tolerance. Green for within set tolerance, Yellow indicating out of tolerance warning, and Red indicating attention in required.

Module shall have fused connections to jar and shall be connected by a quick connect terminal. No other connections shall be required.

**Data Collector:**

A Wireless Data Collector (DACM) shall be provided for the collection of data transmitted from the modules and transmitting data to the Controller/Cyclemeter thru the use of a CAD5e cable

Each DACM shall be capable of being connected in series with other units as well as an optional Hydrogen Detector.

**Software:**

System shall include Windows based Software for use if desired. Software shall be capable of monitoring and controlling more than one controller string.

Software shall have the following features:

- a. Continuous monitoring of each controller parameters
- b. Control of each controller parameters
- c. Monitoring of all jars
- d. Trending of all data
- e. Printout of all data and faults
- f. Email capability for warning and out of limit parameters
- g. Storage of all measured faults

**E. Warranty** - The manufacturer shall state his warranty of the equipment. In no case shall it be less than 36 months after start-up or 40 months after shipment, whichever occurs first.

***F. Execution:***

1. Manufacturing
  1. The manufacturer shall design, build, test and arrange for shipment.
  2. The manufacturer shall prepare and deliver the required instruction manuals with the equipment.
2. Site Preparation - The owner shall prepare the site for installation of the equipment.
3. Installation
  1. The owner shall arrange for a factory qualified technician to install the equipment.
  2. The equipment shall be installed in accordance with local codes and standards.
  4. Field Start-up and Inspection - The equipment is to be checked out and started by the field service representative from the equipment manufacturer.
  5. Spares - A list of manufacturer's recommended spare parts shall be submitted with the manuals.