



Industrial & Commercial Facility Electrical Audit Guide

Ensuring Operational Safety, Efficiency, and Compliance

Industrial and commercial facilities depend on reliable electrical systems to maintain safety, efficiency, and compliance with NFPA 70E, NEC, and OSHA regulations. A well-maintained electrical system prevents failures, reduces downtime, and ensures regulatory compliance for government, military, and private sector contracts.

This guide outlines the key steps facility managers, plant engineers, and electrical maintenance teams must take to conduct a comprehensive electrical audit and maintain system reliability.

Power Supply & Electrical Infrastructure Inspection

- Inspect Main Electrical Panels & Distribution Boards – Ensure panels are labeled, secured, and free from overheating.
- Test Power Supply Stability – Measure voltage fluctuations, phase balance, and power quality to prevent equipment damage.
- Check Transformer Efficiency & Condition – Inspect for oil leaks, insulation breakdown, and overheating.
- Examine Circuit Breakers & Protective Devices – Ensure proper operation and replace degraded components.
- Inspect Grounding & Bonding Systems – Verify that all systems comply with NEC, OSHA, and MIL-SPEC standards.

Emergency & Backup Power Systems

- Test Backup Generators & UPS Systems – Conduct load tests and fuel quality checks to ensure reliability.
- Check Battery Backup Systems – Confirm battery charge levels and replace any outdated units.
- Inspect Surge Protection Systems – Ensure protection against voltage spikes and lightning strikes.
- Test Emergency Lighting & Exit Signs – Verify that all emergency lighting is functional and meets safety regulations.

Electrical Safety & Code Compliance

- Review NFPA 70E & NEC Compliance – Ensure facility meets arc flash safety, PPE requirements, and labeling standards.
- Inspect Electrical Wiring & Insulation – Identify frayed or exposed wires, loose connections, and overheated insulation.
- Check Panel Labeling & Single-Line Diagrams – Ensure all electrical infrastructure is properly labeled and documented.
- Assess Lockout/Tagout (LOTO) Procedures – Ensure personnel follow OSHA energy control regulations.
- Infrared Thermal Scanning – Identify overloaded circuits, faulty connections, and equipment overheating before failures occur.

Energy Efficiency & Power Factor Correction

- Conduct Power Factor Analysis – Evaluate capacitor banks and harmonic filters to optimize power efficiency.
- Audit HVAC & Industrial Equipment Power Consumption – Identify opportunities to reduce energy waste and improve efficiency.
- Inspect & Maintain Lighting Systems – Upgrade to LED and energy-efficient solutions where applicable.
- Verify Smart Metering & Load Management Systems – Ensure accurate monitoring of power usage for cost control.



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Why Electrical Audits Matter

- Minimize Equipment Failures & Production Downtime – Prevent costly operational disruptions.
- Ensure OSHA & NFPA Compliance – Stay up to date with regulatory requirements to avoid fines and penalties.
- Reduce Energy Costs & Improve Efficiency – Identify wasteful energy usage and optimize power consumption.
- Increase Electrical System Lifespan – Routine inspections help extend the life of infrastructure and equipment.

Need an Electrical Audit for Your Facility?

MD Marine Electric specializes in electrical audits for industrial, government, and commercial facilities. Ensure compliance. Prevent failures. Reduce energy costs.

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