

Corrosion monitoring

Ultrasonic corrosion monitoring is a non-intrusive (non-invasive) technique for mapping material thickness. The technique can be used to identify variations in material thickness due to corrosion or other degradation phenomena, graphically portraying problems such as stress corrosion cracking (SCC) or hydrogen-induced cracking (HIC).

Data can be stored as a digital image for subsequent analysis, and it can also be used as a reference for future inspections, using colour coding to show differences in thickness readings.

Applus+ is a trusted partner in corrosion monitoring, offering its own developed and patented methods, techniques, and solutions to every client.



THE Applus+ SOLUTION

Often the industrial assets, equipment, installations, and plants are exposed to general corrosion. This is the gradual destruction of a material common in metallic and non-metallic assets caused by interaction with chemicals, electrochemical, friction or other environmental causes. Applus+ helps clients mitigate costs by preventing degradation of an asset or equipment over time, thus problems can be addressed before it reaches its critical point.

When monitoring an asset, we observe the progress, quality, and integrity of your asset over a period of time. The discontinuity in materials is regularly shown on other surfaces or irregularities in the wall thickness. The regular data collection helps experts to consult on which maintenance work needs to be performed to mitigate damage. Clients frequently prefer regular monitoring to enhance operational reliability and prevent rapid degrading, avoiding failure and maintain reliable and safe operation for people and



environment.

Next to all conventional Non Destructive Testing (NDT) methods, Applus+ uses the following screening techniques:

- Visual inspection—VT
- Corrosion detection under insulation – RTD INCOTEST
- Detection of corrosion through coatings – SLOFEC
- Detection of corrosion under insulation – Guided Waves
- Detection of indications during pressure testing—Acoustic Emission
- Magnetic Material Memory – MMM
- Inspection of welds and base material for the presence of surface related cracks through the coating – ECA
- Corrosion of piping supported on supports – CUPS

Methods for detailed quantification of indications:

- Ultrasonic inspection of welds with accurate characterization of indications – ToFD
- Electronically controlled ultrasonic inspection – Phased Array
- Ultrasonic inspection – RTD IWEX-3D
- Non-contact ultrasonic inspection – EMAT
- Corrosion mapping T-scan / Map scan

Special Solutions:

- Automated ultrasonic weld inspection – RTD Rotoscan
- Automated weld inspection by irradiation – RTD Ray scan
- Automated corrosion mapping – T-scan / Map scan
- Internal pipeline inspection – PIT
- Difficult to inspect pipelines – DTI Trek scan
- Austenitic weld inspection – TRL
- Computed radiography – DR/CR
- Digitization of films
- Drone inspection
- Inspection of heat exchanger tubes (ET, IRIS)

Applus+ helps mitigate risks, ensure integrity and safety of assets, and contribute to a successful HSE program for people and the environment.

Target customers

The technique is used in a wide range of industries. In the oil and gas industry, for example, it is used for the in-service inspection and characterisation of corrosion in pipes,



storage tanks, and vessels. Proper monitoring is also necessary for boilers, crude oil systems, water systems, flow lines, storage tanks, vacuum towers, and cooling systems, to prevent leaks, and failures and contribute to high performance and reliability.

Key customer benefits

Safety: As equipment and assets age, they become more sensitive to corrosion. This effect should be properly monitored to avoid expensive replacement costs and accidents to people and the environment.

Cost reduction: Damaged equipment or assets cause massive costs. Corrosion monitoring helps avoid expenses by enhancing their lifetime.

Improved Efficiency: The operational reliability can be improved by:

- Extending the life of existing assets and of related operational equipment.
- Providing insights into materials that are less likely to corrode for future asset purchasing.
- Contributing to the identification of cost-effective methods for remedying corrosion growth and related issues.
- Identifying conditions related to corrosion in the operating environment—either that contribute to corrosion or that seem to mitigate corrosion—can then be used to inform purchasing and maintenance decisions.
- Helping to reduce facility shutdown time.

If corrosion is left unmonitored, it can cause structural failure of assets, costly repairs and contaminated products, enhancing safety risks to personnel and subsequent environmental damage.