

Corrosion-resistant alloy (CRA) Inspection

Corrosion-resistant alloy (CRA) inspections apply ultrasonic inspection (UT) techniques to inspect austenitic welds. The UT inspection of austenitic welds differs greatly from inspection of low-alloy carbon steel welds.

The main difference associated with welds on corrosion-resistant alloy materials is a coarser grain structure than mild steel. The combination of a coarse grain structure and the anisotropic nature of CRA weld-filler materials affects the ultrasonic-wave propagation by way of sound attenuation. This can potentially result in CRA weld defects going undetected.

To minimize this issue, the probes make use of angled longitudinal waves/creep waves rather than the conventional shear-wave approach, generally used for mild-steel weld inspection. These probes are referred to as transmit and receive longitudinal (TRL) probes, and TRL inspection probes are widely used on coarse-grained materials because these provides a better signal-to-noise ratio than conventional probes.



THE Applus+ SOLUTION

The corrosion-resistant alloy services at Applus+ provide a range of TRL inspection methods, covering both conventional PE and phased array applications, and Applus+ has worked with many of the majors in the oil and gas sector. Working closely with international bodies such as DNV, Applus+ is fully certified to apply TRL techniques on CRA/austenitic fabrication materials.

With our own product designers and in-house probe-design department, Applus+ has the ability to provide clients with a customised solution for corrosion-resistant alloy inspections. In addition, we ensure that our inspectors are professionally trained in this technique.



Target customers

The TRL method for corrosion-resistant alloy inspections is used widely in ultrasonicinspection techniques related to construction activities, particularly in the mining, oil and gas and power industries. The technique is used to inspect welded components that incorporate a CRA layer on the ID pipe surface and which have then been welded with an austenitic filler material such as inconel.