EVO 1.0 UC

Ultrasonic Crack Inspection

Detecting and Sizing of Cracks and Crack-like Anomalies

Cracks and crack-like features can occur during pipe manufacture, pipeline construction or operation. Whatever their origin, these flaws can seriously compromise the integrity of a pipeline, making it essential to detect and size them before they cause irreparable damage.

Ultrasonic crack inspection enables early detection and sizing of cracks and crack-like anomalies. This allows the pipeline operator to take appropriate measures to avoid pipeline failures caused by cracks. The principle of the ultrasonic crack inspection tool is based on the 45° angle beam technique using shear waves. Due to the so-called corner reflection, even minor cracks from approximately 1 mm (0.04 in) onwards give quite strong reflections. The pulse-echo technique is applied, i.e. the same probe serves both as transmitter and receiver, before the signals are processed further.

For inline inspection (ILI), the coupling of the ultrasonic pulses into the pipe wall is achieved through the pipeline medium (usually cruide oil/ refined products). Due to the different sound velocities in the coupling medium and in steel, a specific angle of incidence is required in order to obtain a 45° refraction angle in the pipe wall.

EVO 1.0 UC

- Precise inspection of axial cracks
- Absolute crack sizing for full range of crack depth
- Available for a bend radius starting from 1.5 D
- Designed specifically for high-precision inspection of axial cracks in the pipe body and long seam welds, including stress corrosion cracking
- Available for diameters from 6" to 48"

EVO 1.0	Your benefits
Up to four times faster inspection speed	No reduction of flow rate
Up to four times higher axial resolution	High performance crack profiling inspection
Shorter tool lengths	Enhanced tool operation
Maximized ILI tool	Customization to your needs

Axial Cracks

Circumferential Cracks

Metal Loss

Geometry Ovalities

Mapping

Ultrasonic Crack Inspection

Specifications

Key Tool Specifications: EVO 1.0 UC

Tool sizes	6" to 48"	6" to 48"
Pipeline medium	Liquid	Liquid
Max. operation speed	4 m/s	9 mph
Temperature range	-10 to +50 °C	14 to 122 °F
Max. pressure	120 bar	1740 psi
Min. bend radius	1.5 D 90°	1.5 D 90°
Min. axial sampling distance	0.75 mm	0.03 in
Circumferential sensor spacing	UC 10 mm	UC 0.39 in

Max. operating speed and min. axial sampling distance depend on specific ILI tool set-up. Special configurations for high-temperature, high-pressure, multi-diameter and bi-directional inspections available upon request.

Inline inspection tool – EVO 1.0 UC

Defect Location Accuracy

Axial from nearest girth weld	±0.1 m	±3.94 in
Circumferential		
• for Ø < 20"	±10°	±10°
• for Ø ≥ 20"	±5°	±5°

Axially oriented crack colony

Key Performance Specifications (referring to API 1163)

POD for axial cracks, crack-like anomalies and linear indications ≥ 90%		
Min. depth of crack with L ≥ 20 mm (0.79 in)		
• Base material & at weld	1 mm	0.04 in
• In weld	2 mm	0.08 in
Depth sizing accuracy at 80% certainty in ERW and base material		
• 1 … < 4 mm (0.04 … < 0.16 in)	±1 mm	±0.04 in
• ≥ 4 mm (0.16 in)	not specified	not specified
Length sizing accuracy at 90% certainty	±10 mm	±0.39 in
Location in pipe wall		
• Internal/external	Yes	Yes

Please note: Tool and performance specifications depend on inspection and pipeline conditions. Please contact your local NDT Global representative for further information. NDT Global reserves the right to introduce modifications and changes without prior notice.