Fire prevention in electrical infrastructure using the Safetis EV thermal imaging sensor

PROBLEM

Electrical infrastructure such as substations, switchgear, and emergency generators are critical components in the energy networks of modern societies and industrial complexes. Despite being subject to strict safety standards and regulations, there remains a significant risk of fires and technical failures.

Multiple factors contribute to this issue: **fluctuations in electrical voltage, technical faults, system overloads, insulation errors, amongst others**. These factors can lead to overheating, and in extreme cases, fires that can have devastating consequences.

Fires in these critical infrastructures can cause massive material damage, disrupt business and operations, and sometimes pose a risk to human lives.
They may also result in extensive and long-lasting power outages that cause complications across a wider area, from households to large industrial complexes and public services.

Proactive and effective monitoring and risk management are therefore essential for the safety and functionality of these systems.

Sophisticated detection and control systems are needed that can quickly identify and respond to any signs of anomalies or threats, minimizing potential damage and preserving the integrity of the electrical infrastructure.

HOW DOES THE SAFETIS EV THERMAL CAMERA/SENSOR REDUCE RISKS?

SAFETIS EV offers a revolutionary solution targeting some of the most urgent problems related to electrical infrastructure. It is a modern thermal detection sensor/thermal camera designed for rapid and early risk detection before a fire breaks out.

REAL-TIME DETECTION
The SAFETIS EV system is equipped with 19,200 active temperature sensors for quick detection. These sensors automatically scan areas up to nine times per second, enabling early detection of temperature anomalies.

ONBOARD SMART EVALUATION
The „Onboard SMART Evaluation" feature in SAFETIS EV provides built-in intelligence that allows for real-time complex temperature data analysis directly on the device, eliminating the need for additional external hardware or software for data evaluation, which leads to faster information processing and response to potential issues.
DUAL ALARM DETECTION

The „Dual Alarm Detection" feature is a key characteristic of the SAFETIS EV system, enhancing its efficiency in monitoring and risk management. This mechanism allows for the setting of two different temperature alarm levels: one for warnings and another for critical situations.

The warning alarm is the first level that signals a potential issue. For example, it may indicate mild overheating or other anomalies that are not yet critical but require attention.

The critical alarm is the second, more serious level that triggers when the temperature reaches dangerously high values. In such cases, immediate intervention is needed to prevent damage or even catastrophes, such as a fire.
Users can link these alarms to digital outputs for each **Region of Interest (ROI)**, allowing for automated reactions in different areas and at different temperature levels.

MODBUS RTU COMMUNICATION PROTOCOL

Modbus RTU is a standard communication protocol widely used in industrial applications for data transfer between electronic devices. SAFETIS EV uses this protocol, simplifying its integration into existing systems.
The SAFETIS EV thermal camera/sensor can be **connected to extension solutions via RS485 or Ethernet, or digital outputs DO (3x) can be used directly for alarms.**

RS485 is a hardware specification for the physical layer, enabling communication over longer distances and in more robust environments. Ethernet is a standard network technology commonly used in local computer networks using TCP/IP. 3x digital output (DO), where one of the outputs functions as a heartbeat for device monitoring, ensuring it is still operational.
All these options **allow for a high degree of flexibility in integrating SAFETIS EV into various system and extension solutions.**

As SAFETIS EV supports the Modbus RTU communication protocol through RS485 and Ethernet, it can be easily and effectively integrated into a broader ecosystem of industrial control and monitoring systems like fire alarm system or PLC.

AUTOMATIC AREA SCANNING

Utilizing automatic real-time area scanning, SAFETIS EV can rapidly respond to any changes, thereby significantly reducing the time required for problem identification and resolution.

As a result, there is **a high degree of reliability and safety that minimizes the risk of technical failures, overheating, and ultimately fires.** The SAFETIS EV thermal camera/sensor thus represents protection not only against tangible damages but also a reduction in financial costs associated with potential disasters and subsequent repairs.

CAMERA PLACEMENT

For optimal monitoring, **it is crucial that the SAFETIS EV camera is correctly positioned**. Assumptions that it will cover the largest area are incorrect and misleading. Correct placement can be calculated in our FOV calculator, which graphically displays the area that the thermal camera/sensor will cover for the customer.

MOUNTING METHOD

SAFETIS EV is a lightweight and compact thermal sensor/camera, weighing less than 300 grams. This simplifies mounting on various types of walls and ceilings without the need for additional equipment or structural modifications. A mounting bracket for attachment is also included in the delivery.

SOFTWARE CONFIGURATION

It is true that SAFETIS EV is primarily a simple thermal sensor for easy installation and fire detection. However, the included software allows setting additional parameters and options for Regions of Interest (ROI), including two temperature alarm levels, which is important for effective detection and proactive maintenance.

SAFETIS EV does not require any additional PC or hardware for its operation, which is a significant advantage.

Thanks to its technical specifications such as 19,200 active temperature sensors, fast detection with automatic scanning up to 9 times per second, and a dual-level alarm system, the SAFETIS EV thermal camera/sensor is an ideal solution for monitoring distribution substations, transformer stations, and emergency generators.