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Eddy Current Testing | Eddy Current Inspection

Eddy Current Testing or Eddy Current Inspection is one of several NDT methods using the principle of electromagnetism to conduct examinations. Other methods, such as remote field testing (RFT), flux leakage and Barkhausen noise, also use this principle.

THE Applus+ SOLUTION

Eddy Current Testing is completed through a process called electromagnetic induction. When alternating current is applied to the conductor, such as copper wire, a magnetic field develops in and around the conductor. This magnetic field expands as the alternating current rises to maximum and then collapses as the current is reduced to zero. When another electrical conductor is positioned in close proximity with this changing magnetic field, current will be induced into this second conductor. Eddy currents are induced electrical currents that flow in a circular path. Eddy Current testing takes its name from Eddies, which are formed when a liquid or gas flows in a circular path around obstacles under the right conditions.

ID probes, also referred to as Bobbin probes or feed-through probes, are inserted into pipelines or tubing to inspect from the inside out. ID probes have housing that keeps the probe centred in the product and maintain the orientation of the coil(s) constant relative to the test surface. The coils are most commonly wound around the circumference of the probe so the probe inspects an area around the entire circumference of the test object in one go.

Applus+ offers five NDT inspection methods for heat-exchanger tubing systems:

- ECT - Eddy Current Testing
- RFT - Remote Field Testing

- NFT - Near Field Testing (Fin Fan Testing)
- IRIS - Internal Rotary Inspection System.
- MFT – Magnetic Flux Leakage Testing

Choosing the appropriate NDT inspection method for equipment depends on the tubing's material and the specific NDT inspection needs. All of our inspectors are trained to use each technique so they can perform complementary NDT inspections to provide a comprehensive service.

The key difference to the services provided by Applus+ is the high level of training received by our NDT technicians, who work efficiently and report quickly.

Our NDT personnel is unique in the industry:

- A two-person team to perform the inspection
- An additional technician to analyse results on-site

As a result, we can typically provide:

- An initial report on the day of inspection
- A final report that is delivered in days, not weeks

Reports are only useful when the customer understands them fully. Applus+ ensures our clients understand our reports by:

- Explaining the initial reports on the day of inspection
- Providing a timeline for final report delivery
- Conducting an exit interview to answer all questions

The goal at Applus+ is to provide an excellent service and go beyond the industry standard.

Target customers

Eddy current inspections can be deployed in any sector that uses heat-transfer systems, including the petrochemical, power generation, industrial air-conditioning, and commercial heating-unit industry sectors.

Key customer benefits

Benefits of the Applus+ eddy current NDT services at Applus+ include:

- Fast inspection speed to approximately 60 feet (18m) per minute
- Differentiation between ID and OD flaws
- Reliability and accuracy of test results
- Detection of gradual wall-thinning and localised flaws
- Provision of both phase and amplitude information
- Inspection of U-bend tubes with some radius limitation
- Permanent availability of test-result records
- Accurate identification and evaluation of flaws under the support plates (baffles) using multi-frequency techniques