

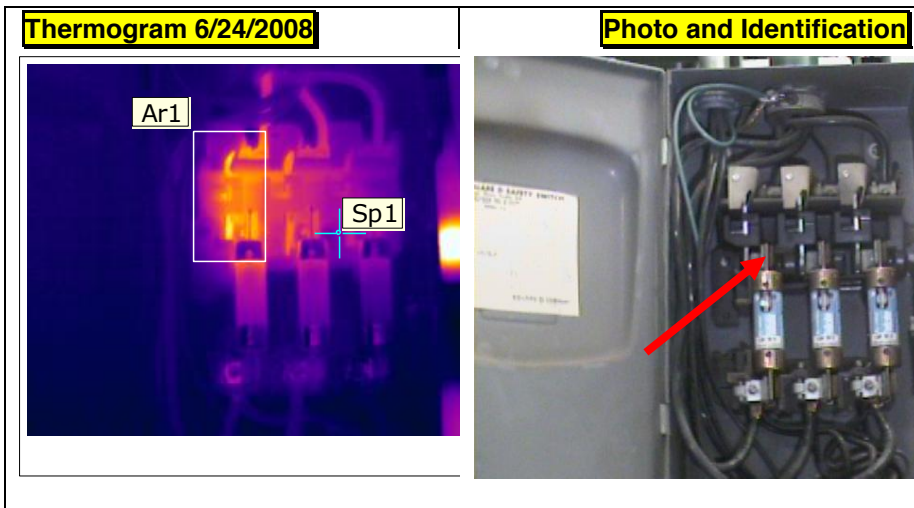
CNA Insurance Saves Clients More Than \$105m in Risks and Losses

— Infrared Surveys Now a Standard Practice

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Electrical systems - for obvious reasons - are designed to be reliable. Like any complex system, electrical systems require periodic maintenance and inspection to ensure power is supplied to buildings and facilities in a safe and efficient manner.

That's why CNA offers Infrared (IR) thermography tests to new and existing clients with total insured values (TIV) of \$10 million or more per location. A thermal imaging scan increases confidence in equipment, decreases the potential for fire loss, reduces high-energy costs, and helps avoid business interruption.



When thermal images are captured with a FLIR infrared camera, the "vital signs" of potential faults are instantly recorded with the IR image. Analysis and reports can be completed later using the radiometric information captured in the field. This makes for productive use of the client's - and the thermographer's time.

Analysis & Recommended action:

This represents an Intermediate fault. This fault should be corrected by a qualified electrician within 60 days. Correction of this fault also represents potential energy savings of \$100 per year.

The A phase fuse knife connection (Ar1) is significantly hotter than the other connections (Sp1). This knife connection should be removed and the conductor connections inspected for corrosion/pitting or other faults. If corrosion/pitting or other faults are found, then the knife connection should be replaced.

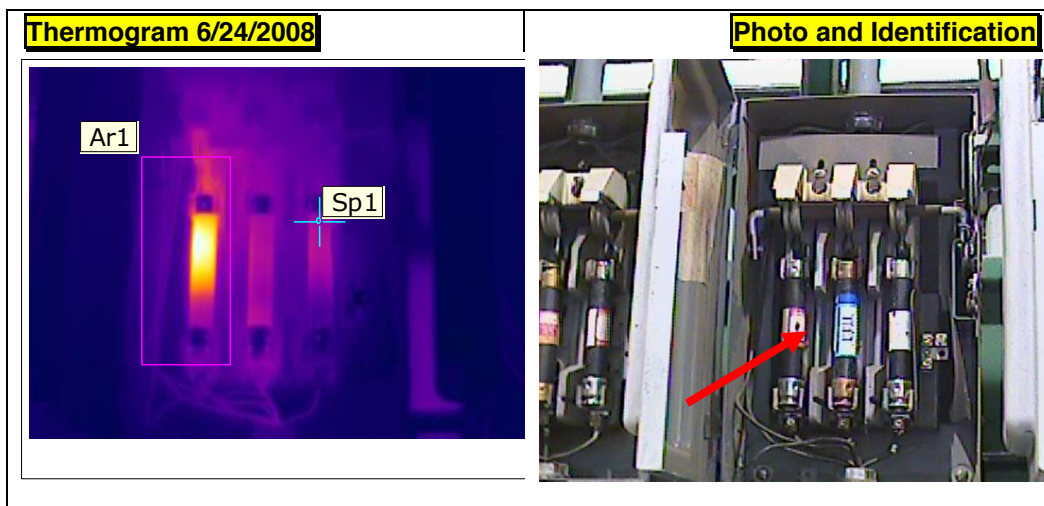
NFPA 70B recommends that building owners complete IR surveys annually. CNA (and other sources) recommend every 3 to 5 years, depending on level of faults found. The cost of an infrared survey is estimated by CNA at \$2,000 per day. CNA performs IR surveys with FLIR P65 infrared cameras. The surveys are conducted at no extra charge to clients who qualify for an offer of an IR survey, saving them at least \$2,000 annually.

CNA Finds Eight Faults Per Report

A reasonable “average” electrical fire loss today is estimated to be \$750,000 based on inflation factors (using Means cost analysis data) and recent CNA loss experience. The chance of an electrical fire is estimated by CNA to be 2% for critical faults and 1% for serious faults, but the actual chance of a fire occurring is difficult to quantify.

Since 2005, CNA has conducted 4,236 infrared surveys, averaging approximately 100 surveys a month. The Total Insured Value (TIV) amounts to more than \$107 billion. Using 21 FLIR infrared cameras, CNA thermographers have found, on behalf of clients, 32,751 faults or deficiencies. This is an average of eight faults per report.

CNA has saved its clients an estimated \$40,883,708 or \$9,651 per IR survey. CNA has been providing these No Extra Cost value-added services to clients who qualify since 2005.



Analysis & Recommended action:

This represents a Serious fault based on the apparent temperature differential compared to similar equipment in the panel. This could result in the failure of the circuit breaker and ultimately an electrical fire loss of \$250,000 or more. This fault should be corrected by a qualified electrician within 30 days. Correction of this fault also represents potential energy savings of \$187.50 per year. This fault is not likely to result in a business interruption loss from the circuit failing due to the circuit controlling just lighting.

This circuit controls shop lighting. While heating of these fuses is typical due to the lights being under load continually, the level of heating in the A phase fuse (Ar1) was noted to be excessive. The fuse itself may be deteriorating internally and should be replaced.

How it Works

IR thermography can detect heat in the form of infrared energy that is emitted from faulty equipment. Everything with a temperature above absolute zero releases thermal, or infrared, energy. The light composed of this energy isn't visible because its wavelength is too long to be detected by the human eye.

The higher an object's temperature, the greater the IR radiation it emits. So, IR thermography cameras not only can "see" this light, but can also delineate hot areas from cool areas.

CNA Uses FLIR Technology

CNA's certified thermographers conduct infrared scans on equipment to find potential problems in the early stages of breakdown or failure. Mechanical systems and key production equipment are also assessed during IR thermography. No interruption of production is typically required during the test

CNA estimates that, all together, its insureds whose equipment was tested have saved more than \$10 million per year from the IR program since its inception in 2005. Savings include lower electrical repair costs, reduced fire and business interruption loss potentials, and electrical energy savings. Infrared testing is another example how CNA Risk Control works with you and your agent to help strengthen your risk management program and integrate it with services that help protect lives, safeguard assets and increase profitability.

Energy savings are calculated using a FLIR-developed spreadsheet named "Indirect Power Calculations from Surface Temperatures." Energy savings vary from \$1.50/day for critical faults to \$0.15/day for minor faults.

Insurance loss statistics (FM Global) from the 1990's showed "average" electrical fire losses to be \$200K for circuit breakers; \$500K for switchgear; and \$1 million for Motor Control Center rooms. A reasonable "average" electrical fire loss would be about \$750K using inflation factors (Means cost analysis data) and recent CNA loss experience.

This article is based on a presentation at FLIR's InfraMation in Reno, NV, November 3-7, 2008. For more information on Risk Control Services call CNA Risk Control toll free at 866-262-0540 or email riskcontrolwebinfo@cna.com. For information about FLIR Infrared Cameras, call 800-464-6372 or email moreinfo@flir.com.