

A property owner's guide to electrical system preventive maintenance.



An effective EPM program can pay for itself many times over.

Your facility's electrical distribution system is at the heart of your business operations, and a formal electrical preventive maintenance (EPM) program can help avoid potential downtime, while also helping to prevent injury and economic loss.

What's the risk to your business?

A power failure could be catastrophic to your plant's production line, data center, distribution center and other processes that rely on your facility's electrical distribution system to operate safely and efficiently.

Some practical advice for a safe operation.

An EPM program can pay for itself many times over. In addition to normal deterioration, an EPM can identify and address load changes, circuit alterations, improper protective devices and changing voltage conditions. Both direct and indirect benefits are derived from lower repair costs, reduced equipment downtime, greater energy efficiency and improved safety of personnel and operations.

See the following pages for practical steps your business can take.

Electrical Systems



An infrared scan of your power system is a cost-effective way to identify problems.

A key element of your EPM is to retain the services of a properly trained, licensed and insured professional electrician — knowledgeable of state and local electrical codes — to perform an inspection of your facility's electrical distribution system. In selecting an electrician, you should perform the following checks:

- Ask for licenses to ensure they are current
- Obtain certificates of insurance and check certificate dates
- Ensure your electrician understands the level of inspection to be conducted, including the potential use of emerging technologies such as thermal imaging and ultrasonic testing

National Fire Protection Association (NFPA) 70B Recommended Practice for Electrical Equipment Maintenance is the industry standard for preventive maintenance for electrical, electronic and communication systems and equipment installed in industrial plants, institutional and commercial buildings, and large multi-family residential complexes. An effective EPM program consists of a series of specific inspection and testing procedures.

Creating a six-step EPM program for your facility.

STEP 1—PLAN

The success of your EPM depends on good planning, especially when performing emergency repair work. To create your plan:

- **Identify the people and resources needed** to perform specific tasks and appoint an EPM supervisor to oversee your facility's program
- **Verify you have all necessary wiring diagrams, schematics and manuals** needed for troubleshooting your facility's electrical distribution system
- **Develop detailed safety and work procedures** to carry out your plan

STEP 2—INSPECT

The inspection phase of your EPM should include the following steps:

- **Assess all electrical equipment** — including motors, transformers, circuit breakers and controls — to enable the EPM supervisor to prioritize each plan component
- **Check the condition of electrical protective devices** such as fuses, circuit breakers, protective relays and motor overload relays to ensure each component is in good physical condition and is operating within its load level rating

Electrical Systems

STEP 2—INSPECT *(continued)*

- **Identify environmental or operating conditions** which may impact maintenance frequency
- **Determine if inspections will require instruments such as infrared viewers and ultrasound transducers;** NFPA 70B and 70E® Standard for Electrical Safety in the Workplace® guidance should be followed for safe work practices and personal protective equipment selection and use

Important note: An infrared scan of your power system provides you with a cost-effective way to discover potential problems within your electrical distribution system and should be performed at least annually. Contact Nationwide® Loss Control Services to inquire about having a scan performed at your facility.

STEP 3—MAINTAIN

Testing, cleaning, tightening and lubricating are all key maintenance tasks that qualified professional electricians are trained to perform. Be sure to consult manufacturer's literature before attempting any maintenance work on electrical components.

STEP 4—RECORD

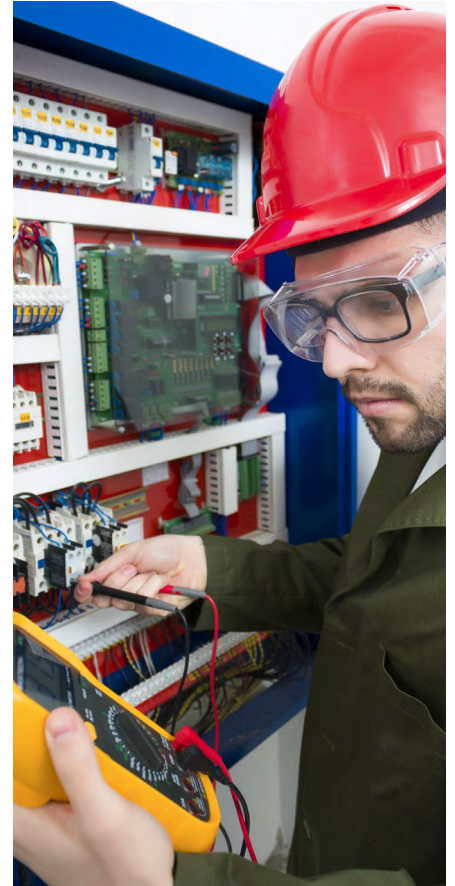
Recording test and other data can help set maintenance intervals, isolate troublesome equipment and provide a baseline for predicting when insulation or other components are starting to fail. Test result records should always include the date, identification of equipment tested and pertinent data about any problems discovered. System conditions such as load current, voltage, temperature and other related information can help determine how close components are to being overloaded. Test and record forms should be developed and tailored to your company's specific needs. NFPA 70B also provides ideas and examples of forms.

STEP 5—EVALUATE

An accurate evaluation of test results is the most important step in the EPM process. Analysis of records will allow you to determine if additional maintenance needs to be performed and to pinpoint problems which might otherwise go unobserved.

STEP 6—DETERMINE MAINTENANCE FREQUENCY

Many recommended maintenance intervals are annual, but specific components or conditions may require greater frequency. NFPA 70B, Table L provides guidance on maintenance and testing intervals.



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Questions? Contact
Nationwide Loss Control
Services: 1-866-808-2101
or LCS@nationwide.com.

Electrical Systems

Questions to ask before electrical work begins.

The following checklist of questions should be asked before any electrical work gets underway in your facility:

- Has the proper training and licensing check been conducted for “qualified person” status?
- Does your facility have a formal electrical maintenance and safety program that meets NFPA 70B and 70E requirements?
- Have you established a program to ensure electrically-safe working conditions? Do you have a formal lockout/tagout program in place?
- Is electrical equipment labeled with power- and safe work practices-related information per NFPA 70E requirements?
- Does your business have an energized electrical work permit program in place?
- Are hazard identification/risk assessment and controls for potential electrical hazards and arc flash boundaries in place per NFPA 70E?
- Has a thorough job briefing been conducted?

Elements of an effective EPM program include:

- Training
- Routinely scheduled inspection, testing and servicing of equipment
- Priority determination and planning
- Safety program compliance including lockout/tagout, arc flash injury prevention, personal protective equipment and emergency response procedures
- Scheduled maintenance
- Documentation and periodic audit review



Providing solutions
to help our members
manage risk.SM



For your risk management and safety needs, contact Nationwide Loss Control Services: 1-866-808-2101 or LCS@nationwide.com.