

Eddy Current

A Method for Inspecting Non-Ferromagnetic Metals



Eddy current testing is used to detect discontinuities in assets such as pipes and tubing by subjecting them to a strong external magnetic field.

Eddy current methods are generally used in plant inspections for non-ferromagnetic metals or special applications such as heat exchanger tubes where a number of special coil designs are available. However, special differential Eddy current probes have recently been developed for the inspection of steel components including welds.

This method is based on the principle of measuring changes in the impedance of an electromagnetic coil as it is scanned over a surface of conductive material. The inspection is performed by placing an electromagnetic coil over a conductive material. When the coil is scanned over a discontinuity, the secondary magnetic field is distorted, thereby changing the loading on the coil. By observing these changes in coil loading and impedance discontinuities or anomalies may be identified.

Applications

- Nonferrous materials such as copper, brass, 304 stainless steel, 90/10 CuNi, etc.
- Internal tubing inspection in components such as main condensers, air conditioning units, lube oil coolers

Advantages

- No contact with component surface is required; high temperature testing or inspection of coated surfaces
- High scanning speed of 1m/s
- Component evaluation at variable depths is achievable through measurement at a range of frequencies or through different coil sizing