



## Manual ultrasonic examination of stainless steel welds

Although this application of the manual ultrasound technology is still frequently –and justly– regarded as quite difficult, both for experienced ultrasound technicians who have completed special training and have all the necessary materials for the same, and for manufacturers who also have to implement special measures concerning the design and finishing of welds, we can, in most cases, guarantee a qualitatively acceptable inspection of welds in stainless steel.

### Your tailor-made solution

The problems:

Stainless steel welds have a special crystalline structure that makes it difficult to allow ultrasonic waves to pass through. This involves the ‘anisotropy’ and the grain size. This ‘inspectability’ problem also occurs in the case of materials other than carbon steel welds: Duplex, 9% nickel, bimetallic welding.

The proposed solutions:

Our biggest asset: The use of transmitter-receiver probes with longitudinal waves (TRL probes) for each specific geometry. Vinçotte leads the world in the development and manufacture of such probes (see the specific Product Sheet for more details).

But this is not all, even safety aspects play a role:

- knowledge of the correct geometry of the weld (for recognising geometric echoes) and the welding process
- representative gauge block with calibration reflectors in or next to the weld in order to be able to qualify the method
- probe soles corrode on the diameter of the piece
- special training of operators
- drawing up special working methods for each specific application

Limitations

- specific extra training and qualification of the operator also requires the normal Level II certification as per ISO 9712 or SNT-TC-1A
- the welding crown must be ground perfectly flat in order to enable 100% inspection of the welding volume
- the coupling agent used should be free of chlorine

### Your result

Based on our years of experience in this technologically relevant difficult domain, we can in most cases, carry out a correct evaluation of stainless steel welds, with almost the same accuracy, speed of execution, etc. as applies to carbon steel welds, with compliance with the above rules.

### Please note

**Norms:**

ASME III, ASME V, ASME XI  
ISO 22825

### In which situation?

The operators of nuclear power plants, manufacturers of stainless steel equipment and pipelines.