



# Thermographic Surveys

## What is the hazard?

Forty percent of industry's fire loss expenses and approximately twenty per cent of major fires are generated and caused by electrical faults. The usual causes include loose connections, the weakening of insulation, faulty or overloaded components, obstructed cooling or mechanical damage.

Losses resulting from the overheating of mechanical machinery due to an obstruction or the friction of worn-out machine parts also occur frequently. Since all of these incidents involve elevated surface temperatures, thermographic surveys are recommended as a fast and cost-effective preventive maintenance tool. Through this technique, weak points that become heated prior to failure can be detected and losses, including interrupted use, can be avoided.



## Thermographic surveying

Surface temperatures, in other words their heat emission or infrared radiation, can be easily and reliably measured by thermographic imaging. The method involves the use of an IR camera, which produces a digital image of the surface. The image is interpreted and documented by skilled surveyors, who also give suggestions for corrective action. Surveys can be performed by qualified external specialists and should preferably be conducted under full electrical load. If you purchase an own IR camera, ensure that the users receive appropriate training. In many countries, thermographic imaging qualification training conforms to the requirements of ITC classes I, II or III as defined by the ASNT (American Society for Non-destructive Testing), CEN 473, ISO IS 9712, Guideline No 3 2003 CFPA-E or VdS 2861.

## How to reduce the risk

**Electrical maintenance:** Conduct, as part of your preventive maintenance programme, at least annually a thermographic survey of all the important electrical components – transformers, substations, switchgear and control cabinets, electrical panels, fuse boards, terminals, joints, power factor compensation equipment, cable or bus bar installations, extension cables etc. Through this technique you can detect the weak points and avoid many losses, including fires.

**New electrical installations:** Perform an initial thermographic survey of new electrical installations (i.e. after installing new machinery or replacing electrical parts) in order to detect possible faulty components, installation faults, etc. and to give a baseline for future surveys.

**Mechanical maintenance:** Complement your maintenance schemes by monitoring mechanical devices and machine parts such as motors, pumps, gearboxes, clutches, bearings, brakes, heat exchangers, hydraulic systems and conveyors through the use of thermographic imaging.

**Hot work control:** During and after the performance of hot work, the fire-watch can use an IR camera as a useful tool to identify accumulated heat around the hot work area.

**Industry-specific (an example):** Furnace shells and refractory lining in the melting and heating industry can be monitored through thermographic imaging to identify hot spots.

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