

### **Inspections can detect problems and avoid costly equipment failure.**

Thermal imaging has evolved into a valuable diagnostic tool for predictive maintenance. By detecting anomalies often invisible to the naked eye, thermography allows corrective actions to be taken before electrical, mechanical, or process equipment fails. The use of palm computers and database software has improved and speeded up data collection.

An infrared inspection program can provide users with a quick return on investment. According to Scott Cawfield, president of Logos Computer Solutions, Inc., Seattle, on average, for every \$1 spent on an infrared electrical inspection there is a \$4 return on investment for materials and labor to fix the problem equipment before it failed. Depending on other factors, he suggested, that ratio could be closer to 1:20.

What's in a program?

The essential elements in an IR inspection program, Cawfield said, are to:

- Use or create an equipment inventory list to account for what equipment was tested and when.
- Assign a criticality factor to each piece of equipment to prioritize inspection schedules and repairs.
- Determine the pertinent information to be recorded in addition to temperature readings and reference points; other factors such as camera emissivity value, equipment load, wind speed, environment, and manufacturer influence temperature readings.
- Provide consistent data collection procedures.
- Analyze problem areas and generate appropriate reports.

Barriers to effective IR programs

But not all companies are enthusiastically adopting an infrared thermography program. The barriers often cited are in the financial arena—time, personnel, camera cost, training, or contractor expense. The most-mentioned aspect of the financial barrier is the lack of awareness of the benefits to the bottom line.

The main factor standing in the way of the effective use of infrared thermography technology

## 2005 Infrared Thermography

Written by MT Staff

Monday, 01 August 2005 00:00

---

centers on the cost of high-level education and training. It is not only training in thermography but also other associated topics such as materials science, physics, and thermodynamics, "plus knowledge of 'how things work', from engines and turbines to buildings' thermal insulation or HVAC units," noted one inspection service provider.

### Advice from experts

Users of infrared thermography must realize that they should not build the program to meet all of their needs at first—allow it to be dynamic. Maintain good record keeping for trending purposes.

And be sure to communicate what the infrared program is contributing to the company. "Tout your program as often as you possibly can in a professional, reasonable way so that when money is tight people will understand your value," was the advice from one provider.

A little outside-the-box thinking helps, too. "There are unique applications for nearly every industry, or even every facility. Sometimes it takes a little imagination, but the benefits can be staggering," said another provider.

### New applications

Suppliers for this directory were asked about new applications for infrared thermography, both in the plant and otherwise.

In plant applications, ITR Inc. cited monitoring of couplings and cranes, while Mikron Infrared added monitoring of boiler tubes and continuous monitoring of electrical control panels. Logos Computer Solutions mentioned PDA data collection running on Pocket SQL in conjunction with a Web browser/Web manager for infrared PdM program management.

Evaluation of motor and control circuits from the MCC was a new application suggested by Power Down. Snell Inspections and Infrared Solutions found companies doing more building diagnostics (e.g., building envelope, HVAC, and roof moisture surveys and inspections).

Expert Infrared Inspections has performed inspections on a 4 MW extreme duty dc motor in a

## 2005 Infrared Thermography

Written by MT Staff

Monday, 01 August 2005 00:00

---

steel mill and on television broadcasting equipment. And training has gone online, as Infrasppection Institute offers distance learning courses in certification preparation and other areas.

Outside the plant, one of the more widely known new applications of infrared thermography was to measure the body temperature of individuals in airports during the severe acute respiratory syndrome (SARS) outbreak in 2003, noted Cantronic Systems Inc. Mikron Infrared cited an application in monitoring coal piles, while Infrared Research Inc. provided an environmental application in checking illicit discharges in streams and waterways.

Monitoring of leaf temperatures to improve irrigation was an application forwarded by IRISYS. Other new applications included using infrared to spot rodent and termite problems (Infrared Solutions), for metal shredding systems (FLIR Systems, Inc.), and security (ASC Systems).

Our two-part guide

This two-part guide to IR equipment and services is designed to give you a source for infrared thermography assistance.

The technology supplier section lists companies and indicates their product or service offerings; companies that supply only infrared thermometers are not included. The company directory lists specific information about these suppliers, including addresses and telephone numbers, as well as Web sites. Information was supplied by the companies listed.