

## WHY USE INFRARED THERMOGRAPHY?

Infrared thermography is a non-contact diagnostic tool used in preventive and predictive maintenance programs. Identifying an anomaly, scheduling the repair, and eliminating the cause of the problem within a proper time frame is the most efficient and cost effective way to maintain your systems as well as reduce the potential risk of loss.

## WHAT IS INVOLVED IN AN INFRARED CONSULTATION ?

- The mechanical and /or electrical system must be “under load”.
- Systems should be operating under load for a minimum of 20 minutes.
- Increased load results in more defined heat patterns and better anomaly identification.
- Infrared thermography is limited to surface temperature and covers will need to be removed.
- A qualified electrician should be on site to remove electrical covers. This is also beneficial if repairs are required.
- The risk consultant will check all operating mechanical and electrical systems, identify apparent anomalies, and store data for further analysis and reporting.
- A report, including pictorial representation of the information gathered, will be prepared.

For more information on this or other loss prevention concerns please contact:

*Mennonite Mutual Fire Insurance Co.*

### RISK CONSULTING DEPARTMENT

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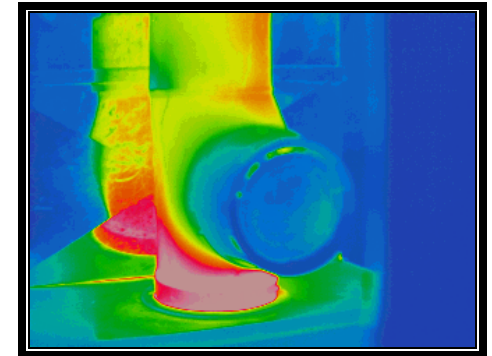
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Working with you to reduce frequency and severity of losses, by reducing or eliminating potential hazards that may cause loss of property or life.

# INFRARED THERMOGRAPHY

*Mennonite Mutual Fire  
Insurance Company*

RISK CONSULTING DEPARTMENT



AN INVALUABLE TOOL FOR:  
Electrical Systems Testing  
Mechanical Systems Testing  
Preventative Maintenance  
Loss Prevention

# Infrared Thermography

- What is it?
- What does it do?
- How do we apply it?
- What do we see?

## WHAT IS IT?

Infra - means beyond  
 Red - a color in the visible spectrum  
 Thermo - heat  
 Graph - picture

Infrared thermography is the picture of heat beyond the red end of the visible spectrum.

## WHAT DOES IT DO?

Infrared thermography is a technique that uses a specialized infrared camera or sensor to detect and image heat and heat patterns without physical contact. This technology is limited to surface temperatures and will not penetrate walls or other covers.

This technique makes invisible infrared radiation visible.

Many anomalies can be detected immediately, however, data is also stored for further analysis and future trending.

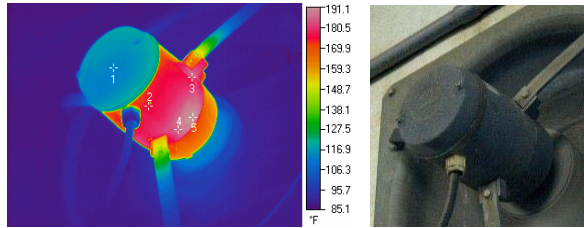
## HOW DO WE APPLY IT?

The primary focus of infrared thermography for Mennonite Mutual Fire Insurance is Mechanical and Electrical Consultations.

### MECHANICAL CONSULTATIONS

Mechanical systems generate heat during normal operations making infrared thermography an excellent tool to evaluate these operations. Excessive heat generated by wear, misalignment, over or under lubrication and misuse are often identified.

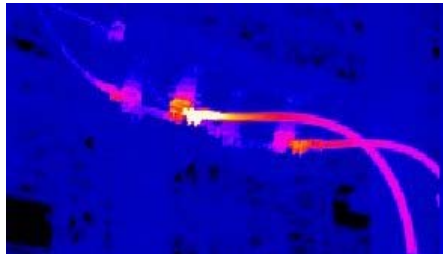
Some mechanical applications are motors and generators, belts and pulleys, bearings and gears.



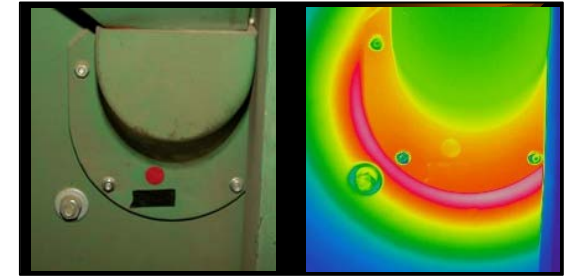
### ELECTRICAL CONSULTATIONS

Infrared imaging enables us to quickly identify the heat patterns associated with high resistance or excessive current flow in an electrical system before the situation results in an outage or explosion.

Once a problem is identified, solutions can be pursued using other tests if necessary.



## WHAT DO WE SEE?



Visible Light Image - bearing holder with electrical tape to aid with the interpretation  
 Thermogram - heat patterns associated with the bearing holder where blue is indicative of lower temperatures while red / white suggests increased heat.

The thermographic information is stored and analyzed to determine operating temperatures and incorporated into a report.

*Below is a report interpreting the results adjusting for emissivity and reflectivity.*

Mennonite Mutual Fire Ins				
Box 190, Waltham, SK S0K 4R0 306 945-2239				
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THERMOGRAPHIC REPORT				
COMPANY NAME: John Doe's Seed Cleaning		LOCATION: Upper Right Bearing Holder		
ADDRESS: Box 123		EQUIPMENT ID: Gustafson Grader #2		
CITY, STATE ZIP: Anywhere, SK, S0S 1S0		SEVERITY: Immediate Action Required		
38.6 °C		104.9 °C		
Emiss.	Rect1	Ref.	Point3	Point4
	0.96	0.96	0.96	0.96
Avg °C	74.0			
Min °C	38.1			
Max °C	109.3	45.7	109.0	69.9
Delta °C	63.6		63.3	24.3
PROBLEM	Intense heat around the bearing holder			
RECOMMENDATION	Investigate and correct			
INSPECTOR	Garth A. Driedger			
ASSISTANT				
CONSULTATION DATE	February 2003			