

Infrared Cameras and Safety Inspections at Tiger-Sul Facility

Stu Lloyd, Tiger-Sul Plant Manager

Whatever the industry, there is always a need for proactive response to help minimize potential damage or injury in the workplace.

Thermal imaging is the perfect tool to help with this by detecting early signs of failure by scanning for anomalies. Tiger-Sul uses thermal imaging to highlight issues and potential sources of ignition during manufacturing facility inspections, as shown in Figure 1.

What is Predictive Maintenance?

Predictive maintenance is a way of predicting when machines or equipment may fail, allowing maintenance to then be conducted before the failure occurs.

These predictions are based on temperature measurements to evaluate machines by detecting temperature anomalies in hot and cold spots. This process is condition monitoring to detect possible changes in equipment before failure occurs.

How does Predictive Maintenance work?

By using condition monitoring equipment like infrared cameras, predictive maintenance can be carried out by assessing equipment and machinery 'around the clock' in a fast and low-cost manner.

Thermal Imaging cameras can capture infrared images of mechanical components within the machinery including, motors and pumps. Once the components have been identified, it is easy to determine problems within them like bearings or gearboxes on conveyers, augers, and lift elevators.



Figure 1: Conveyor bearing failure as seen with a thermal imaging camera..

By following this process, managers can respond quickly to prevent these potential damages from becoming costly failures further on.

How can I use Thermal Imaging to detect faults?

Thermal equipment is often used within industry to highlight issues with mechanical systems to detect overheated bearings shown by high-temperature readings, demonstrating where strain has occurred on the motor. Thermography cameras can also detect lubrication issues and misalignment that could result in a reduction in workflow pace if not detected.

Infrared cameras can be used to carry out low voltage inspections of electrical equipment by identifying temperature increases in electrical connectors. Loose connections result in potential arcing and/or increased heat generation. Locating the high temperature position provides opportunity to pinpoint and correct problem before failure occurs.



Figure 2: Electrical panel breaker failures as seen by thermal imaging.

As demonstrated in Figure 2, thermography can also be helpful when conducting inspections of connectors carrying high voltages to detect issues. By identifying the temperature difference, you can then work out what actions need to be implemented before the problems occur. The image captured on the thermal camera will also help to clearly indicate where circuit breakers and power lines of high voltages are situated to help assess other potential issues.

Why Use Thermal Imaging

• Easy-to-use equipment

Just like a standard camera or a mobile phone, thermography cameras are based on the same basic hand-held principle of 'point and shoot' to capture images, they also can record video.

• Used during systems operations

You don't need to worry about shutting down plant equipment for predictive maintenance to be conducted. The thermal cameras will still be able to detect faults accurately.

• Locate the exact problem areas

Thermography can identify precise locations where anomalies are situated, helping you to fix the problem promptly before it gets worse.

Where can I use Predictive Maintenance?

• Electrical Installations

Detect poor connections, arcing, internal fuse damage and electrical leakage.

• Mechanical Industries

Seek out overheated bearings, equipment, and machines, highlight misalignment issues that can cause heat buildup.

• Plumbing Survey

Highlight insulation breakdowns, blockages in pumps, pipes, and valves.

About Tiger-Sul's Predictive Maintenance

Tiger-Sul started using infrared cameras at the Irricana facility years ago for proactive maintenance with great success. The Tiger-Sul maintenance department now has the ability to inspect essential product transfer systems, steam systems, and electrical infrastructure without shutting down equipment; thus allowing production to continue safely until scheduled maintenance is performed.

An added bonus to using the new technology is the low cost and ease of use. The ROI on the equipment can be measured in months and introduces a measure of accountability into maintenance/servicing activities as the IR images are time-date stamped. These images can provide a visual library for any equipment being monitored, then compared to previous images, possibly showing any degradation of stress points.

About Stu Lloyd

Stu is the Tiger-Sul Six Sigma Black Belt Champion and Plant Manager at the Tiger-Sul Irricana manufacturing facility, Canada.

Stu's background before moving into manufacturing 15 years ago was in the military, technical training, civil aviation, and defence industries, where the infrared technology is already heavily adopted.



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