



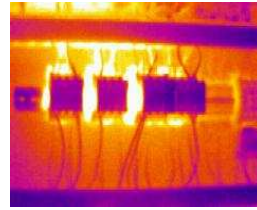
**Thermographic Inspection
Infrared Imaging**

THERMOGRAPHY?

The basis of Thermographic Inspection is formed by comparison of temperatures in like components. Variances can be quantitatively and qualitatively measured.

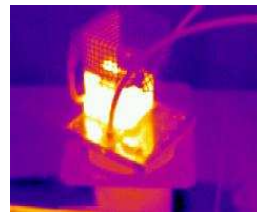
These variations in temperature often reveal some sort of abnormal operation.

Concealed equipment problems exist in almost every significant building. Unfortunately, very few are discovered and corrected through conventional maintenance activity. Most go undetected until there is an operating failure. Thermographic Inspections can catch potential problems before they are realized. If done periodically, predictive thermal inspections can save maintenance cost and prevent unproductive downtime, saving you money.



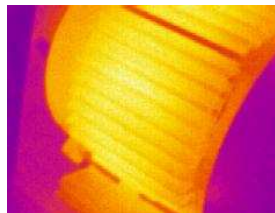
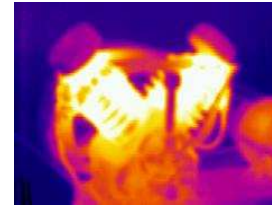
Electrical Inspection:
Locate and identify bad connections, overloading, overheating and damaged or worn components *before* they fail.

Inspections on mechanical and electrical equipment should be done at least once per year, and twice per year on critical equipment.



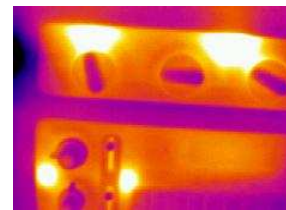
To get the most accurate readings equipment should be inspected when it is at least 40% loaded. All panels for each piece of equipment should be opened

Mechanical Inspections:
Spot problems invisible to the naked eye in motors, bearings, and conveyance systems.

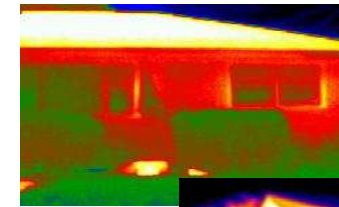


Any rotating motor or part can be inspected for wear, function, and lubrication or alignment issues, robbing it of power and you of money.

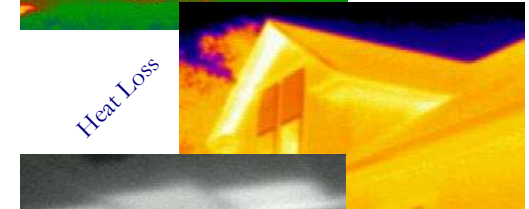
Predictive/Preventative Maintenance:
Diagnose & correct the problem before it becomes a costly problem.



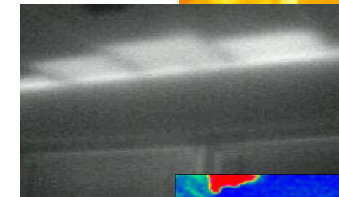
**Building Inspections
Moisture, Heat Loss, Infestations
Flat Roof Inspections**



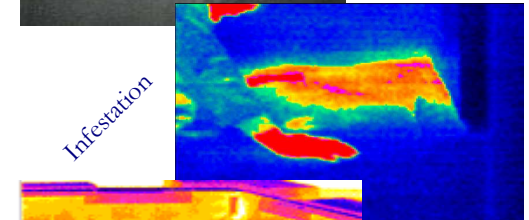
Building Inspection



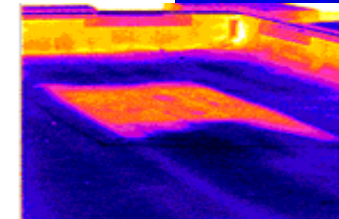
Heat Loss



Moisture Detection



Infestation



Flat Roof Inspection

Let us protect your infrastructure from unnecessary breakdowns and costly production downtime!

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Why Thermal Inspection?

Thermographic imaging is a non-contact method of detecting thermal anomalies. These anomalies, also called “hot spots”, usually precede equipment failure. Therefore, thermographic inspection of a facility’s electrical and mechanical systems can yield tremendous benefits.

For example:

Repair costs can be reduced substantially. The reason—by gaining the ability to schedule equipment repair and replacement before actual breakdowns, the total amount of equipment downtime is reduced.

Equipment life is extended by pinpointing faulty components and minimizing the damage that occurs to the overall system.

Catastrophic failures can be averted and the specific area of repair can be identified, eliminating the need to shut down an entire system.

Energy can be saved by identifying inefficient components in the system and then repairing or replacing them.

Risk management is improved by helping to prevent accidents and catastrophic fires related to mechanical and electrical system problems.

Thermographic imaging is an industry-proven and field-tested technique for meeting the requirements regarding electrical inspections.

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PREDICTIVE MAINTENANCE POTENTIAL APPLICATION TARGETS

GENERAL ELECTRICAL SYSTEMS

Bus bar overload
Fuse/breaker open, overloaded, normal, etc.
Conductors, insulated and un-insulated - overloaded
Transformer operating temperature, thermal distribution, winding temperatures, etc.

MECHANICAL

Power transmission/gearbox temperature
Power train drive clutch temperature
Gear train temperature
Drive belt/chain temperature
Drive pulley/sprocket temperature
Air compression temperature
Universal coupling temperature
Conveyor roller bearing temperature
Vacuum pump operating temperature
Shaft support bearing temperature
Shaft oil seal temperature
Circulating fan motor temperature

BUILDING

Wall and ceiling insulation
Window air leaks
Door air leaks
General envelope air leakage
Roof water leakage
Flashing water leakage
Hot/cold water/steam line insulation
Hot air central heating operating temperature
Steam central heating operating temperature
Steam heating heat exchanger operating uniformity
Steam heating line leakage
Central heating duct insulation
Roof thermal uniformity, eccentricity, heat loss, etc.

INSULATION VERIFICATION

Presence
R Value

LINE DETECTION

Underground
Overhead

“SEE” a problem before it becomes a problem!
Prevention = Production

ELECTRICAL INSPECTIONS

- Find “hot spots” related to loose connections
- Locate imbalances and overloads
- Check fuses, breakers, switch-gear and bus ducts
- Inspect substations, transformers and conductors
- Check repair quality after it is completed
- Inspect new installations prior to acceptance

MECHANICAL INSPECTIONS

- Inspect bearings and couplings on rotating equipment
- Quickly locate blocked cooling ports in motors
- Diagnose coupling, belt and gear alignment problems

ROOF MOISTURE SURVEYS

- Information for long-term roof maintenance programs
- Locate wet or damaged insulation
- Integrity-check new roof systems prior to acceptance
- Verify repairs
- Identify damage from storms, contractors, etc...
- Identify wet insulation prior to installing membrane
- Inspect the roof before the warranty expires

BUILDING DIAGNOSTICS

- Diagnose insulation and comfort problems
- Determine location/existence of existing insulation
- Provide QC inspections of insulating work
- Find air leakage sites
- Reduce freezing of water systems caused by air leakage
- Verify tire sealing
- Check HVAC for circulation and distribution problems
- Diagnose condensation problems

