

# Guided Wave Testing

## Pipe condition screening with the Wavemaker<sup>®</sup> G4<sup>™</sup>

Guided wave testing is used for rapid screening of long lengths of pipe to detect volumetric change and external and internal corrosion. This method enables inspection of areas that are difficult to access such as buried sections, insulated lines, and lines with protective coatings.

The Wavemaker<sup>®</sup> G4<sup>™</sup> Pipe Screening System uses low-frequency, guided ultrasonic waves that propagate along the pipe wall.



### FEATURES

**Rapid screening method**

**Long lengths inspected from single location**

**Applications for online condition monitoring**

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## Pipe condition screening with the Wavemaker® G4™

### Process of Inspection

The system is composed of three primary components: the transducer ring, the Wavemaker® G4™ system, and a controlling computer.

Transducer rings use mechanical or pneumatic pressure to dry-couple piezoelectric transducer elements to the pipe being inspected. The transducers send waves in each direction along the pipe wall. Volumetric changes in the returning echoes indicate flaws and other features in the pipe. Long lengths of difficult-to-access pipe can be examined from a single location with minimal preparation and disruption while the pipeline is on-line.

When a difficult-to-access section of pipe needs to be monitored on a regular basis, the ongoing cost for accessing the inspection point(s) can be prohibitive. An alternative solution is the gPIMS® guided wave monitoring sensor which is a Permanently Installed Monitoring System (PIMS) installable on any pipe between 3 in and 48 in diameter.

The Wavemaker® G4™ system ensures consistency of future inspections for accurate condition monitoring by storing test parameters such as pipe size, orientation, and the identification of the original reference file. The software automatically selects the appropriate collection parameters, greatly reducing the possibility of operator error.

### Applications

- » Sleeved road crossings
- » Corrosion Under Insulation (CUI)
- » Buried pipe
- » Wall penetrations
- » Pipe racks
- » Corrosion under supports
- » Offshore risers and caissons
- » Locating of previously unrecorded welds
- » Subsea pipe

### Capabilities

- » Standard on-line inspection at temperatures from -40°F / -40° C to 160° F / 70° C
- » High-temperature inspection options available up to 660°F / 350°C
- » Inspection of pipe from 2 in to 72 in diameter (gPIMS®: 3 in to 48 in)
- » Fluid and gas within the pipe has a minimal effect on test results
- » Inspection in hazardous atmospheres using ATEX certified gPIMS® rings
- » 360° inspection of the identified diagnostic length of pipe
- » Sophisticated data interpretation distinguishes defects and standard pipe features
- » Pulse-echo technology provides information on anomaly characteristics
- » Detects general pipe wall metal loss and planar defects at long range
- » Detects increase in metal volume such as welds and transitions between pipes with differing wall thickness
- » Inspection of subsea pipe from 6 in to 26 in diameter in down to 10,000 fsw / 3,000 msw



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