

Eddy Current Testing (ECT)

Eddy Current inspection is one of several NDT methods that use the principle of electromagnetism as the basis for conducting examinations. Several other methods such as remote field testing (RFT), flux leakage and Barkhausen noise also use this principle.



THE Applus+ SOLUTION

Eddy currents are created 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 collapses as the current is reduced to zero. If another electrical conductor is brought into close proximity with this changing magnetic field, current will be induced in this second conductor. Eddy currents are induced electrical currents that flow in a circular path. They get their name from Eddies, which are formed when a liquid or gas flows in a circular path around obstacles when conditions are right. ID probes, which are also referred to as Bobbin probes or feed-through probes, are inserted into hollow products, such as pipes, to inspect from the inside out. ID probes have a housing that keep the probe centered in the product and the orientation of the coil(s) somewhat constant relative to the test surface. The coils are most commonly wound around the circumference of the probe so that the probe inspects an area around the entire circumference of the test object in one go.

Applus+ offers five 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 inspection method for your equipment depends on your tube material and specific inspection needs. All our crews are trained to use all techniques so they can perform complementary inspections, providing the most comprehensive service possible.

The best crews in the business. The key Applus+ differentiator is the high level of training received by our crews, who work efficiently and report quickly.

They are unique in the industry in that they consist of:

- 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

Thorough reports, fully explained. Reports are only useful when the customer understands them fully. Applus+ ensures our customers 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 Applus+ goal is to provide excellent service and exceed the industry standard.

Target customers

Eddy current testing is of relevance in any sector that involves the use of heat-transfer systems, including the petrochemical, power generation, industrial air-conditioning and commercial heating unit industries.

Key customer benefits

Benefits of the Applus+ eddy current testing service include:

- Increase of 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 records available on test results
- Accurate identification and evaluation of flaws under the support plates (baffles) using multi-frequency techniques