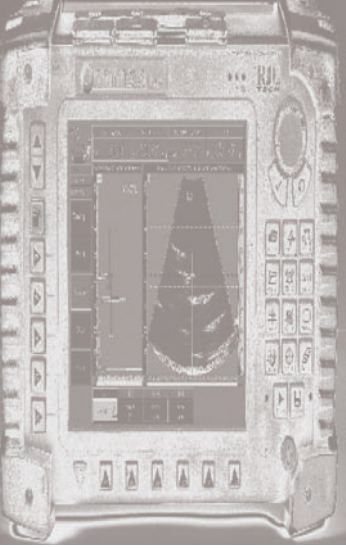


Phased Array

Multi Element Ultrasonic Inspections



Applications for the Phased Array technique include:

- ⊕ Piping weld inspection
- ⊕ The inspection of complex geometries
- ⊕ Corrosion mapping
- ⊕ The inspection of nozzle welds
- ⊕ Turbine component inspection
- ⊕ The detection of stress corrosion cracking
- ⊕ Flange sealing face inspections
- ⊕ Shaft and axle inspections
- ⊕ Pressure vessel weld inspection.

Phased Array

Phased Array uses multiple ultrasonic elements and electronic time delays to create beams by constructive and destructive interference. As such, phased arrays offer significant technical advantages over conventional single-probe ultrasonics; the phased array beams can be steered, scanned, swept and focused electronically.

Phased Array offers significant advantages over traditional radiography of welds including:

- ⊕ **No safety hazards**
- ⊕ **Improved defect detection and sizing**
- ⊕ **Great flexibility in parameter range**
- ⊕ **Compliant with all known codes**
- ⊕ **Many special techniques are possible.**
- ⊕ **Electronic scanning permits very rapid coverage of the components, typically an order of magnitude faster than a single probe mechanical system.**
- ⊕ **Beam forming permits the selected beam angles to be optimized ultrasonically by orienting them perpendicular to the predicted defects, for example Lack of Fusion in welds.**
- ⊕ **Beam steering (usually called sectorial scanning) can be used for mapping components at appropriate angles to optimize Probability of Detection. Sectorial scanning is also useful for inspections where only a minimal footprint is possible.**
- ⊕ **Electronic focusing permits optimizing the beam shape and size at the expected defect location, as well as optimizing Probability of Detection.**

Overall, the use of phased arrays permits optimizing defect detection while minimizing inspection time.

