International SA
Inspection & Engineering Services

# Corrosion Mapping

## Early Observation of Corrosion

Corrosion and erosion can inflict significant damage upon petrochemical vessels and pipework. Other phenomena such as hydrogen induced cracking and high temperature hydrogen attack can also prove costly in plant operation. Due to the risks involved, it is important to recognize corrosion damage as early as possible, especially when such knowledge can assist in planning your operational maintenance strategy.

We have the expertise necessary to demonstrate and define the true condition of your equipment. With our corrosion mapping system, a solution is available to assist you in developing condition-determined maintenance strategies which can be used in the calculations for the remaining lifetime of a plant.

Our strategies can also be used within a structured plant maintenance program and we also offers a visual representation of the results with a comprehensive report of the affected areas helping you to avoid unplanned shutdowns.

### Corrosion Mapping Technique

In this ultrasonic examination technique, use is made of a zero (0) degree probe, also known as a straight probe. The probe is positioned on the area to be inspected and it is then constantly “seen” by means of an infrared camera or a two-axis encoder. By using an infrared camera to trace the position of the probe, it is possible to examine complex geometries as well as flat surfaces.

For pipes or elbows, we use several two-axis scanners that are rapidly installed and gives the opportunity to map pipes and elbows in one single scan.

In a sense, corrosion mapping is a form of measuring wall thickness of the material, but a large number of wall thickness measurements are produced in a very small grid and printed with a specified color-pallet. If a difference in the wall thickness occurs because of corrosion, Erosion, pitting, doubling, delamination or loss of wall thickness, this will be indicated in a Change of color (typically from blue to red). Because this inspection can also be analyzed afterwards with a computer and a color pallet is used, general visual interpretation is extremely simple. The high degree of reproducibility makes corrosion mapping an interesting tool to use when monitoring corrosion, and it allows the corrosion speed of the material to be calculated efficiently.

## Applications:

- Storage tanks, tanks
- Reactors
- Pipes, including elbows and T-pieces
- All materials that can be penetrated by ultrasonic sound waves (also plastics and wavistrong)

## Benefits

- The thickness of the pieces to be examined is of secondary importance.
- Thin locations are reproduced directly in color, on-the-spot results.
- Indications can easily be measured, both in surface and in form.
- High degree of reproducibility.
- No ionizing radiation with regard to the taking of on-stream pictures.
- No disruption of other activities.
- Data, a constant C-Scan, is digitally stored and saved.
- Confirmation of a complete inspection.

## Limitations

- The material to be inspected must be able to be penetrated by ultrasonic sound waves. The material structure and particle size play a decisive role in this.
- The condition of the surface over which the grid has to move must be clean, free from weld splashes, rust, etc. to guarantee good contact

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