



Long Range Ultrasonics

Low frequency, ultrasonic guided waves allow rapid surveys of long sections of pipe.

Often this amounts to tens of metres from a single test point, in either direction.

Although cost savings are greatest for insulated lines, the system is equally effective for uninsulated pipe.

Guided wave technology minimises access needs and surface preparation for inspection. This in turn translates into substantial savings in insulation removal and reinstatement, scaffolding and so forth.

Brief Description

Manual ultrasonic thickness checks for metal loss due to corrosion or erosion are highly localised. Only the thickness of the area under the transducer itself is measured.

To survey a large area requires many measurements and access to much of the surface of the component being examined. Where access is difficult or costly a detailed survey becomes cost prohibitive with the result that often only a limited sampling is carried out.

Similar restrictions also apply to other methods of measuring wall thickness such as radiography.

Long range ultrasonics overcomes this restriction by using guided ultrasonic waves. These are of much lower frequency than for normal ultrasonic tests and can travel many metres with minimal attenuation. This allows testing of large areas from a single test point.

Guided ultrasonic waves are transmitted along a section of pipe from a probe collar clamped to the pipe. The same probes receive reflected signals from areas of corrosion damage and other reflectors in the pipe. The instrument gathers data from the upstream and downstream directions separately and displays the position of indications along the line.

Corrosion detected by a long range UT survey will normally require verification. This may be with ultrasonics or the MBI Incotest™ system. Incotest will provide a quick measure of wall loss without removing insulation. Manual, contact ultrasonics or corrosion mapping provides the most detailed information about the extent and nature of any corrosion damage.

“Making a Visible Difference”



Capabilities

- Set up time is approximately 15 - 20 minutes. Inspection of as much as 1km of pipe per day under good conditions.
- Provides 100% coverage on straight sections. Bends may need separate scans.
- Suitable for pipe diameters 2" to 60". Equally applicable to carbon and stainless steel.
- Sensitive to both internal and external metal loss (corrosion under insulation). Detects wall losses in excess of 9% pipe wall cross section.
- Discriminates between defects and features such as welds, bends and pipe supports.
- May be used on piping in oil, gas and petrochemical installations (< 125oC).
- Can scan inaccessible regions including sleeved pipes, under pipe supports, storage tank bund wall penetrations, road crossings, under bridges, jettys, offshore risers etc.

Limitations

- May not be applicable to some coated pipes (concrete, bitumastic or Denzo™).
- Less effective on lines having a large number of bends or branches or on very convoluted pipe.
- May not be applicable to lines containing sludgy liquids. These and waxy deposits can reduce test range.
- May not be applicable for detection of small isolated corrosion pits.

Preparation

- Access to pipe surface, approximately 1 metre length required at each test point.
- Coating needs to be removed for approximately 1 meter at the collar locations. The surface in this area should be free from loose scale, rust etc. Clearance around pipe 10 to 20 cm.

Services Required

- Provision for personnel and equipment access.
- 110V AC electricity supply, the system can be deployed using stepped up 12V supply from a vehicle, access permitting.