

The Development of RRARC Ultrasonic Sizing System for Planar Flaws

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ABSTRACT

Ultrasonic Testing (UT) is a major nondestructive testing method, it is widely used in the inspection of steel structures, boilers, piping systems, vessels etc. Hence UT is vital to the safety of most facilities and the public. However, in most cases, the severity of a flaw is mainly judged by its echo height and this has been considered inadequate especially for planar flaws. Because this kind of flaws are highly undesired it is very important to design a better sizing technique for this application. In this research a novel one is proposed and named RRARC which stands for Reliable Repeating ARCs. During a normal scan, at every probe position when a tip echo is caught an arc can be drawn with the probe position as the center and the echo path length as the radius. Theoretically, these repeating arcs will intersect with each other at the flaw tip which is the center generating those diffraction echoes. Therefore, these intersections can be used to calculate the mean position and its associated error of the flaw tip and this makes this technique not only a reliable one but also technically meaningful.

Keywords : Nondestructive testing、Ultrasonic Testing、UT、flaw、RRARC

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