

Tube Testing

Trane Care Services



Trane Care customized service solutions to buildings owners address operating efficiency, energy and environment concerns. Tube Testing is one of the five solutions designed to optimize your equipment reliability.



Tube-in shell exchanger wear

A heat exchanger contains several hundreds of tubes, all undergoing mechanical stress and chemical corrosion.

Corrosion may cause leaks into the rest of the equipment stopping the production of chilled water but also damaging compressor mechanism and heat exchanger internal elements, ultimately leading to major system breakdowns.

The tube condition is therefore critical to chiller performance and yet tubes are not checked during standard maintenance.

While they are relatively easy to maintain, heat exchangers can be very expensive to repair or replace.

Maintaining heat exchangers in optimum condition will result in:

- Improved equipment operation and reliability
- Extended equipment life
- Reduced operating costs
- Reduced risks of costly breakdowns
- Reduced downtime.

Various types of defects may happen while your chiller seems to be performing well

Chemical defects



EXTERNAL CORROSION
Caused by air intrusion.



DEPOSIT CORROSION
Deposits of algae and slime caused by inadequate water treatment.



INTERNAL PITTING
Caused by an abnormal presence of aggressive elements in water.

Mechanical defects



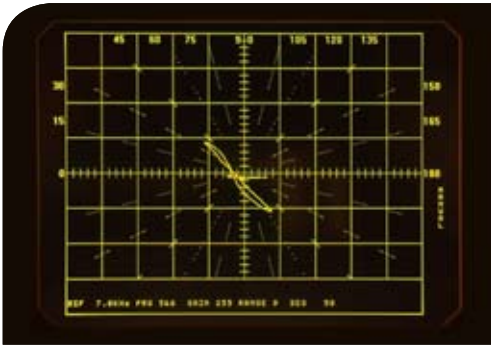
FREEZE RUPTURE
Caused by low water flow in the evaporator.



TUBE SUPPORT WEAR
Caused by the tube/support contact. Although this phenomenon is quite rare, it must be quickly detected.



STRESS CRACKING
Longitudinal or intergranular cracks caused by high water flow.



Tube-in-shell exchanger enhancement

Trane has over 30 years of tube testing experience and in fact, was the first HVAC manufacturer to apply the Eddy Current technique. We are the experts you can rely on.

Equipped with the latest technological tools, Trane can detect, locate and record internal and external corrosion, deposits, wear or cracking before their consequences start to damage your installation.

Trane specialists use an inspection probe inside each tube of the exchanger unit to detect the magnetic field that is generated by the eddy currents. The magnetic field being produced by these eddy currents is monitored with a micro-processor-based memory oscilloscope.

If a defect such as a crack is detected in the tube, the magnetic field from the eddy currents will be disturbed from their normal circular shapes and a change in the signal will display on the screen.

Eddy current tube analysis should be conducted as a part of predictive and curative maintenance program. It is the recommended scientific method to identify the root cause of a problem and the extent of damage caused to the tubes.

Tube testing by Trane

- Timing: Trane service professionals will use advanced simulator tools to define timing intervals with you.
- Downtime: 1-2 days
- Tube testing:
- Eddy current analysis of evaporator and condenser tubes
 - Analysis of signal on memory oscilloscope
 - Defect recording on strip-chart
 - Defect type identification
 - Endoscopic inspection of detected faults
- Report 1: Preliminary report produced on site.
- Report 2: Full report within 1 week including:
- Test summary
 - Tube by tube results
 - Tube-sheet defect analysis
 - Graphic recordings
 - Photographs of defective zones
 - Technical recommendations.

All reports are held by Trane for future reference.

If your report shows that intervention is necessary, a Trane technical expert will propose practical actions to resolve the situation and will offer his assistance to restart your chiller.





Trane Care Services

Trane Care offers an extensive array of upgrade products to answer our customers' top business priorities. Because Trane service experts will analyze your objectives, you can trust they will make the best recommendations to meet your building needs.

With Trane Care, let us show you how to enhance your cooling and heating system to like-new performance. Trane Care reliability services reduce the risk of breakdowns, improves operation, and extends equipment life.



Reliability



Energy



Environment

Trane Care proposes cost effective ways to optimize the energy efficiency of your existing system and generate immediate savings.

Trane Care service experts can advise building owners and managers on how to manage complex issues such as building carbon foot print, occupational health, comfort, safety and compliance with national and local legislation.

Call on Trane

Call on Trane today and get the expertise of a global leader and its experienced service professionals and resources. With more than 120 locations in Europe, Middle East, Africa and India, Trane has one of the most extensive service networks in the industry.

Our local technicians have:

- Knowledge on the history of your equipment and controls
- In-depth expertise in servicing your equipment and controls
- Access to the latest technology and support

Call us, let's talk.



Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services, and parts. For more information, visit www.Trane.com.

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.

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