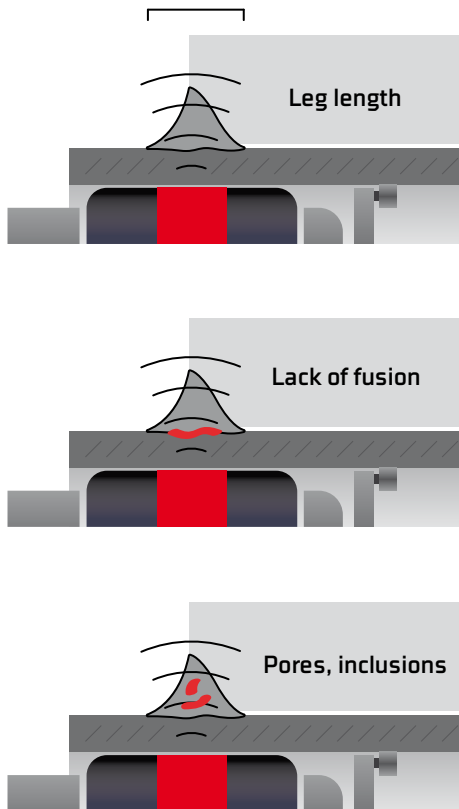


Tube-to-Tube sheet weld scanning

– with specially designed ultrasound scanner for fast inspection rate



The examination supply detailed information about the quality of the weld, insuring the clients confidence in delivering a first class tube sheet weld product. For objects already in process, the examination will locate possible leakages developed during operation.

Specially designed scanner

Tube-to-Tube sheet ultrasound examination is performed using a specially designed scanning system, developed by FORCE Technology for detection of weld defects.

Advantages using the Tube-to-Tube scanning

- Fast inspection rate: 60-90 weld examinations per hour.
- Minimum downtime.
- 100% circumferential scanning of the weld
- Exact positioning and extent of indications e.g. indicated as between 9-11 o'clock.
- No special safety preparations are required prior or during the examination
- Easy transportable equipment, approx. 50 kgs.
- On-site reporting.
- Well proven technique/technology.
- Experienced FORCE Technology specialist team.

The technique

Tube-to-Tube sheet scanning is an ultrasound inspection, where the ultrasonic probe continuously rotates in the tube and at the same time moves axially typically 1 mm per 360° rotation like a spiral movement.

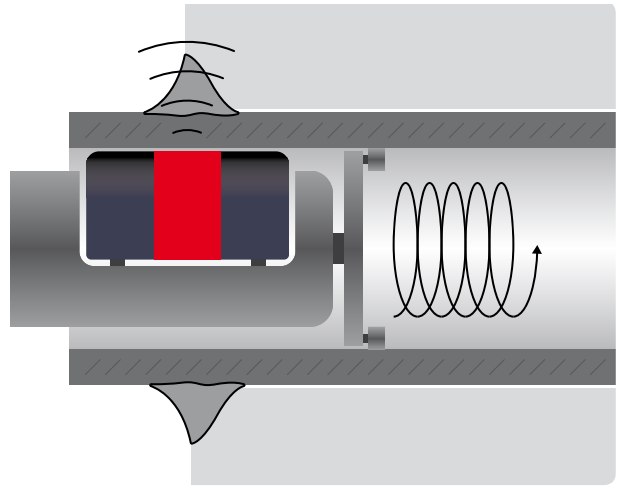
In some situations it is even possible to scan with 2 probes side-by-side enabling scanning of 2 welds at the same time and thereby reduce inspection- and downtime significantly.



Examples of defects

The following types of defects are for example detected by Tube-to-Tube sheet scanning:

- Root defects
- Lack of fusion
- Inclusions
- Cluster of pores
- Sizing of leg-length



Scanning examples

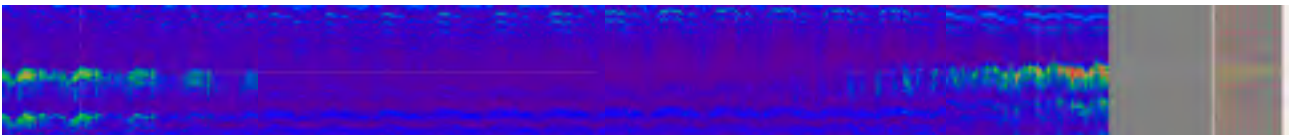


Figure 1 shows a scanning without indications

Signals to the left and right in the image are from the outer tube wall, detected after and before the weld.

The scanning starts with the transducer behind the weld inside the tube and then rotates towards the tube end during the scanning. The centre of the image displays a clean weld, i.e. signal without indications of defects.



Figure 2 shows signals from a root defect in the welding (between the red lines)

The signals between the red lines are from a root defect. The signal is repeated several times, hence the transducer record the defect during several rotation. By positioning, during data evaluation of the indication, it can be determined that the signals are from the same defect. To the right in the image, the tube wall at the tube end is just becoming visible.

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