The Controller

October

LOGIC Technologies, Inc.
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"Advanced technological solutions at an affordable cost."

Inside this issue:

Ideas for articles of interest?
Please submit articles or requests to:
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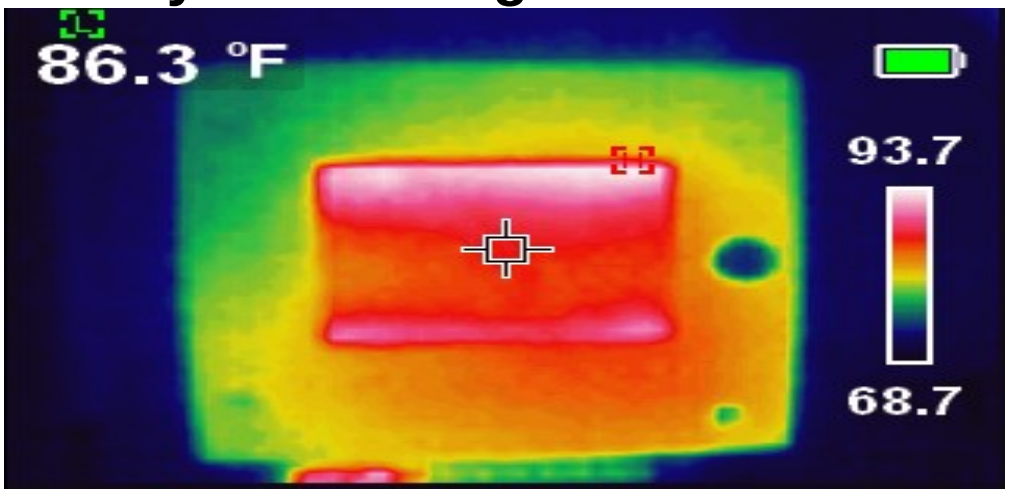
Thermal Imaging Cameras Boost Safety and Savings



If you take care of your control systems they will take care of you and a valuable tool to help you accomplish this is a thermal imaging camera. A thermal imaging camera (TIC) is a device that uses infrared radiation to create an image similar to a camera, however it measures heat or temperature and displays it as an image or color map. Lighter or brighter areas are warmer and darker areas are cooler.

In recent years, these cameras have dropped in price and devices are available that plug into smartphones as well as commercial units. They range in price from several hundred dollars to tens of thousands.

By using thermal imaging, problems can be spotted ahead of time, helping you to avoid shutdowns and keeping your employees safe from potentially hazardous situations.

One of the best ways to get ahead and stay ahead on maintenance is by systematically using a TIC to scan your facility for overheating electrical components and equipment. Thermal imaging also aids in predictive maintenance, which helps determine the condition of in-service equipment in order to estimate when maintenance should be performed. Predictive maintenance differs from preventive maintenance in that it uses the actual condition of the equipment, as opposed to an average or expected lifespan to determine when service is needed. Having this information makes for convenient scheduling of corrective maintenance which is performed only when needed and significantly reduces equipment downtime. A TIC can also help detect water leaks and areas with excessive moisture buildup. When used to spot losses of heat and energy in equipment and insulated systems, thermal cameras can really help to save money.

Training Information and Schedule

Training Enrollment

LOGIC Technologies, Inc. conducts in-depth training sessions at our facility on a monthly basis. Two free sessions are included with each system purchased. Additional training sessions are available for a nominal fee. Operator training sessions are $1045 per person and advanced training sessions are $1045 per person. We provide lunch for each class day; however, all other travel expenses are your responsibility.

Operator- Level Sessions

This class session provides overview coverage of the use of our system to maintain the daily operations of a refrigerated facility. The class is conducted by one of our senior engineers who have many years of experience designing refrigeration control systems. In effect, the classes are taught in layman's terms by someone who fully understands the issues faced by refrigeration operators.

October 11 - 13
December 13 - 15

Advanced SST Sessions

This class session provides in-depth coverage of the screen and report development tools. Also, briefly covering the script language used to develop control algorithms. These classes are conducted by senior members of our engineering staff. Prior technical and basic programming knowledge is a prerequisite for this course.

To be announced.

* Seating is limited, make your reservations early by contacting:

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There are several factors to consider when selecting a thermal imaging camera. These are resolution, range of temperature, sensitivity and durability.

In an industrial setting, a higher resolution will produce more accurate readings. You will want to make sure that the camera you select has a temperature range compatible to what you expect to measure. A sensitive and precise camera will be able to detect minute changes in an environment and ensure your measurements are reliable. Lastly, you will need a portable device that is durable and able to withstand your anticipated environment. Look for a device with water, dust and shock resistance if needed.

Some of the common causes of fire and overheating equipment include loose connections, load imbalances, corrosion and increases in impedance to current.

When you observe an overly hot reading via thermal imaging, go back and perform follow up testing with a volt meter to further isolate the problem area. When repairs have been completed and the equipment is back in operation, a thermal imaging camera can confirm if the repair was successfully completed.

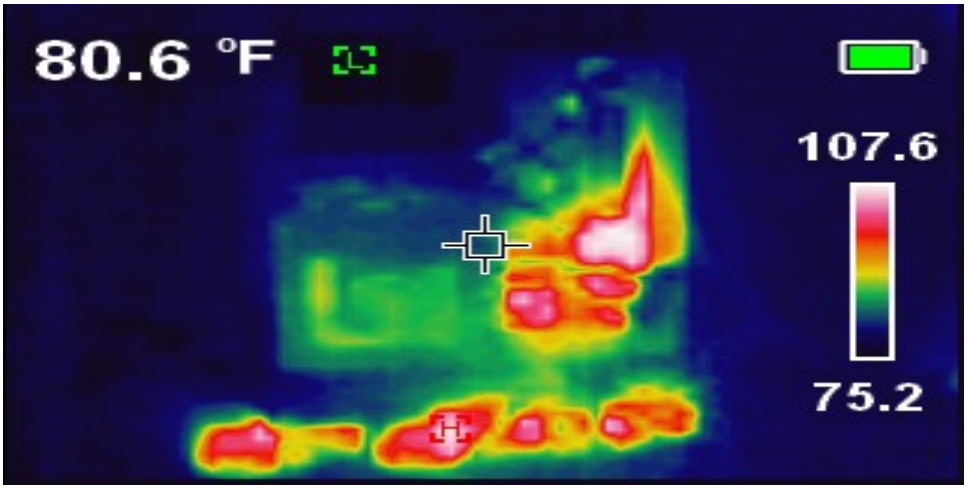
ENERGY - EFFICIENT SOLUTIONS PROVIDED ON AN INTERNATIONAL SCALE

Benefits Of A Preventive Maintenance Program

Studies conducted by the Federal Energy Management Program have shown that a properly implemented preventive maintenance program can result in savings of 30% to 40%. Preventive maintenance can reduce maintenance costs, eliminate breakdowns, and minimize or eliminate the amount of downtime in a facility, all of which leads to an increase in productivity.

Because heat is a good early indicator of problems or malfunctions in equipment, using thermal imaging first in your preventive maintenance program allows you to map results over time while equipment is in service. This allows maintenance staff to observe any unusual spikes and address problems before they become failures.

By monitoring equipment performance, companies can transition away from costly emergency repairs, and instead focus on scheduled maintenance which in turn will extend the lifespan of equipment. Inspections take much less time than repairs and are able to be performed while equipment is in operation. Inspections can be performed even more rapidly when using a thermal camera.



Some other components of a preventive maintenance program include the observation and experience of maintenance staff, comprehensive manuals from original equipment manufacturers and specialized software that is used to track the performance of equipment.

Preventive maintenance can be calendar-based, usage-based, or condition based. A usage-based program will take into account how frequently the equipment is running, as in some facilities, equipment may be run 24/7 in continuous operation. A condition-based program will use a visual inspection or a measured condition, depending on how often different parts experience wear and tear.

In the past, facilities would only replace parts and equipment when they broke down to capture the longest run time possible and mitigate costly time for repairs. But over time, statistics have become available that show this is not the most cost effective solution. When parts are replaced before they fail, there is less chance of surrounding parts sustaining damage.

History Of The Thermal Imaging Camera

A thermal imaging camera is a device that captures an image using infrared radiation similar to a standard camera using visible light to record an image. Visible light cameras capture images in the 400 – 700 nanometer (nm) range, whereas thermal imaging cameras are sensitive to wavelengths in the range or 1000 nm to 14,000 nm.

Sir William Hershel discovered infrared in 1800 as a form of radiation beyond red light. These infrared rays were mainly used for thermal measurement.

The development of detectors was focused mostly on the use of thermometers and bolometers until World War I.

Hungarian physicist Kálmán Tihanyi invented the infrared-sensitive (night vision) electronic television camera for anti-aircraft defense in Britain in 1929.

In the late 1990's the use of infrared began moving towards civilian use. A dramatic decrease in price for uncooled arrays, along with the significant increase in developments, led to a dual-use market encompassing civilian and military uses.

A thermal imaging camera consists of five components: an optic system, detector, amplifier, signal processor and display. These parts work together to gather infrared radiation, like that given off by warm objects or flames, into a visible light representation in real time.

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