

STEAM SYSTEM SURVEYS

**Reduce Costs, Downtime,
Failures and Equipment Damage**

Today's facilities engineers are saving of hundreds of millions of dollars every year with infrared steam system inspections. Our professional infrared testing services can substantially improve profitability and reduce your operating, testing and maintenance costs by:

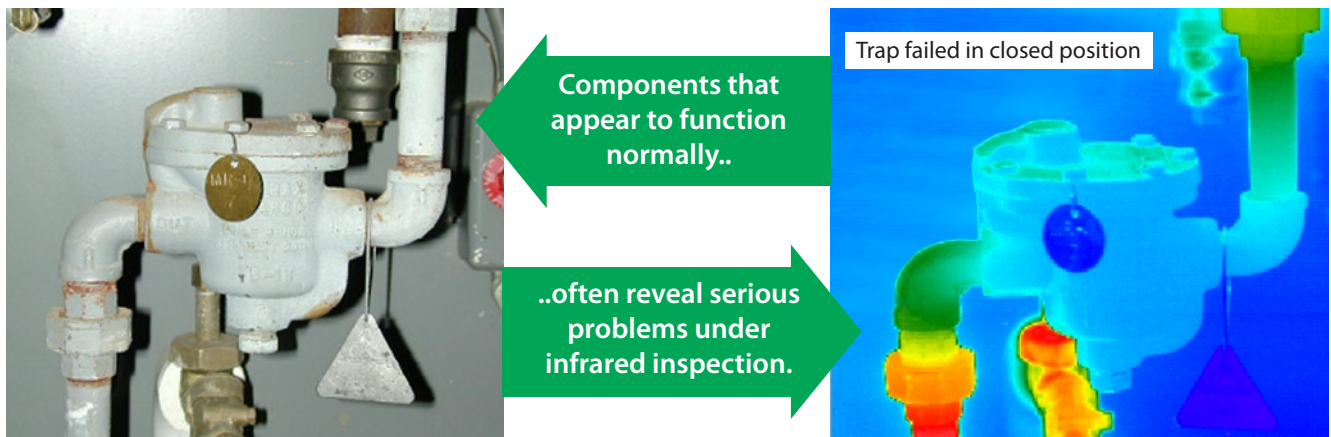
- quickly pinpointing faulty equipment
- reducing downtime and equipment damage
- preventing catastrophic failures
- cutting fuel costs and boosting efficiency
- targeting maintenance efforts
- establishing repair priorities

Steam Systems: What You Don't Know Can Cost You

In steam systems, improper heat distribution is a sign of wasted money and impending trouble. Temperature anomalies can indicate blockages, component failures or other common problems. Any one of these faults can significantly reduce the fuel efficiency of the entire system and lead to expensive or even catastrophic failures. Infrared thermography is a proven and cost-effective preventive maintenance tool for all types of steam systems.

Professional Thermography: Fast, accurate detection

Using cutting-edge infrared detection technology, our Certified Thermographers rapidly and accurately pinpoint the thermal anomalies that threaten the efficiency, safety, and reliability of your steam system.



The survey is non-contact and equipment can be inspected quickly. In a matter of hours, our professional infrared testing can develop a complete catalog of hidden failures in your steam system.

No need to shut down

Because thermography is non-contact and nondestructive, there is no need to interrupt production or plan for costly shutdowns. Our thermographers inspect your equipment under normal loads and operating conditions, so you don't have to disrupt your service and production schedules. By testing the operation of your systems in 'real time' our inspections can help you understand the practical impacts of emerging component problems.

Established 1984

INFRA^{RED} ANALYZERS INC
Certified Thermographers

Nationwide Service

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Steam Systems: Preventive Maintenance Saves Big Money

"Approximately 20% of the steam leaving a central boiler plant is lost via leaking traps in typical space heating systems without proactive maintenance programs. Relatively simple equipment and programs can easily cut losses in half. Intermediate equipment and programs can cut losses in half again. The best equipment and programs can reduce losses to less than 1%." - *Steam Trap Performance Assessment*, U.S. Department of Energy

"Unfortunately, when it comes to steam traps, people often ignore them. There's a complacency about them that is costing steam users much more than they realize. The hard reality of a plant maintaining its boiler and forgetting about the rest of the steam system can be a horribly wasteful proposition. Losses can include not only wasted energy but replacement of damaged equipment and misuse of man-hours. **It is not uncommon to discover system losses in the hundreds of thousands of dollars.**" - *Inspect Steam Traps for Efficient System*, by Bruce Gorelick and Alan Bandes, SteamOnline

"In steam systems that have not been maintained for three to five years, 15–30% of the traps may have failed. Regularly scheduled maintenance should reduce this to under 5%. The excess costs due to **one medium-sized steam trap** failing in an open position in a 100-psig steam system can be **over \$3,000/yr.**" - *Follow These Best Practices in Steam System Management*, by David Jaber, Gilbert A. McCoy and Fred L. Hart, CEP Magazine

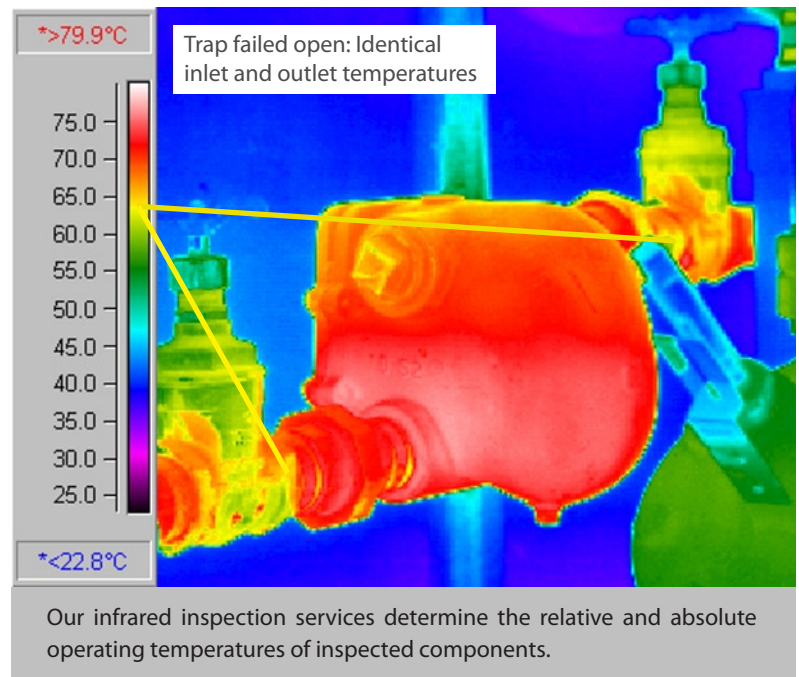
More Money Saving Benefits

- **Immediately Cost-effective:** Professional thermography delivers the best "bang for the buck" of all predictive maintenance technologies. In virtually every steam system inspection we find hidden problems that would have cost several times the survey investment. Locating even one or two of these faults can more than pay for the service.

- **Safe, Flexible, and Scalable:** Even underground steam pipes can be accurately inspected. Because infrared thermography is a "remote sensing" technology, systems of almost any size and configuration can be safely and accurately tested.

- **Proven Predictive Maintenance Technology:**

Since their introduction in the early 1970s, infrared surveys have given facilities managers the power to find hidden faults and inefficiencies in operating equipment, and even see problems before they happen. Infrared inspections have become an integral part of effective maintenance programs at plants across the country. Manufacturers, schools, healthcare facilities, utilities and many other groups have come to rely on the cost-saving benefits of routine infrared inspections.



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Pinpoint Problems in Steam Systems

Reduce Down Time and Increase Profits

Identify Blocked/Faulty Steam Traps and Lines

Locate Plugged Exchangers

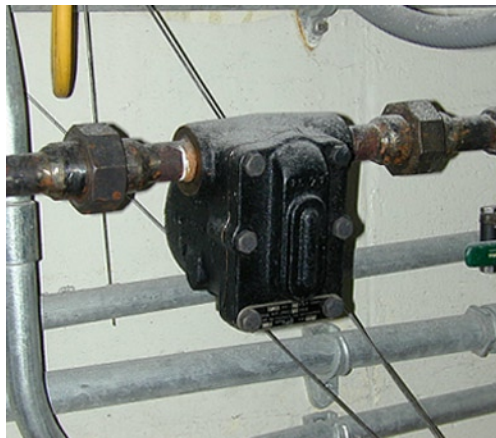
Pinpoint Boiler and Refractory Problems

Detect Problems in Real Time - No Need to Shut Down

Reduce Fuel Costs by Increasing Energy Efficiency

Identify Small Problems Before They Become Bigger and More Costly

Proactive, Predictive Approach Avoids Unscheduled Maintenance



Establish Repair Priorities and Save Even More

An effective preventive maintenance program boosts profits by scheduling repairs before expensive losses and emergencies occur. Infrared inspections help you quickly differentiate the relatively few real problems in a system from hundreds of potential problem areas. By using our reports to target and schedule their repairs, our clients find they can significantly improve the productivity of their maintenance programs. They've found that infrared inspections not only improve the reliability and efficiency of the physical plant, but also help them in their efforts to control ongoing labor costs.

Certified Thermography: Infra-red Analyzers is committed to the highest standards of professional thermography. Founded in 1984, we are an independent consulting firm serving thousands of commercial and institutional clients, including Fortune 500 companies such as GE, IBM, General Dynamics, UPS, International Paper, Coca-Cola, Weyerhaeuser, Nextel, Wyeth, and Anheuser-Busch. Our Certified Thermographers have completed courses of study and passed examinations as specified by the American Society for Nondestructive Testing (ASNT). We also provide ongoing training and support to our staff in all applications of thermographic testing.



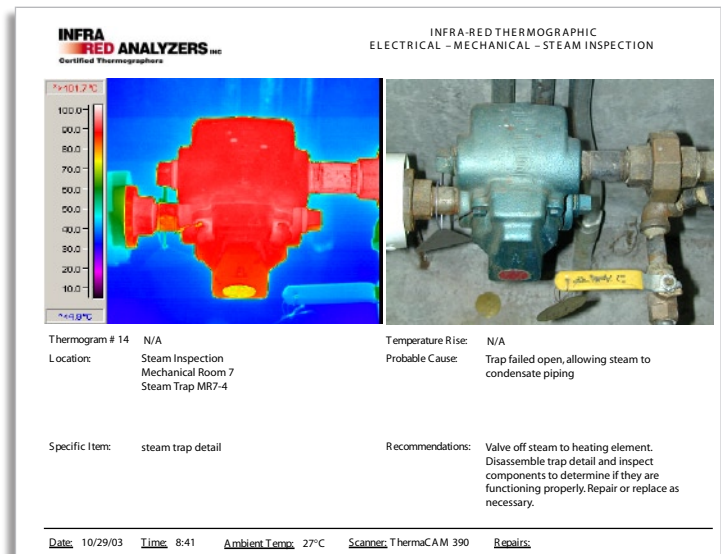
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What You Get..

Our professional testing reports lead the industry in quality, accuracy and detail. When you order a steam system inspection from Infra-red Analyzers, you have the option of receiving your test results as a printed full-color bound report, on a CD-ROM, or via e-mail in popular PDF format for even faster service. All report formats include:

- **Complete Equipment List:** All inspected equipment is listed with detailed references to location and specification.
- **Photographic Documentation:** All detected problems are documented with full color infrared and conventional photographs.
- **Repair Guidance:** To help you get the most out of your inspection report, we note probable causes and provide recommendations for corrective action.



Common Hidden Steam System Problems:

Trap Fails Open: Substantial Energy and Water Waste - **Trap Fails Closed:** Substantial Reduction in System Capacity, Water Hammer Damage, Potential Rupture
Line Leakage: Substantial Energy Waste, Associated Damage

Equipment Recommended for Infrared Inspection:

All steam system components, including:
Traps - Exchangers - Boilers - Refractory - Lines - Manifolds - Coils

Do you have questions about infrared inspections and how they can help prevent catastrophic failures and save you money? Please call us toll free at **800-879-1964**.

Full Service Thermographers..

We also perform roof moisture surveys, vector mapping leak detection, and other testing services:

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