

Risk A/T[®] Work



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Conducting Electrical Equipment Maintenance: An Ounce of Prevention is Worth a Pound of Cure

Larry Ritter, AVP, Risk Control Equipment Breakdown Specialist - Southeast Region, Sompo International, North America, ritter@sompo-intl.com

Conducting regular maintenance on critical electrical power distribution equipment, including generators and motors, improves equipment efficiency and extends equipment life, and can lower your overall maintenance costs. Properly maintaining your equipment not only makes good business sense, but it will have a positive impact on a business' bottom line and the overall safety of its employees.

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Maintenance Planning and Implementation

As electric power distribution equipment requires less attention than other plant production equipment, maintenance is often postponed or completely overlooked until an issue arises. This neglect can result in damage to equipment and also a total plant shutdown. Regular maintenance and upkeep of electrical components before they fail saves money by avoiding costly and time-consuming business interruptions, as well as regulatory fines and penalties and those costs associated with workplace accidents.

To ensure that maintenance occurs on a regular basis, a well-planned preventive maintenance program should be developed, documented and adhered to. Akin to other

safety and maintenance programs, buy-in from senior management is imperative and where it all starts.

Once leadership has agreed to implement a maintenance program for electrical distribution equipment, an inspection of the equipment is the next step. Inspections need to be conducted either by qualified on-staff maintenance electricians or electrical contractors. The frequency of inspections and maintenance should consider a calendar-based service, as recommended by the manufacturer, and also based on equipment history – the older the equipment, the more frequent the inspections. Importantly, the inspection should consider the manufacturer's recommended maintenance procedures for that equipment. Once the inspection is completed, all data and findings should be evaluated and documented, with any repair recommendations and future inspection schedules communicated to management in a written report.

Key Factors of Electrical Equipment Failures

Key factors that can result in electrical equipment failures for rotating electrical machinery:

- Dirt, grease, and oil deposits seeping into motor and generator insulation can create a heat buildup in the insulation.
- Continued motor and generator overloads in excess of the nameplate rating may contribute to excessive internal heat buildup, reducing rotor and field winding life.



- Moisture penetration into motor and generator winding insulation may contribute to early insulation failure.
- Worn brushes, dirty collector rings and commutators are the forerunners of excessive sparking, in which may contribute to AC and DC motor and generator failure.
- Excessive vibration, misalignment and inadequate lubrication are prime causes of bearing failure.

Key factors that can result in electrical equipment failures for switchgear and transformers:

- Dirt accumulation, flashover and arcing on supply, load bus and insulators are the most common causes of failure.
- Loose mechanical cable and terminal connections inside and outside the above equipment.
- Excessive power demand and overloading of a transformer for long durations can result in early oil and insulation deterioration, oil sludge buildup.
- Worn, corroded and malfunctioning mechanical linkages and contacts.

Failures caused by the above factors can all be minimized by completing the maintenance recommended by the manufacturer and based on equipment history, while also operating the equipment within its design parameters.

Determination + Execution = SUCCESS

While the specifics of a preventive maintenance program will vary from business to business, success in eliminating electrical failures will depend upon management's determination in carrying out the program. If executed properly, management will discover that the costs of an effective maintenance program are outweighed by the benefits to the company from decreased production losses and emergency repair expenses.

We Are Here to Help

By introducing a formal electrical equipment preventative maintenance plan along with your overall safety program, you are taking an important step to protecting your property and your employees. Please reach out to your Sompo International Risk Control Specialist or contact us at +1 877 667 5733 or RiskControlQuestions@sompo-intl.com for more information.

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