



FLIR

APPLICATION STORY



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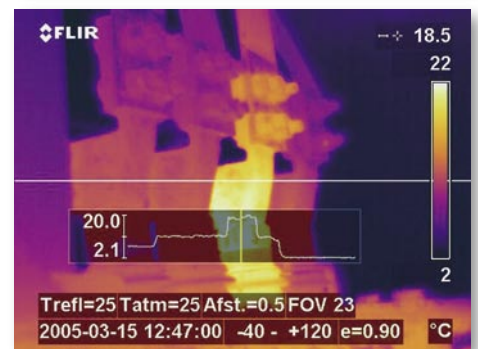
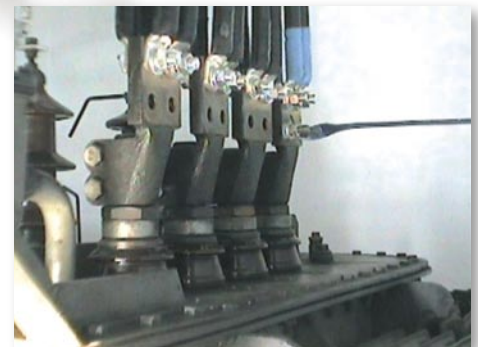
Mastering the Maintenance Process: Thermography makes Eaton Group save a quarter of a million dollars per year

Preventive maintenance is not just a matter of organisation: it also requires knowledge and the efficient handling of gathered information. A suitable thermal imaging camera helps in both of these areas, with an impact which makes itself abundantly clear in the cost-benefit analysis.

Thermography, among other things, reveals and measures heat generation in machines and installations. It visualises overheated components and detects and prevents "creeping" breakdowns. It has become a familiar and accepted technique for preventive maintenance. What is less well known, however, is that the consistent, large-scale use of thermography can yield impressive savings.

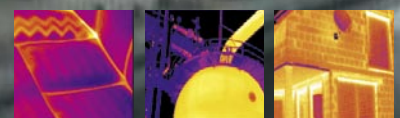
The American Eaton Group produces a very wide range of industrial goods worldwide, and has a turnover of 9.8 billion dollars. In Europe, its segments

Eaton Fluid Power, Eaton Automotive and Eaton Truck are strongly represented. They focus on various systems and components for vehicles and for the aviation sector: from hydraulic systems for the new Airbus A380 to compressors for the engines of legendary Italian motorcycle maker Ducati. Eaton Electrical manufactures and modifies low- and medium-voltage distributors and installations for industrial customers.



Top of transformer; low-voltage connection

FLIR



Consistent inspection

Eaton Electrical's Field Service Department operates from the Netherlands. An autonomous profit centre, which also has external customers, the department inspects all of the Eaton Group's European sites. This means that all the electrical installations at all twenty-six production sites from Poland to Portugal receive a thorough annual inspection with the thermal imaging camera. Naturally, a careful look-out is kept for hot spots and other developments in cables and switches during these tours of inspection. But how is this information gathered and processed? How is the thermographic information classified, assessed and presented?

Peter Koelewijn is Field Service Supervisor and chief thermographer at Eaton. In this function, he visits all the Eaton Group's sites every year. With his FLIR Systems ThermaCAM P65 thermal imaging camera at the ready, he inspects all low- and medium-voltage installations at the sites. Peter Koelewijn has a couple of rules-of-thumb which help ensure that the inspections go smoothly: "I set the emission value carefully. I don't make much use of the autofocus, because I can adjust the settings faster manually, but I do attach importance to a precise setting for the range. I make important comments directly into the headset."

The images and data stored locally in the camera are then loaded into the computer and, using the FLIR Systems Reporter software, introduced into a report and subjected to further analysis. It goes without saying that interpreting the infrared images requires a thorough knowledge of the inspected installations. And although the results of these inspections are in fact only recommendations, it is advisable for local maintenance managers to follow the advice given by the thermographer. "You can only draw conclusions on the basis of experience and a thorough understanding of both the camera and the installations you inspect" says Peter Koelewijn. "Of course, it's also important to have the reports of the previous years within reach," he adds.

Classification and savings

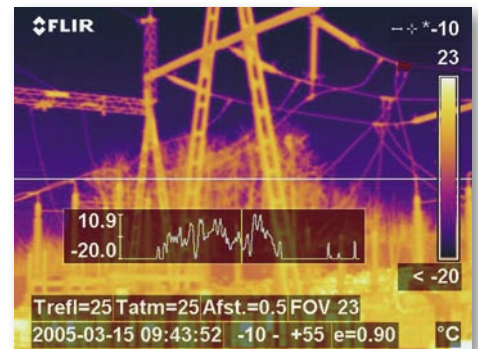
At Eaton, the inspection results are classified according to a four-level fault rating system: a "minor problem" can be sorted out during the regular maintenance rounds by one of the group's 50 preventive maintenance employees. At the opposite end of the scale are "critical problems", which require immediate intervention and also involve an additional thermographic inspection on site straight after the repair work. The levels in between, "serious problem" and "intermediate problem", require repairs within one to two days and two weeks of the inspection respectively.

The report, consisting of a visual and an infrared photo of the scanned object, a temperature curve, basic thermographic data and a commentary, is then sent to the local maintenance managers and archived at the Service Department at Eaton Electrical for subsequent use.

This precise classification into levels of urgency, detailed reporting per scanned object and regular inspecting saves the Eaton Group some 250,000 dollars a year in Europe alone.

A customer-friendly camera

So is the man with the all-seeing thermal imaging camera actually welcome at Eaton sites? "Yes, absolutely," laughs Peter Koelewijn. "The visual aspect of the inspection, which this camera provides in both its daylight and infrared modes, represents significant added value. Another positive feature is that, thanks to the large detachable LCD screen on the ThermaCAM P65, the local manager can follow the measurements. A user-friendly, versatile camera is fine, but a customer-friendly camera is obviously an additional benefit. And if we point it upwards for a moment, we can even tell the maintenance people which of the fluorescent lamps on their premises need replacing."



150 KV station, visual and thermal images



Busbar rail system in production hall

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