



## Maximize the service life of your electrical distribution system

### Equipment care bulletin

HSB Canada, part of Munich Re, is a technology-driven company built on a foundation of specialty insurance, engineering, and technology, all working to drive innovation in a modern world, to keep you ahead of risk.

Every year, HSB investigates numerous electrical distribution system failures. The primary reasons for these failures are loose or high resistance electrical connections, excessive moisture and lightning.

To help you achieve reliable and uninterrupted service of your electrical distribution system, we are offering the following comments and suggestions.

#### **Design**

The installation and operation of your system should be checked to ensure that you are keeping the electrical loading within the design capability. Over time, electrical loads in the distribution system can change due to

changes in equipment and types of loads. Electrical loads can be shifted to ensure that circuits are properly loaded and balanced.

#### **Infrared**

Most electrical faults can be eliminated or reduced by proper preventive maintenance to your system. A major aid in helping to identify potential problems is infrared (thermographic) testing.

Electrical equipment emits heat in the form of electromagnetic radiation. Infrared cameras, which are sensitive to thermal radiation, can detect and measure the temperature differences between surfaces. Abnormal or unexpected thermal patterns can be



indicative of a problem with the equipment – problems that could lead to a breakdown or cause a fire.

An infrared (thermographic) survey of all cable runs, bus ducts, and electrical distribution and control panels can detect ‘hot-spots’ or heat unbalances which may indicate loose or corroded connections, or overload conditions that need to be corrected.

#### **Connections**

Panels that are located in high dirt or dust areas should be de-energized and all connections checked for tightness.

While the panel is down, all dust and dirt should be removed. All cable runs, bus duct systems, and electrical panels should be checked to ensure that all moisture seals and insulation are intact and in good condition.

#### **Testing**

Many systems are protected against short circuit, under-voltage, line surges and lightning. However, our experience still indicates most systems do not have adequate surge protection, a major cause of premature failure.

One key area of preventive maintenance is to test and recalibrate all meters and relays to ensure that they are in proper working order. Circuit breakers that are not frequently operated should also be cycled during this testing period.

#### **Safety**

When service is performed on any electrical circuit, it is important to note that all electrical safety precautions must be followed. Energized circuits can and do represent significant shock hazards. All personnel working on your systems must be properly trained and qualified.

#### **Cost**

The cost of unscheduled and unwanted breakdowns of your electrical system can be more than you might expect. Even when machinery insurance is available, the deductible may still account for a considerable out-of-pocket expense. Having insurance may be of little comfort when your distribution system has failed and you are left in the dark.

In addition, if you have tenants or are trying to run a business, you don’t need the added headaches of irate customers because your system is down from minor maintenance oversights.

Our advice is intended to complement the equipment manufacturer’s recommendations - not replace them. If you have doubts about any particular procedure, contact your equipment service representative.