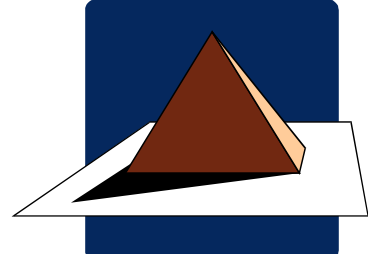


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“Service Measured To The Standard”

~ BATTERY SYSTEMS ~

What one item in our vehicles do we take for granted until it fails? It is the battery. Battery technology has reached a level of excellent performance and reliability. As the result of many of our vehicle improvements, maintenance intervals have increased from months to years between inspections. “Out of thought — Out of mind” can lead to complacency. Thus, one day the average owner will find their car will not start.

Industrial batteries are in many ways similar to our vehicle batteries. But, can you take an industrial battery for granted? They can fail at the most inopportune times. Has it happened to you? The majority of plant battery systems are used in important and critical services. During an emergency, will there be DC power for the UPS to supply your computer system? During an electrical problem, medium and high voltage breakers require battery power to trip. Without DC power, the affected power distribution center will not be isolated and an upstream breaker will trip. This upstream breaker may be the main breaker source to the plant.

Will you have DC power if there is a problem?

Conducting a battery system survey will identify and prioritize your battery PM program.

On the next page is a Summary Survey Data Form and a Maintenance Severity Rating Table for your use to evaluate the potential battery reliability issues in your plant.

The Summary Survey Data Form is a summation of information for each battery system and its severity rating. The Maintenance Severity Rating Table is a guide listing nine inspection categories. Based on the inspection, a possible rating ranging from 1 (for good or fair) to 5 (for critical service or repair condition) would be recorded for each category. Once the survey for a location is completed, the rating numbers are totaled and noted on the bottom of the Summary Survey Data Form.

After completing the inspection for all the battery locations, the totaled rating numbers can be used to prioritize the maintenance sequence based on the highest number(s). Wet cell batteries and dry cell batteries should be ranked as separate groups.

Disclaimer

Cornerstone Electrical Consultants, Inc. does not and cannot know all the facts of your particular situation, and, as such, the information provided herein is not intended to create any express or implied warranty to the reader. The content is for informational purposes only, and the reader's adoption and/or application is performed strictly at the reader's own risk. Cornerstone Electrical Consultants, Inc.'s clients and friends should conduct an independent investigation of the facts for their particular situations and exercise their own judgment as to the appropriate solution based upon the results thereof.

SUMMARY SURVEY DATA FORM

General Information				
Location				
Date				
Service				
Manufacturer				
Battery Type				
Number of Cells				
Voltage Rating VDC				
Present Voltage VDC				
Average ICV ¹ VDC				
Amp-hour Rating				
Present Load Amps				
Average Corr. S.G. ²				
Room Temperature				
Charger System				
Rating Information	1 - 5	1 - 5	1 - 5	1 - 5
Service				
Room Temperature				
Water Level				
Number of cells having Corr. S.G. .010 points or more below the average Corr. S.G.				
Number of cells having ICV .04 volts/cell below the average ICV				
Cleanliness				
Connections				
Charger Condition				
Last Service Date				
Total of Rating Numbers				

¹ Individual Cell Voltage (ICV) should be taken with a digital voltmeter.

² Cell specific gravity needs to be temperature corrected to 77°F. If electrolyte temperature is <75°F, subtract .001 for each 3° below 77°F. If electrolyte temperature is >79° F, add .001 for each 3° above 77°F.

MAINTENANCE SEVERITY TABLE

Category	1 Rating	3 Rating	5 Rating
Service	General Purpose	Important	Critical
Room Temperature	75°F ± 5°F	75°F ± 15°F	75°F ± 25°F
Water Level	Normal	Low Level Line	Plates Exposed
Number of cells having Corr. S.G. .010 points or more below the average Corr. S.G.	0-5% of the cells	5-10% of the cells	>10% of the cells
Number of cells having ICV .04 volts/cell below the average ICV	0-5% of the cells	5-10% of the cells	>10% of the cells
Cleanliness	Dusty	Dirty	Battery Salts
Connections	Clean	Corroded	Loose
Charging System	OK	Alarms	Failed
Last Service Date	3 months ago	6 months ago	12 months ago