RoCombo IEC / XT Service

In-line Combined Internal Metal Loss and Geometry Analysis

Increased probability of detection (POD)

Increased probability of identification (POI)

Superior defect sizing accuracy

Corrosion plays a crucial role in pipeline integrity, it is a time-dependent deterioration process. The monitoring of internal corrosion is inevitable for reliable and save operation. Our RoCombo IEC/XT service offers simultaneous detection of shallow internal corrosion and ID anomalies.

Solution

RoCombo IEC/XT is based on the Eddy Current Principle, a well established, reliable inspection method with high sensitivity and accuracy. Eddy currents are generated when a conductor is exposed to a changing primary magnetic field due to the motion of the field source (IEC sensor with coil system) relative to the conductor (pipe wall) or due to variations of the field over time. This causes a distribution of circular currents in the pipe body which are concentrated near the pipe wall surface adjacent to the exciting coil. These circulating eddies induce secondary magnetic fields that oppose the change of the original magnetic field in accordance with Lenz's law of electromagnetic induction. The mutual inductance between the coil system and the conductor then results in a characteristic signal. The presence of metal loss disturbs the EC field, causing a change in the signal which is used to determine feature dimensions and severity.

In addition the eddy current measurement component is combined with a deflection sensor that allows for simultaneous measurement of the inner pipeline contour. Thus, not only corrosion but also deformations can be captured in one run.

Benefits

- Accurate and precise detection and sizing of shallow internal corrosion by high density of eddy current sensors and high sampling rates.
- High precision geometry mapping and dent sizing using contour following sensor technology even at tough operational conditions.
- Accurate discrete stress and strain gridding derived from high resolution inspection raw data.
- Quantitative determination of scale, debris and wax achieved by touch less pipeline surface sensing.
- Lifetime integrity management supported by full recording of the complete inspection raw data.
- High availability and a wide range of proven tool configurations addressing individual operational pipeline requirements.
- High quality service with certified processes (API 1163), personnel qualification (ASNT) and equipment (CE, ATEX)

ROSEN
empowered by technology

Service Options

All aspects from the inspection request to the final report are covered with the flexibility to choose from various service options.

- Cleaning – operational and pre inspection
- Speed Control – inspection at high flow rates
- XYZ – route mapping and strain assessment
- Multi-Diameter – pipelines with varying diameter
- Offshore – long distance and high pressure
- Post ILI – data alignment and combined evaluation
- Integrity Assessments – RBI, FFP, CGA
- NIMA – versatile asset integrity software suite

Remarks and Features

- Other tool sizes are available on request
- Other operating times and inspection lengths available on request
- Higher pressure rating available on request
- Tailored solutions with different specifications available
- API 1163 certified services
- CE and ATEX certification available
- Contact ROSEN for more detailed information about the presented service
- Specifications are subject to change, depending on specific requirements or tool configurations

Technical Specifications

Standard Operating Specifications

Tool sizes available	6"–56"
Pipeline product	Gas or liquids
Product temperature range	0 °C–65 °C (32 °F–149 °F)
Maximum operating pressure	15 MPa (2175 psi) 25 MPa (3625 psi) optional
Operating speed range	0.3–3.0 m/s (0.67–6.7 mph)
Minimum pipeline bend radius	1.5D

Performance Specifications for ID Anomalies

Feature		Accuracy*	Detection threshold*
ID Changes		±0.8 mm (0.03")	
Ovalities	Ovality Length Orientation	±0.5 % ±15 mm (0.6") ±12°	0.5 %
Dents	Depth Length Width Orientation	±0.8 mm (±0.03") ±7.6 mm (±0.3") ±25.4 mm (±1.0") ±12°	2.5 mm (0.1")

* Values are given for a certainty level of 80 %.

Sizing Capabilities

Depth at POD = 90 %	1.5 mm (0.06")
Depth maximum*	10 mm (0.40")
Depth sizing accuracy at 80 % certainty	±1.3 mm (0.05")
Length sizing accuracy at 80 % certainty	±6.0 mm (±0.24")
Width sizing accuracy at 80 % certainty	±5.0 mm (±0.20")

* Deeper features will be reported at Dmax.
Note: The wall thickness is not measured by the tool.
Abbreviations: POD = Probability of Detection

ROSEN Swiss AG
Obere Spichermatt 14 · 6370 Stans · Switzerland

Phone: +41-41-618-0300
info@rosen-group.com
www.rosen-group.com

ROSEN-Group_Serviceflyer_RoCombo_IEC-XT_v1-0_2024