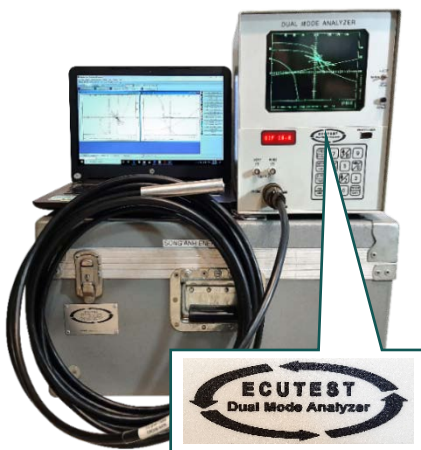


EDDY CURRENT TESTING CHILLER HEAT EXCHANGER TUBES

INTRODUCTION

Eddy Current Test (ECT) is the nondestructive testing method which applies electromagnetic induction effect.

ECUTECH ECT equipment is specifically designed to find crack, leak, erosion, and corrosion on both inside and outside of non-ferrous tubes.



IMPACT FACTORS

There are some factors that can cause erosion, corrosion, blockage, even leak and crack on heat exchanger tubes:

- Inappropriate water treatment solution.
- Friction by vibration when operating.
- Freezing due to chilled water temperature is too low.

CONSEQUENCES

Heat exchanger tubes, which are not checked, monitored and treated on time, can lead to leak or crack. If a copper tube punctures, water mixes with refrigerant, moves into and damages the chiller compressor. This is one of the most serious problems of chillers and affects operation of the whole buildings. In addition, a great deal of refrigerant loses because of this accident.



RECOMMENDATION

In order to monitor and promptly handle heat exchange tube problems, chiller manufacturers recommend that tubes should be inspected every 2 to 5 years. Test period can vary depending on chiller operating conditions and heat exchanger conditions.

The copper tubes need to be tested both inside and outside to be able to accurately recognize the current status.



Maintenance

[] Measure the compressor motor winding resistance to ground; a qualified service technician should conduct this check to ensure that the findings are properly interpreted.

Contact a qualified service organization to leak-test the chiller; this procedure is especially important if the system requires frequent purging.

[] Use a nondestructive tube test to inspect the condenser and evaporator tubes at 3-year intervals.

Note: It may be desirable to perform tube tests on these components at more frequent intervals, depending upon chiller application. This is especially true of critical process equipment.



MAINTENANCE

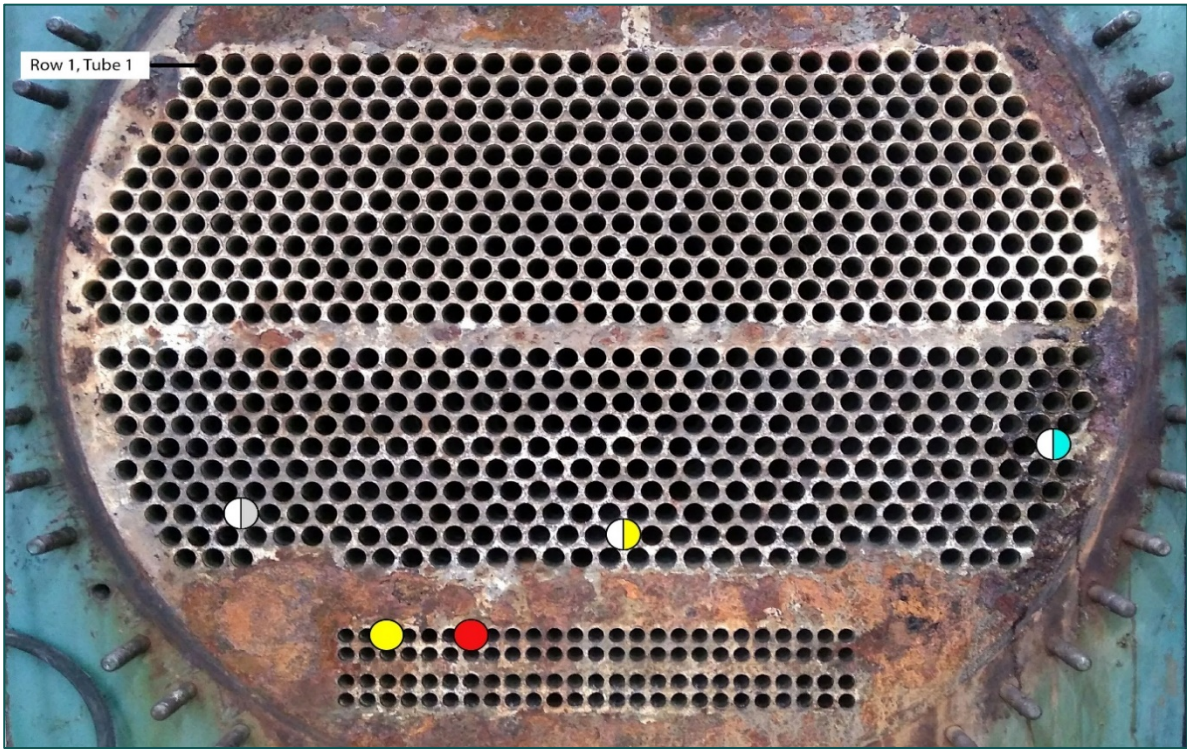
Procedure	Yearly	Other
Record operating conditions (on applicable Log Form)		
Clean tubes	X?	
Perform Eddy current testing and inspect tubes		2-5 Years
Lubricate motor		



APPENDIX C — MAINTENANCE SUMMARY 19XR,XRV Maintenance Interval Requirements

EVERY 3-5 YEARS			
COMPRESSOR	None.	CONTROLS	None.
COOLER	Perform eddy current test.	STARTER	None.
CONDENSER	Inspect float valve and strainer. Perform eddy current test.	OIL RECLAIM	None.

CASE STUDY



	DESCRIPTION
	OD Met Loss < 30%
	ID Met Loss < 30%
	OD Support Wear < 20%
	OD Corrosion Depth < 30%
	ID Pitting Depth < 30%
	Expansion Freeze Bulge
	ID Erosion Met Loss < 30%
	100% Penetration
	Restricted

	DESCRIPTION
	OD Met Loss > 40%
	ID Met Loss > 40%
	OD Support Wear > 20%
	OD Corrosion Depth > 40%
	ID Pitting Depth > 40%
	Freeze Rupture
	ID Erosion Met Loss > 40%
	Cracking
	Plugged

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