

Thermography Services

HSB, part of Munich Re, is a technology-driven company built on a foundation of specialty insurance, engineering and technology, all working together to drive innovation in a modern world.

HSB Thermography overview

Anticipating risk and preventing loss is core to Hartford Steam Boiler's offerings. While routine equipment inspections and preventive maintenance can reduce failures, they cannot reliably identify unseen signs that a breakdown may be imminent.

HSB Thermography Services offers infrared scanning to identify loose or deteriorated connections that can detect overloading and other "invisible" problems that could lead to an unforeseen breakdown in the future.

How infrared thermography works

All electrical and mechanical equipment radiates heat. Infrared video cameras that are sensitive to thermal radiation detect and measure the temperature differences between surfaces. The cameras then convert the information and display it as a visible image, allowing us to "see" a heat signature.

Abnormal or unexpected thermal patterns typically indicate a problem with the equipment, including conditions such as:

- Loose electrical connections
- Overloaded circuits or phases
- Deteriorated or damaged insulation
- Bearing failure
- Insufficient lubrication
- Steam leaks

These and other issues show up as "hot spots" that a trained professional can interpret to determine the likely cause and potential remedy.

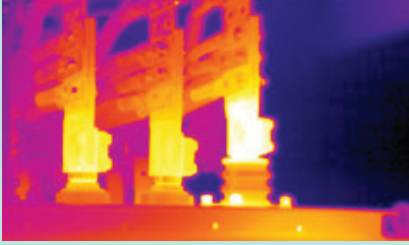
A cost-effective tool

The cost of an initial survey can result in a significant savings when compared to the cost of a breakdown. And, this savings can be compounded when factoring in the potential losses due to damage associated with fire.

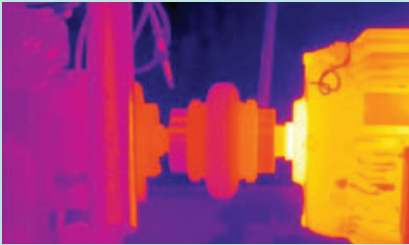
For example, repairing a loose connection – easily found with a thermographic scan – may cost only about \$100. If left undetected, that same connection could result in a fire. That might mean injury, loss of life, or severe damage that shuts a business down.

Thermography in action

The following are examples of how infrared thermography can help prevent loss and help businesses avoid losses that impact the bottomline.



Overheated transformer bushing
A transformer experienced an internal problem that a thermography survey revealed as an overheated bushing. Within 24 hours, the transformer was shutdown, and a back-up unit was installed. This averted potential spoilage of millions of dollars in agricultural products.



Under-lubricated motor bearing
A thermography survey revealed that the bearing on the driving end of a motor was reading 187 degrees F, more than 60 degrees above ambient. On closer inspection, the lubrication was found to be insufficient. Proactively correcting the problem prevented the motor from failing.

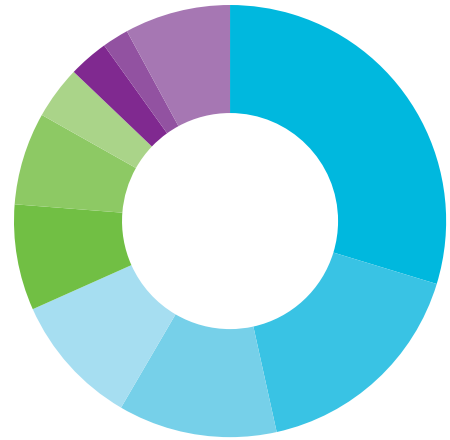


A properly operating steam trap
Not all hot spots indicate a problem. This image shows a steam trap that is operating properly. Faulty steam traps waste energy; infrared thermography is an invaluable tool for readily detecting them so they can be repaired.

**Primary Causes of Electrical Losses:
HSB Claim Data**

Name	%
Defective connections / parts *	30
Moisture	17
Line disturbance (other than lighting)	11
Defective / inadequate insulation *	10
Lightning	8
Foreign objects / short circuiting *	7
Collision	4
Overloading / inadequate capacity *	3
Accumulation of dust, dirt and oil *	2
All other causes	8

*(causes that are often found during Infrared survey)



The HSB difference

For over 147 years, Hartford Steam Boiler has been setting the standard in equipment breakdown and other specialty insurance worldwide. We bring deep engineering knowledge and skills, along with close relationships with our customers and business partners.

HSB has been conducting thermographic surveys for many types of businesses — grocery stores to steel mills, since 1983. Our program meets the American Society of Nondestructive Testing Practices for Thermal/Infrared Testing Certification and is overseen by an independent Level III company, Snell Infrared in Barre, Vermont.

HSB Thermography Services uses video rather than infrared scan guns to generate the most accurate data available. Our certified technicians, located in major cities across the United States, consult with customers to clarify their needs and goals before

work begins. They evaluate the scan results and provide meaningful recommendations that can help the customer prevent potential losses.

This combination of consultation and technology is key. Without the knowledge and experience needed to correctly interpret results, an infrared survey cannot deliver its full benefit.

Value of thermography services

- Independent studies have shown that for every \$1 spent on infrared surveys, \$4 were realized in cost avoidance. And this is only on direct damage.
- When business interruption, extra expense or spoilage losses were avoided the ratio went to 1:20.

For more information:
Ronald (JR) Smith, Director,
HSB Thermography Services,
Ronald_Smith_Jr@hsb.com
216-588-1381
Or, visit <http://www.hsb.com/HSBGroup/thermography.aspx>