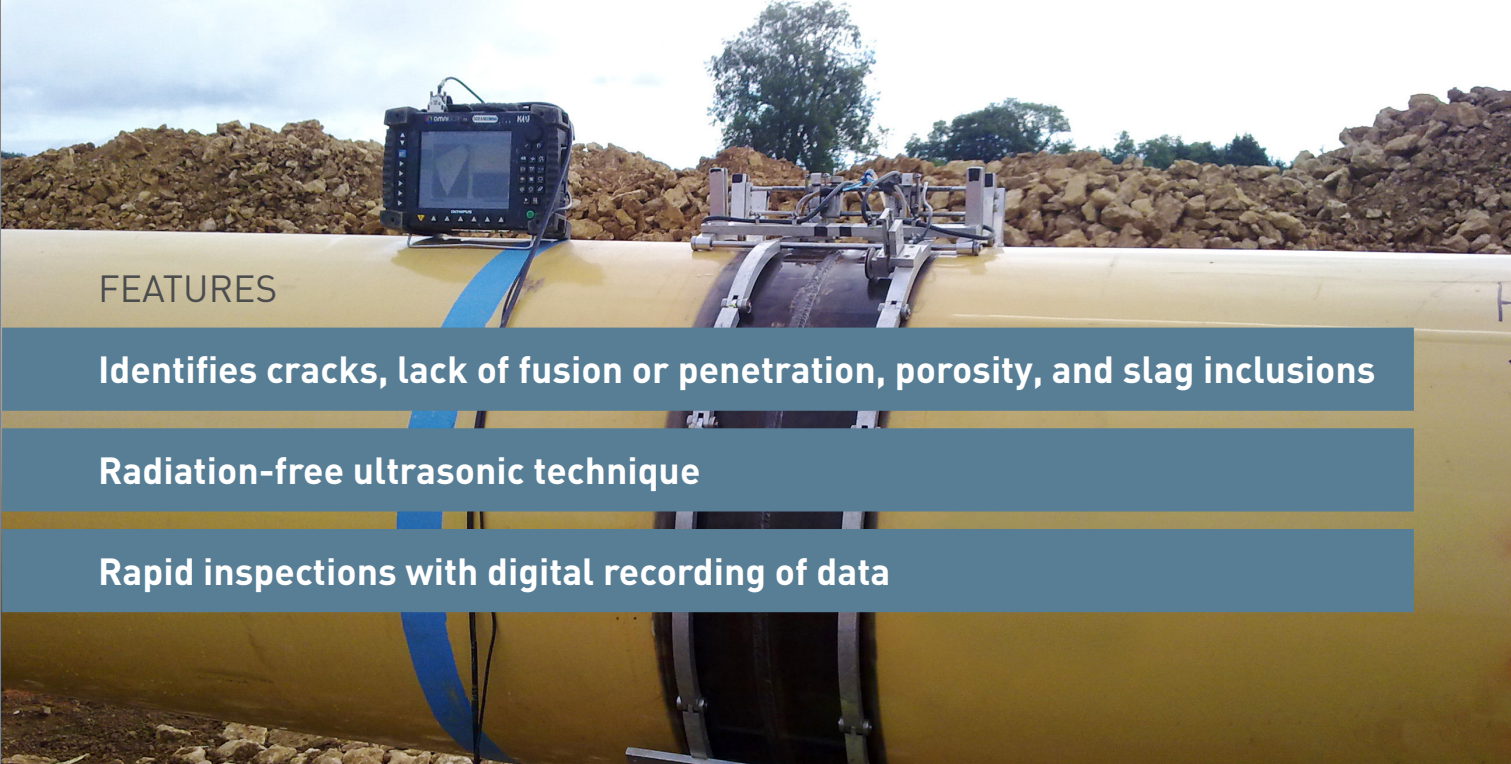


Phased Array Ultrasonic Testing (PAUT)

Fully code-compliant pipework inspection

Our fully code-compliant PAUT offering provides an alternative to on-site radiography. Developments in construction codes allow PAUT to be used as a direct replacement for radiography on piping butt welds to ensure assets meet the quality control requirements of ASME B31.3 and B31.1 and numerous European standards. PAUT can be applied when considering both workmanship and engineering critical assessment (ECA) acceptance criteria, with data being suitable for accurate sizing and defect characterization.

A photograph showing a Phased Array Ultrasonic Testing (PAUT) system in use. The equipment, including a control unit with a screen and a probe assembly, is mounted on a large yellow industrial pipe. The background shows a construction site with piles of earth and trees under a cloudy sky.

FEATURES

Identifies cracks, lack of fusion or penetration, porosity, and slag inclusions

Radiation-free ultrasonic technique

Rapid inspections with digital recording of data

Phased Array Ultrasonic Testing (PAUT)

PAUT reduces inspection time by simultaneously collecting multiple angle ultrasonic data in a single pass scan from either side of the weld. Typical inspection rates are between 15-20 butts per shift. By ensuring accurate scan plans and specifically designed techniques, construction defects are readily detected, sized, and sentenced accordingly.

Data Analysis

Sophisticated analysis software enables experienced operators to interrogate welds from multiple orientations including a comprehensive evaluation of the weld root, fusion face, and weld toes.

Applicable Piping Construction Codes

The codes listed below allow the use of PAUT for the inspection of butt welds.

ASME B31.1

ASME B31.3

API 1104

BS EN ISO 17640

BS 4515

BS EN ISO 13588

Complementary Techniques

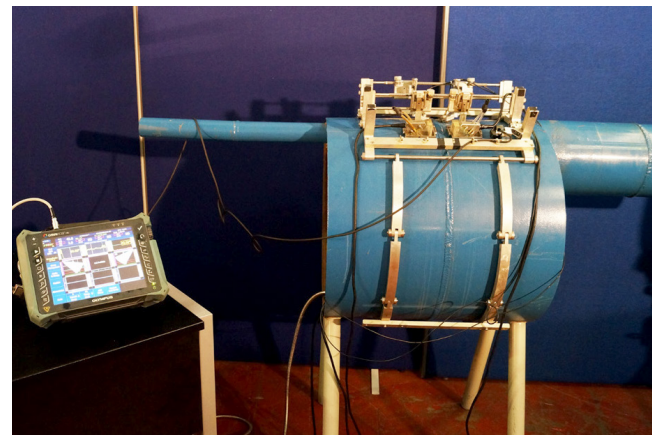
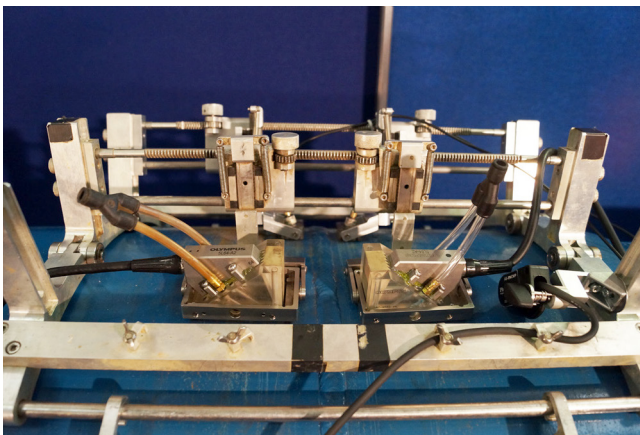
Combining phased array with non-orientation/non-amplitude reliant techniques enables the inspection of joints not normally considered appropriate for ultrasonic testing. Adding time of flight diffraction inspection to a phased array survey enables the interrogation of complex weld bevels or inaccessible fusion faces in the case of pipe-to-fitting joints.

Advantages

- » Radiation-free ultrasonic technique
- » Welds from 3/4 inch in diameter up to flat plate may be inspected
- » Wall thicknesses from 4 mm (Wall thickness below 4 mm may be possible using a go/no go strategy)
- » Independent from site utilities due to battery operation and irrigation system
- » Rapid inspections with digital recording of data
- » Digitally-encoded scanning for accurate sizing
- » Highly sensitive to fusion face flaws
- » Free viewing software available to allow the client to review inspection data
- » ASME and European code compliant

Considerations

- » Surface preparation is required to support the collection of quality data
- » 100 mm of radial and axial clearance is required for scanner fitment (small bore scanner available for restricted access scanning)



Combined Phased Array and ToFD Scanner

© 2017 Oceaneering International, Inc. All rights reserved.