



The importance of post commission and periodic thermographic survey of switchboards



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 **DaRa**
Switchboards



Introduction

According to the Electrical Safety Foundation International (ESFI), home electronics account for almost 51,000 fires each year, nearly 500 deaths, 1,400 injuries and US \$1.3 billion in property damage.

The ESFI further states that electrical distribution systems are the third most likely cause of residential fires. These figures paint a clear picture of the need for safety, one of the most reliable being an infrared thermographic survey.

Thermography is a non-invasive diagnostic method that enables a technician to identify the surface temperature values without needing to directly be in contact with electrical components. How and where an object - such as an electrical switchboard - emits thermal energy can be measured and presented visually on a screen.



Why do we use infrared imaging?

Thermographic surveys offer a number of benefits for those in charge of switchboard maintenance and monitoring. It allows you to measure, display and store the temperature of large surfaces quickly, while retaining a high level of accuracy and, crucially, offering complete safety to the technician.

As such, maintenance of electrical systems is a prime area for the use of thermal imaging. By conducting a thermographic survey of a switchboard or distribution panel, a technician can identify hot spots - areas that exhibit a higher current density or contact resistance.

When the dissipated heat reaches a level that can cause equipment failure and potentially lead to serious injury, it can be difficult or near-impossible to detect this with just the human eye or a traditional thermometer. To gather the most accurate and reliable readings, thermal analysis is performed to seek out anomalies in temperature - whether through load imbalance, overloaded circuits or poor connections.



What equipment and training is needed?

Surveys are conducted using advanced thermographic equipment. A thermal imager is a camera designed to capture infrared radiation, capable of converting the infrared waves into a digital signal. This allows for a thermal map of the surface to be displayed on the imager's screen.

However, there's more needed for an accurate survey than just the right camera. Not all enclosures, materials or objects will be equal when performing a scan. Reflective objects such as glass or acrylic can result in poor or incorrect readings, as these materials can reflect thermal heat from other sources.

Ensuring that the technician you choose is trained and experienced in how to conduct and analyse a thermal survey will be crucial to getting the most out of your preventative maintenance.



Analysing hot spots in switchboards

Hot spots can indicate areas of equipment that require adjustment, maintenance or replacement. How hot spots and temperatures interact with each other is just as important to gathering an overall picture, however.

Thermal imagers detect variations in temperature across the infrared spectrum, and can be used for both quantitative and qualitative measurements. They help identify electrical hot spots in two distinct ways:

- Quantitative measurements examine a specific point of an object, and determine the absolute surface temperature.
- Qualitative measurements are used to examine an object's surface area as a whole and how temperature is distributed across it.

By combining the above methods, a survey can point out not only where temperature hot spots are occurring, but how they relate to the equipment overall. This provides a more informed view of what potential maintenance may be needed, or where a fault is due to occur.

Benefits of thermographic surveys for switchboards

There are a number of benefits that periodic thermographic surveys offer those responsible for switchboard maintenance.

A survey is the first step in lowering the ESFI figures around electrical failure and associated injury. As one of the crucial components to supplying a building or area with electricity, it's just as important that the inhabitants are kept safe.

Secondly, from a cost perspective, a thorough survey will easily outweigh the potential expenses incurred by a failure not being identified. As a thermal imager can detect specific areas where hot spots may appear, this can often prevent a total system overhaul. In many cases, when a single problem is discovered and fixed, it can prevent the deterioration of the entire system.

Lastly, there's the benefit for your business overall. Many insurance companies now are asking that thermographic surveys be undertaken to assess potential insurance risk before allowing a policy to be formalised, with some offering the service themselves to ensure compliance. One company in the US claims to save their clients over \$100 million due to the use of infrared thermography.

To ensure the safety of the public and the proper operation of equipment, a periodic thermographic survey isn't just a good idea, it's a crucial step to ensure the continued success of your project.



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Stay switched on with DaRa Switchboards

When DaRa was chosen for a project with Puma Energy in Townsville, installing Motor Control Centres (MCCs) at their new fuel-import terminal, we helped present a solution that would retain safety standards of the switchboard while ensuring the utmost protection to the survey operator. This solution comprised of FLIR IR windows - fitted into most of the cubicles so that thermographic surveys could be conducted without having to open the covers.

At DaRa we consider ourselves the trusted electrical switchboard manufacturer for all industries. We also understand that the care and attention we put into the creation of our switchboards must be paired with appropriate upkeep and maintenance.

Designed, built and tested at our in-house manufacturing facility, our switchboards are recognised for their attention to detail, quality design and delivery. Our team are highly regarded as some of the most helpful switchboard engineers sales consultants today, so get in touch with us today and find out for yourself.

At DaRa, we bring the power to you.

A large background image showing a high-voltage power transmission tower in the foreground, with solar panels visible in the lower-left corner. The sky is a mix of blue and orange, suggesting a sunset or sunrise.

DARA SWITCHBOARDS

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