Pulsed Eddy Current Testing (PECT)

PEC is an electromagnetic method to determine the wall thickness of electrical conductors. The PEC probe is placed on an insulated pipe or vessel. A magnetic field is created by an electrical current in the transmitting coil of the probe. This field penetrates through the cladding and magnetizes the pipe wall. The electrical current in the transmission coil is then switched off, causing a sudden drop in the magnetic field. As a result of electromagnetic induction, eddy currents are generated in the pipe wall. The eddy currents diffuse inwards and decrease in strength.

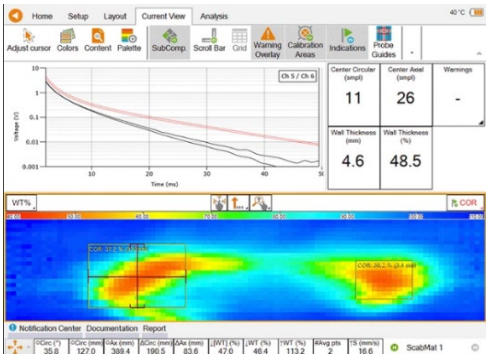
This is monitored by the PEC probe and used to determine the wall thickness. The thicker the wall, the longer it takes for the eddy currents to decay to zero. Applied operating principles of PEC vary from system to system. Generally, to obtain a quantitative wall thickness reading, PEC systems use algorithms that relate the diffusive behaviour in time to the material properties and the wall thickness.



e.g., Corrosion under insulation CUI.

Applications

- Corrosion Under Insulation (CUI)
- Corrosion Under Fireproofing (CUF)
- Insulated pipes and vessels
- Through aluminium, stainless steel, and galvanized steel weather jackets
- In-service scab corrosion assessment, no need to remove the scale
- In-service inspection of storage tank annular plates
- Underwater and splash zone structures
- Marine vessels



PEC data collected showing corrosion map with decay times.

Advantages

- Increased inspection-time efficiency
- Inspect through thick metal and insulation
- Save on insulation removal costs
- Real-time imaging for instant results
- One-touch automated reporting
- Range of application-specific probes
- Fast data acquisition
- Easy setup with automatic optimization of pulser and receiver parameters



PEC setup