

Trane Building Advantage

Tube Testing

TRANE
TECHNOLOGIES

Trane Building Advantage customized service solutions for building owners address operating performance, energy efficiency, and environment concerns. Tube Testing is one of the five solutions designed to optimize your equipment reliability.



Oil Analysis

Vibration Analysis

Compressor R'newal

Tube Testing

Exchanger Enhancement

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



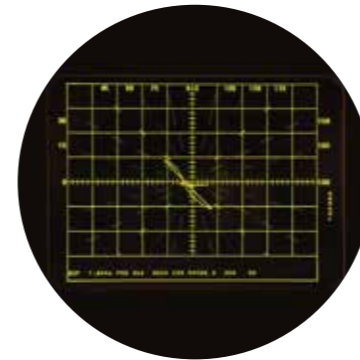
FREEZE RUPTURE
Caused by low water flow in the evaporator.



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 Services

The real expertise of a manufacturer



- Systems approach
- Dependable installations
- Energy saving solutions
- Operating cost optimization
- Chiller plant management solutions
- Chilled water production solutions.

At Trane, we are committed to providing a comprehensive portfolio of HVAC solutions throughout your system lifecycle.



Breakdown resolution

No one plans for breakdowns, but when they happen you need the right partner. Our expert Service Engineers use the latest diagnostic tools to guide you through your options to Repair, Renew, Replace or ReThink.



Secure operations

At every point during the lifetime of your equipment - installation, commissioning, maintenance or breakdown - Trane can offer an effective solution with commissioning, first-aid kits and service agreements.



System upgrade

Trane Building Advantage

Trane is committed to bringing the latest technological advantages to our customers through a wide portfolio of solutions which increase the Efficiency, Reliability and Sustainability of their HVAC plants. Our Service Engineers use their expertise together with the latest diagnostic tools to future-proof your system and make it "better than before".



Equipment rental

For special events, exceptional needs or when you want to ReThink HVAC management, Trane Rental Services have the right solution. With our extensive fleet of equipment, we can perfectly match your temporary heating and cooling requirements.



Contact us

With over 1000 of the best trained sales engineers and service technicians in the industry, Trane is in the best position to serve your needs. Just call us and we will help you configure the Trane Free Cooling solution for your HVAC system.



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.eu or tranetechnologies.com.