

DC Power Systems Services

***We provide full-range services for DC Power Systems in the
ELECTRIC UTILITY and NUCLEAR POWER PLANT markets***



HM CRAGG
critical power +

HM Cragg is a highly qualified team of professionals who provide complete stationary battery and DC power system **engineering, procurement, maintenance, testing and installation support services** for new generation and operating power plants, and transmission and distribution substations. Our years of experience, combined with serving on industry code committees, makes us uniquely qualified to provide our stationary battery and DC power system services to **Nuclear Power Plant (NPP), Generation, Transmission and Distribution** owners.

Furnish Batteries, Battery Chargers, DC Distribution and Auxiliary Equipment

- + Class 1E qualified safety related for NPP
- + Switchgear and control
- + UPS
- + Communications



Battery and Battery Charger Replacements/Installations

Class 1E safety related for NPP and non-safety related or commercial grade for NPP BOP systems, fossil fuel and renewable energy generating stations, transmission and distribution substations.

- + Removal and installation
- + Testing and commissioning
- + Factory and acceptance witness testing
- + EPA compliant recycling
- + Project management and technical support

Testing Services

All testing is performed in accordance with the NPP licensee's technical specification requirements for Class 1E safety related batteries and with the recommended practices of IEEE Std. 450 for vented lead acid (VLA) batteries, IEEE Std. 1188 for valve regulated lead acid (VRLA) batteries and IEEE Std. 1106 for vented nickel cadmium (NiCd) batteries.

- + Battery acceptance test
- + Performance test of battery capacity
- + Modified performance test – Type 1, 2 & 3
- + Service test
- + Battery charger load test
- + NERC Std. PRC-005 compliance testing



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Preventative Maintenance Services

- + Class 1E safety related
- + Switchyard and substation batteries
- + BOP non-safety related
- + Battery chargers

DC Ground Fault Locating Services – “GROUND BUSTERS”

DC ground fault locating services provides location and elimination of unintentional low resistance field grounds that can potentially lead to unintended operation of plant and substation DC equipment on an ungrounded designed battery and DC power system resulting in plant and system transients and outages. Locating and elimination of grounds is performed without interruption of critical loads and circuits and is transparent to the operation of the critical DC power system.

Battery Monitoring Systems (BMS)

- + Furnish, install and commission
- + NERC Std. PRC-005 compliant

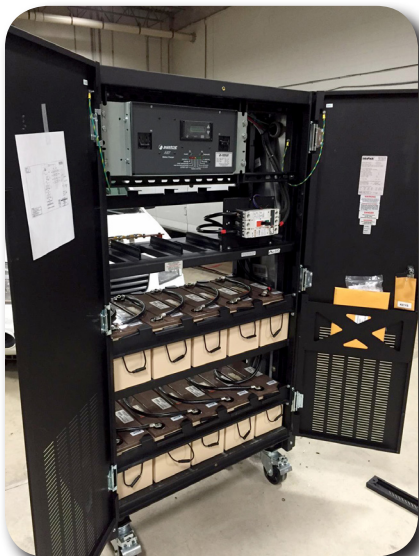
Engineering, Consulting and Training Services

- + Root cause failure analysis, investigations and studies
- + Maintenance and testing program development
- + Site audits
- + Energy storage and advanced battery technology evaluations, reviews and studies

- + DC power system design/specification/component selection
- + System performance and testing evaluations and studies
- + Code Compliance Evaluation

Mobile DC Power Systems

Provides reliable, temporary and emergency DC power source for unexpected loss of critical battery and for scheduled replacement/maintenance/testing of a battery system. Designed, engineered and built to meet the specification and system requirements of the customer.



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