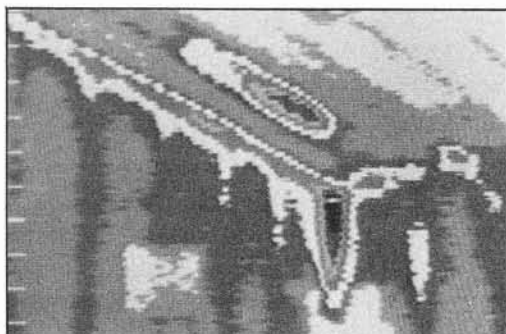


the electrical digest

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Thermography Cuts Energy Costs



Thermogram of building interior shows cold area (black corner) where a squirrel had built a nest in a cathedral ceiling.

Energy costs. They're responsible for ever-escalating percentages of company operating expenses. In the Canadian climate, energy conservation techniques and careful management of energy consumption are essential for any firm – and the techniques must be cost-effective.

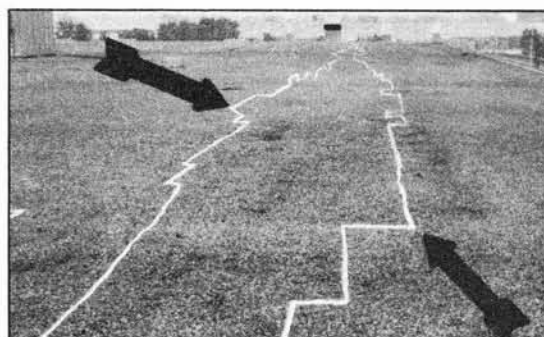
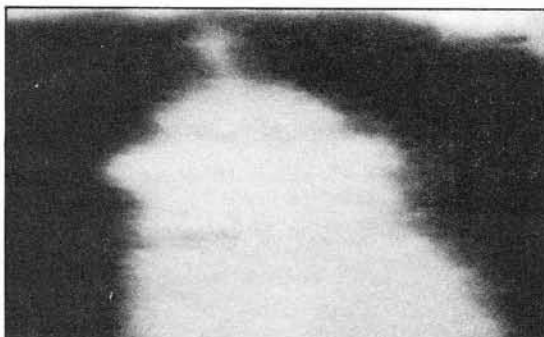
Infrared thermography is a method by which companies can detect and identify energy problems quickly and efficiently. Information provided by thermography takes considerable guesswork out of their solution.

Building Envelope Inspection

Deficiencies in a building envelope reduce the comfort of occupants as well as raise energy costs when heating or cooling the building. (The overall building shell comprising outer walls, foundations, roofs and related systems are considered to be the envelope.)

An experienced thermographer can locate insulation voids, air infiltrations or exfiltrations, and thermal bridging in a building enclosure.

Roof Moisture Surveys



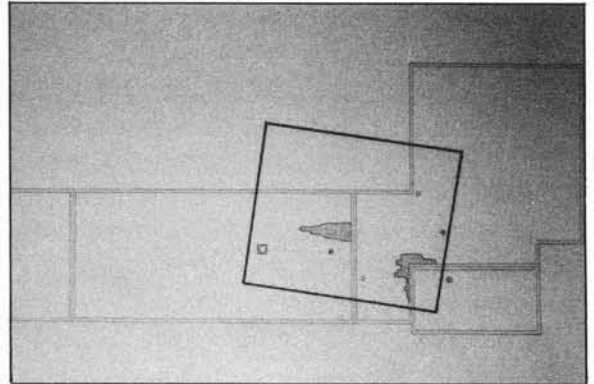
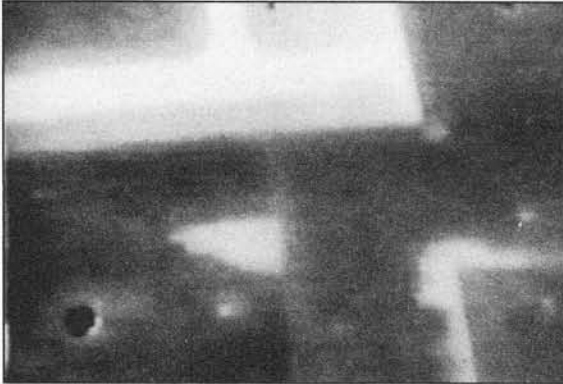
Thermogram of suspect moisture damage with corresponding photograph showing the spray-painted outline of the same area.

Infrared thermography provides valuable information used to target the maintenance of standard built-up roofs. Moisture-damaged roof insulation generates a thermal anomaly which can be detected with an infrared scanner. Such a thermal anomaly can result from either one of two factors: as stored solar energy in wet insulation, or increased heat flow from the building below through the damaged insulation.

By using an infrared roof moisture survey, management can visualize the extent of roof damage and formulate economic solutions. Roof problems which were once thought to require total roof replacement often may be solved by effectively targeting roof repairs. With thermography, roofing systems can be better managed with reduced annual maintenance costs.



Aerial Thermography



Aerial thermography roof moisture survey findings – thermogram with corresponding view of roof sketch marked with approximate size and location of suspect areas.

Qualitative aerial overviews can be acquired by basing the thermographer and equipment in a helicopter. This approach is used by owners of larger volumes of roofing systems to establish priorities of roof-level quantitative surveys, or to better estimate roof maintenance budget requirements.

Aerial thermography also can provide an accurate overview of underground steam distribution systems. Thermal anomalies indicative of steam or condensate leaks and damaged piping insulation can be detected in direct-buried systems.

Targeting steam line maintenance with an infrared thermographic survey helps save steam energy dollars while avoiding excavation of the entire system to locate steam problems.

Thermography Helps Solve Electrical and Industrial Problems

Infrared thermography has many other useful applications. It is a non-contact, non-destructive tool which can locate loose connections, overloads, unbalances and other failure mechanisms in electrical equipment while it is operating (see *Electrical Digest* No. 6).

Thermography can be used to evaluate mechanical systems for proper operation, detect leaks in buried piping and locate dangerous refractory lining deteriorations, to state a few applications.



Sample thermograms from an aerial thermography steam distribution system inspection showing a steam leak beneath a street (left). Right thermogram shows the normal thermal expression of an expansion loop.