ELECTRICAL RELIABILITY PROGRAM GUIDE

By G Power Solutions Inc.

Compliance & Reliability Partner for Power Generation & Critical Infrastructure

Houston • Texas • Gulf Coast Region

www.gpowerinc.com

INTRODUCTION

Electrical Reliability for Critical Infrastructure

Power generation facilities and critical infrastructure depend on reliable electrical systems to maintain safe operations and avoid costly downtime.

Failures in electrical infrastructure often develop gradually through deteriorating connections, insulation degradation, protection system issues, or missed maintenance intervals.

G Power Solutions, Inc. helps facilities detect these developing issues early through structured electrical reliability programs.

Our approach combines electrical testing, predictive maintenance, infrastructure assessments, and engineering insight to help operators maintain reliable electrical systems while improving compliance readiness.

These programs help facilities move beyond reactive repairs and implement long-term electrical reliability strategies.

Facilities that commonly implement reliability programs include:

- **Power generation facilities**
- **Data centers**
- **Utilities**
- **Oil and gas infrastructure**
- **Industrial facilities**
- **EPC infrastructure projects**

POWER SOLUTIONS,INC.

RELIABILITY PROGRAM APPROACH

Our Reliability Program Approach

Electrical reliability programs are designed to identify early warning signs of equipment degradation before failures occur. G Power Solutions, Inc. focuses on five core reliability pillars:

Infrared Thermography

Thermal inspections detect loose electrical connections, overloaded circuits, and failing components before they result in equipment damage or outages. Infrared thermography surveys are one of the most effective tools for identifying developing electrical failures.

Breaker Inspection & Testing

Circuit breakers are critical protection devices responsible for clearing electrical faults. Routine breaker inspection and testing helps ensure mechanical operation, trip functionality, and proper protection system performance.

Transformer Testing & Oil Analysis

Transformer testing and oil analysis provide insight into internal insulation condition and potential developing faults. Oil sampling can reveal early indicators of transformer degradation long before failures occur.

Ultrasonic & Corona Detection

Ultrasonic inspections help identify corona discharge, arcing, insulation tracking, and partial discharge in high-voltage systems. These conditions can exist long before they are visible during routine inspections.

Engineering & Commissioning Support

Engineering support services assist facilities with troubleshooting electrical issues, verifying system performance, and supporting infrastructure reliability improvements.

POWER SOLUTIONS,INC.

RELIABILITY PROGRAM STRUCTURE

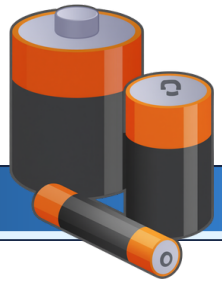
Electrical Asset Data Integration

Electrical reliability programs are typically implemented in stages to help facilities progressively strengthen infrastructure reliability.

Many facilities have electrical testing records scattered across multiple vendors and historical reports. G Power Solutions, Inc. helps consolidate these records into a centralized electrical asset database. This process establishes a complete historical record for each piece of electrical equipment and enables reliability trend analysis over time.

Benefits include:

- **centralized asset documentation**
- **historical testing data organization**
- **reliability trend analysis**
- **improved maintenance planning**



Baseline Electrical Reliability Assessment

The baseline assessment establishes an initial understanding of the condition of electrical infrastructure.

Typical assessment scope includes:

- **electrical infrastructure walkdown**
- **infrared thermography inspection**
- **breaker and switchgear inspection**
- **transformer condition review**
- **protection relay documentation review**
- **maintenance interval review**

The baseline assessment produces a reliability score and identifies potential reliability risks.

RELIABILITY PROGRAM STRUCTURE

Compliance & Reliability Program

Facilities often implement ongoing reliability programs following the baseline assessment. These programs combine periodic inspections, testing, and reliability reporting to maintain long-term infrastructure performance.

Typical program elements include:

- **annual infrared thermography survey**
- **electrical testing services**
- **predictive maintenance inspections**
- **reliability trend monitoring**
- **maintenance planning support**

Critical Infrastructure Reliability Program

Large facilities such as power plants and data centers often require deeper engineering support. Critical infrastructure programs provide long-term reliability oversight.

These programs may include:

- **reliability engineering consultation**
- **advanced diagnostics and troubleshooting**
- **outage planning support**
- **infrastructure reliability reviews**
- **long-term reliability planning**

POWER SOLUTIONS,INC.

ADDITIONAL SERVICES

G Power Solutions, Inc. supports electrical infrastructure reliability through a range of specialized services.

Electrical Testing

- medium voltage breaker testing
- low voltage breaker inspection
- switchgear inspection
- protective relay testing
- transformer testing and oil sampling
- battery system testing

Predictive Maintenance

- infrared thermography inspections
- ultrasonic inspection
- corona discharge detection
- electrical condition monitoring

Commissioning Support

- energization readiness verification
- electrical system startup support
- commissioning assistance
- outage support services

INDUSTRY STANDARDS AWARENESS

Electrical reliability programs incorporate maintenance benchmarking and reliability practices commonly referenced in industry standards.

These standards provide guidance for maintaining electrical infrastructure reliability.

Examples include:

NETA Maintenance Testing Specifications (MTS)

Provides maintenance testing recommendations for electrical equipment including transformers, breakers, switchgear, and protection systems.

NFPA 70B Electrical Equipment Maintenance

Provides guidance for maintenance planning and condition-based maintenance programs.

NERC Reliability Standards

Power generation facilities often maintain protection system maintenance programs and infrastructure documentation aligned with NERC reliability practices.

G Power Solutions, Inc. programs help facilities identify maintenance interval gaps and infrastructure reliability risks associated with these standards.

WHY FACILITIES PARTNER WITH G POWER SOLUTIONS, INC.

Facilities choose **G Power Solutions, Inc.** because our approach combines practical field experience with structured electrical reliability programs.

Our programs help operators:

- **detect developing electrical issues early**
- **improve electrical system reliability**
- **reduce unplanned outages**
- **strengthen maintenance documentation**
- **support power generation and critical infrastructure operations**

By combining electrical testing, predictive maintenance, and engineering insight, G Power Solutions, Inc. helps facilities maintain reliable electrical infrastructure.

Contact

G Power Solutions Inc.

Electrical Reliability Programs • Testing • Engineering Support • Commissioning

Email
sales@gpowerinc.com

Phone
(832) 780-4088 ext 402

Service Area
Houston • Texas • Gulf Coast Region

Download Electrical Reliability Program Guide