

**RSA**  
ENGINEERING & RISK CONTROL  
SERVICES

**MSBA**  
RISK MANAGEMENT

### ELECTRICAL POINTS OF INTEREST

#### **Definition of an Electrical Preventive Maintenance (EPM)**

A managed program of inspection, testing, analyzing and servicing electrical systems, and equipment with the purpose of maintaining safe operations and production by reducing or eliminating system interruptions and equipment breakdowns

#### **1. Why establish an EPM program?**

Electrical equipment deterioration is normal and begins on start up. The deterioration process can be accelerated due to hostile environment, overloads, severe duty cycle, lack of maintenance, and improper operation. In addition to the normal deterioration there are other potential causes of equipment failure: load changes, additions of equipment and circuits, improper selected protection devices, changes in voltage condition, changes in personnel, changes in workplace culture, etc. Without proper maintenance equipment failure is inevitable.

#### **2. What is an EPM program and what are the benefits?**

An effective EPM program recognizes the deterioration process and provides measures for dealing with them. A well administered EPM Program reduces:

- Accidents and saves lives
- Minimizes costly breakdowns and unplanned shutdowns
- Impending problems can be identified and solutions applied
- Avoid major problems before they become catastrophic and costly

The maintenance of industrial electrical equipment is essentially a matter of business economics. Maintenance costs can be placed in either of two basic categories: preventive maintenance and breakdown repairs. The money spent for preventive maintenance will be reflected as less money required for breakdown repairs. An effective EPM program holds the sum of these two expenditures to a minimum. An EPM program is a form of protection against accidents, lost production, and loss of use.

#### **3. An effective EPM program should include the following basic ingredients:**

- Personnel qualified to carry out the program
- Regularly scheduled inspection, testing and servicing of equipment
- Application of sound judgment in evaluating and interpreting results of inspections and tests
- Keeping of concise but complete records

#### **Definition of a Qualified Person**

One who has skills and knowledge related to the construction and operation of electrical equipment and installations, and has received safety training to recognize and avoid the hazards involved. A well-qualified person should be in charge of the EPM program.

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#### **4. Planning and Developing EPM Program**

- Compile a list of all equipment and systems
- Determine which equipment and systems are most critical and most important
- Develop a system for keeping up with what needs to be done
- Train people for the work that needs to be done or contract to special services that are needed
- The individual responsible for the EPM program should be given the authority to do the job and should have cooperation of management, production, and other departments whose operations might affect the EPM program

#### **The person designated to head the EPM program should have the following qualifications**

- Technical Competence: The person should, by education, training, and experience, be well rounded in all aspects of electrical maintenance
- Administration and Supervisory Skills: The person should be skilled in the planning and development of long range objectives to achieve specific results and should be able to command respect and solicit the cooperation of all persons involved in the program.

#### **5. Diagram and Data**

- The availability of up to date, accurate, and complete diagrams is the foundation of a successful EPM program. No EPM program can operate without them, and their importance cannot be overemphasized.

#### **6. Emergency Procedures**

Emergency procedures should list, step by step, the action to be taken in case of emergency or the safe shutdown or start up of equipment of systems.

#### **7. Critical Spare Parts**

- An inventory list of critical spare parts should be updated annually. Quick delivery of replacement parts cannot be taken for granted. Suppliers should be identified, and the replacement parts problem should be reflected in the in-plant spare parts inventory.
- List of outside sources of engineering services for imported equipment should be established.

#### **8. Definition of an Arc Flash Hazard**

A dangerous condition associated with the possible release of energy caused by an electric arc.

An arc flash hazard can exist when:

- Energized conductors or circuit parts are exposed and energized
- If a person is interacting with energized equipment in a manner that could cause an electric arc.

Under normal operating conditions, enclosed energized equipment that has been properly installed and maintained is not likely to pose an arc flash hazard.