

Application note

Small diameter circumferential weld inspection

Customer need

Circumferential butt welds are found in various structures including small diameter tubes in boilers. Experts inspect the tubes to locate defects which could result in the failure of a component, possibly inducing a human or environmental hazard.



When NDT inspection of circumferential butt welds are performed manually, it is difficult to meet the required standards on safety, measurement precision, reliability, and quality data management. New or repaired welds are usually inspected by radiography however the technology requires evacuation of the workers on site and considerable time for developing the radiographic films.

Customer solution

Waygate Technologies field-proven PALM scanners can inspect pipes of diameters from 1.5" up to 3.5". The scanners are easily adaptable with various wedges and phased array probes to meet inspection procedures regardless of tube thickness, material or acceptance criteria.

The PALM scanner uses laterally focused array probes with concave curvature in elevation; the probe design optimizes the ultrasonic beam focus on the surface and increases lateral defect resolution compared to unfocused probes.

The wedges are designed with integrated irrigation channels for consistent couplant feed and all the curvatures are crafted to fit the PALM scanner.

Two sided inspection is possible by adding the relevant Palm extension and utilizing the MultiGroup function. This insures complete coverage of the weld in a single pass. in attached draft.

Key features

- Palm Scanner App on the Mentor UT provides a guided workflow to standardize and reduce time for calibration and set-up of inspection

- Touch screen operation for fast & easy interrogation of suspect areas
- Compact, rigid and lightweight with easy access for gaps as narrow as 12 mm (0.47 inches)
- Optimum spring-loaded open clamp system with no axial slip
- Fast and easy movement between measurements
- Suitable for ferromagnetic and non-ferromagnetic pipes
- Multi-group inspection with coupling check

Application

Weld assessment of difficult-to-access, small diameter pipes.

Modality

Ultrasonic Phased Array

Industry

Oil and Gas, Energy



A, C and sector scans show weld indications

Equipment used

- Mentor UT Phased Array Flaw Detector – P/N 100N3883
- PALM 50 Package for pipe diameter 1.5" to 2.0" (38 mm to 50 mm) P/N 0600392
- PALM 64 Package for pipe diameter 2.0" to 2.5" (50 mm to 64 mm) P/N 0600393
- PALM 90 Package for pipe diameter 2.5" to 3.5" (64 mm to 90 mm) P/N 0600394
- Palm 50 dual side extension-P/N 016925
- Palm 64 dual side extension-P/N 016926
- Palm 90 dual side extension-P/N 016927