ZURICH
Resilience Solutions

Infrared thermography

Electrical equipment survey

The importance of Infrared Thermography

All electrical equipment emits some heat during its normal operating cycle. An infrared thermography (IR) survey on electrical equipment is a non-invasive maintenance method that uses advanced imaging to detect unusual heat signatures—often early indicators of failure in electrical equipment or materials. These "hot spots" can result from loose connections, vibration, electrical resistance, overloading, ground faults, short circuits or deteriorating components. IR surveys can also identify "cold spots" that should be hot, which could indicate a significant risk. Any abnormality may lead to fires, unplanned downtime, equipment loss or costly damage if left unresolved.

How the IR survey works

Inspections are conducted while systems are under normal load, allowing facilities to remain fully operational during the process. All equipment assessments are performed by certified thermographers (ASNT SNT-TC-1A) using advanced infrared diagnostic tools to deliver consistent and actionable insights. Zurich Resilience Solutions works with trusted, reputable vendors to help ensure our customers receive high-quality service tailored to their operational and compliance needs. By identifying issues in their early stages, necessary repairs can be scheduled in advance to avoid disruptive breakdowns, reduce business interruption risk and improve asset longevity. This service supports safety, promotes equipment reliability and contributes to a more proactive and cost-effective maintenance strategy for large mechanical equipment and systems.

Frequent electrical fault fire losses that can be mitigated with early detection

An electrical fault is a condition where electricity flows in an unintended way, potentially causing harm to people, equipment or the electrical system itself. Detecting and fixing faults quickly helps ensure safety and reliability.

Loose or defective connections: deformed contacts can arise from poor installation or load cycling and the resultant expansion or contraction of joints

Electrical issues: faults commonly occur from poor quality current delivery to equipment or overloaded breakers

Excessive dust, dirt and lack of cleanliness: Failure to clean and properly maintain equipment can lessen its efficiency and quality, eventually resulting in a error causing fire, smoke or an expensive repair

Keep equipment cool, clean, tight & dry

According to data compiled in 2023 by the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System, there were

7,400 non-residential fires

due to "electrical malfunction" costing businesses

$354.4 M in estimated losses

https://www.usfa.fema.gov/statistics/nonresidential-fires/electrical.html

The Survey & Expectations

There are two distinct IR surveys. The first evaluates electrical systems, including those of mechanical equipment, typically at 480v and above in all occupancies; a second survey option evaluates photovoltaic (PV) panels, or solar cells. The certified thermographers who conduct the surveys provide detailed reports to help businesses prioritize maintenance and enhance operational safety. All data is securely documented and easily accessible for reference.

1. **Electrical Load Inspections:** Scan energized systems to detect overheating connections or components
2. **Mechanical Equipment Scans:** Assess motors, boilers, bearings and more for thermal abnormalities
3. **Compliance & Safety Checks:** Undergo inspections that support safety protocols, insurance purposes and annual requirements, including those related to NFPA 70B (Section 7.4 table 9.2.2)
4. **Detailed Thermographic Reports:** Receive easy-to- read reports with annotated thermal images and mitigation guidance

IR surveys are an essential health check for electrical systems that helps businesses locate hidden faults early to help prevent fires, breakdowns and safety incidents. It is a proactive, efficient way to keep people and equipment safe.

Limit Equipment Failures | Reduce Fire Risk | Minimize Downtime | Extend Asset Life

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