

Critical Facility Solutions

24x7 Reliability—Essential for your success

- *Increase system reliability to "high nines"*
- *Eliminate unplanned outages and lost income as a result of downtime*
- *Ensure optimum system performance, efficiency and safety*
- *Single point solutions for every threat facing your critical facility*



Introduction

Continuous, clean and uninterrupted power is the lifeblood of every critical facility. When unexpected outages occur it can cost you millions in lost information, lost production, and lost customers. What if you could eliminate unplanned outages and increase system reliability to "high nines" reliability? You can. Consider the benefits of a customized 24x7 Critical Facility Maintenance Program

that addresses all three pillars of system reliability including design, operation and maintenance. Our 24x7 Critical Facility Maintenance Program consists of electrical testing, maintenance, and engineering services all designed to improve each aspect of system reliability. We provide single point solutions for every threat facing your critical facility's power system.

And, we execute them seamlessly ensuring that your entire facility is protected around the clock, 365 days a year.

Design

In order to provide continuous operation under all foreseeable circumstances such as power outages, equipment breakdowns and internal fires, the electrical system design must utilize the most advanced technology available to enhance system reliability. As part of Emerson's 24x7 Critical Facility Maintenance Program, our engineering and design services will help you evaluate your existing systems and components' design to ensure maximum system reliability. Our engineering and design services include:

- *System Reliability Studies*
- *Coordination and Short Circuit Studies*
- *Power Quality Studies*
- *Arc Flash Studies*
- *Grounding Studies*
- *Engineering Documentation*
- *Failure Analysis*
- *Maintenance Program Design and Review*

System Reliability Studies

Our technical team of professional engineers conduct a thorough assessment of your system's design to identify single points of failure within your system. They will investigate the number of redundancies designed into your electrical system

and determine the likelihood of a power interruption under normal or compromised power conditions. Upon completion of the assessment, we will provide recommendations on how to improve your system design to ensure continuous operation under all foreseeable circumstances.

Coordination and Short Circuit Studies

Coordination and short circuit studies are performed to evaluate the adequacy of your interrupting devices and to determine the proper selection and settings of all protective devices. These are performed to ensure that the protective device closest to the overload or short-circuit condition operates to isolate the failure as quickly as possible without disrupting power to other portions of the system.

Power Quality Studies

When dips, spikes, surges, or momentary outages occur, computers and other critical systems may malfunction, fail prematurely or shut down unexpectedly. Power quality studies including harmonic, load flow, and power factor studies are used to identify the source and nature of these disturbances or conditions and to identify solutions that will reduce total system loading and ensure optimum system performance and efficiency.

Arc Flash Studies

As many as 80% of all electrical injuries are caused by burns resulting from exposure to energy released from an arcing fault. As a result, the National Electrical Code now requires hazard labels, proper personal protective equipment, and personnel training. The arc flash study will provide recommendations for personal protective equipment, boundaries for limited, restricted and prohibited approaches, and recommendations for flash protection and safe work practices. Conducting an arc flash study will help ensure the safety of your personnel and compliance with all applicable codes and standards.

Grounding Assessment

Proper grounding is essential to ensure personnel safety and service reliability. Our technical services team can ensure your system grounding complies with code requirements, and that your ground fault protection is adjusted and functions properly.

Engineering Documentation

A comprehensive site survey is conducted to develop or update your existing single-line diagrams or complete electrical system drawings. These documents are essential for troubleshooting, future planning, and personnel safety and training. They can also make a difference between a short or extended outage.

Electrical Reliability Services

Failure Analysis

When a power system fails it is essential to identify the cause as soon as possible after failure, and take corrective action to prevent further occurrences. Our technical staff will investigate the problem and make recommendations to monitor or repair trouble spots.

Maintenance Program Design and Review

An optimized maintenance program evaluates the condition of your equipment and determines the most cost-effective and manageable solution to ensure your critical facility's overall performance, safety, and reliability. As part of our 24x7 program, we can work with you to design and implement a maintenance program that addresses planning, maintenance optimization, and information management to ensure the most reliable, mission critical environment.

Operation

The impact on reliability due to operations and other actions of personnel is significant. Evidence suggests that up to 80% of all reported site infrastructure failures are due to human error. With this in mind, we have designed our 24x7 program to assess your operational processes and provide customized solutions to improve the overall reliability of your electrical system. Our services include:

- *Training and Certification*

- *Documentation Support*
- *Event Record Keeping Program*
- *Spare Parts Inventory and Support*

Training and Certification

Through a complete on-site analysis of your facility, your team's current skill levels and your performance goals, we customize a performance-based program that is conducted on-site and specific to your equipment, operations and systems. Our site-specific programs deliver the most cost-effective instruction to ensure maximum skill transfer to your team.

Documentation Support

Procedures are especially important in critical facilities where a failure can cost you millions. We will work with your team to develop best practices and procedures to ensure the safe and reliable operation of your critical facility. Upon completion, we will provide a bound operating manual covering all aspects of your operation.

Event Management

One of the ways we assure performance is through effective, event [information] management. Continuous improvement in system reliability is dependent upon good event record keeping. Our technical staff can evaluate your current record keeping process and provide

recommendations for improvement—turning your experience into knowledge that works for you.

Spare Parts Support

Having the right parts on hand can mean the difference between minutes or hours of downtime. Our technical team will assess your systems and components and identify the critical spare parts required to keep your systems up and running 24x7. We can also assist you in locating obsolete or hard to find parts.

Maintenance

Electrical equipment deterioration is normal, but it does not have to lead to failure. Our predictive and preventive maintenance programs identify and recognize factors that lead to deterioration and provide measures for reversing those effects. We will help you increase the mean time between failures, decrease the mean time to repair, and stop problems before they start. Our maintenance services include:

- *Online Predictive Testing*
- *Standby and Emergency System Testing*
- *24x7 Emergency Services*

Online Predictive Testing

Our online predictive maintenance services can be performed while your system remains energized, eliminating costly shutdowns. By performing Partial Discharge Testing and Monitoring and Infrared/Thermographic scans, we

can help you identify when a failure may occur so you can plan an outage instead of dealing with an emergency.

Predictive Intelligence

Combining failure analysis data and predictive testing data, our technical staff can perform trending analyses and comparisons and provide truly predictive intelligence that transforms data into knowledge that you can use to target maintenance resources and prevent downtime.

Standby & Emergency Backup System Testing

Will your emergency and standby electrical power systems

function when you really need them the most? We will test and maintain your emergency equipment including generators, uninterruptible power supplies, batteries, and power transfer equipment to ensure that they will operate as intended under "full load" conditions for the length of time specified.

Emergency Service

To assist customers in resolving emergency situations, we offer 24x7 on-site emergency service within specified service areas. In addition, all service agreements include our toll free technical support hotline which provides free 24x7 access to our technical staff

Ordering Information

To learn more about this service and other Emerson Process Management solutions, contact your local Electrical Reliability Services sales representative office or visit us on the web at: www.assetweb.com/ers.

In the U.S., call 1-877-468-6384.

Emerson—Your Partner in Reliability

From installation to operation, only Emerson has the knowledge and experience to seamlessly integrate all the essential services to deliver "high nines" reliability required by today's critical facilities. Look to us as your partner. We'll be with you every step of the way with the right combination of technology, people, and services. Contact Emerson to realize the true potential of your assets.

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