

NDT Solutions for HVAC System Integrity & Performance

In the **HVAC** (Heating, Ventilation, and Air Conditioning) industry, NDT (Non-Destructive Testing) services are essential for ensuring the structural integrity, safety, and efficiency of pressurized systems, heat exchangers, and piping components without causing damage. These services are critical for detecting corrosion, leaks, cracking in both manufacturing and in-service maintenance.

Here are the **key NDT Services** required in the **HVAC industry**:

- 1. Eddy Current Testing (ECT):** The most common method for inspecting non-ferrous tubes in chillers, condensers, and heat exchangers to detect corrosion, erosion, & cracking.
- 2. Remote Visual Inspection (RVI):** Uses borescope cameras to inspect hard-to-reach internal areas of HVAC components.
- 3. Infrared (IR) Thermography:** Used for checking insulation integrity, energy loss, and identifying electrical hot spots in HVAC systems.
- 4. Pulse Eddy Current Testing (PECT):** Used to evaluate the remaining wall thickness of ferromagnetic tubes under insulation.

Eddy Current Testing

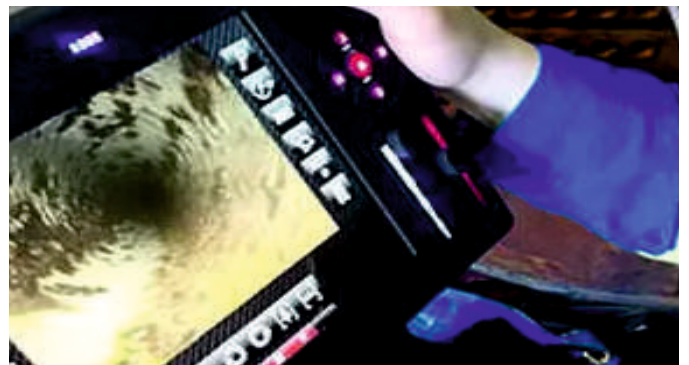


Eddy Current Testing (ECT) is a simple, high-speed, high sensitive, versatile and reliable NDT technique and is popularly used in many engineering industries.

Advantages

- High examination rate, thereby reducing inspection time.
- Examination of Ferrous and Non Ferrous material
- Repeatability comparison between historical & subsequent test results to establish corrosion rate and remaining life
- ECT discriminates between ID and OD defect orientation
- ECT is sensitive to gradual wall loss, cracking, small pitting

Remote Visual Inspection (RVI)



RVI (boroscopy/Videoscopy) is used to visually inspect plant components for surface defects, general condition, degradation, blockages & foreign materials.

Advantages

- Blockage detection in piping & tubing's.
- Complex component like Gear-Box, Compressors can be Inspected with ease.
- Foreign material search & retrieval.
- Air ducts and electrical conduits.

Applications

- Corrosion protection lining inspection in Cok drum.

Infrared Thermography



Uses infrared imaging to detect surface temperature variations, indicating subsurface anomalies or heat patterns caused by defects.

Applications

- Detecting corrosion under insulation, delaminations, or leaks.
- Monitoring overheating in electrical/mechanical systems.

Advantages

- Fast screening tool.
- Detect insulation damage & breakage.
- Detect gas or fluid leakages.
- Identify hotspots in electrical systems.
- Monitor thermal behavior under load.

Pulse Eddy Current Testing (PECT)



Pulse Eddy Current Testing (PECT) is an advanced electromagnetic inspection technology which majorly detects remaining wall thickness under insulation in ferrous material.

Pulse eddy current testing (PECT) can measure thickness through all insulation materials, coatings, fixed chicken wire, concrete, re-bars, corrosion product, stainless steel sheeting, aluminium sheeting, water marine growth, blistering scabs, through metallic mesh.

Advantages

- Cost for removal of insulation and re-insulation is saved.
- Reduced inspection time resulting in high productivity.
- Less operator dependent.
- 6 mtr length of telescopic pole enables to minimize scaffolding requirement.

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