Contact: info@applus.com

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 ultrasonic-inspection 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.