

**COMPARISON IN DETECT THE DEFECTS SIZING USING
CONVENTIONAL ULTRASONIC TESTING AND PHASED ARRAY
ULTRASONIC TESTING (PAUT)**

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ABSTRACT

DETECTION OF DEFECTS SIZING IN V-BUTT WELD USING CONVENTIONAL ULTRASONIC TESTING AND PHASED ARRAY ULTRASONIC TESTING (PAUT) TECHNIQUES

This project gives a review for the comparison of Conventional Ultrasonic Testing and Phase Array Ultrasonic Testing methods in detecting and sizing defects in V-butt joint welds. The instrument used in this project is Omniscan MX2 for both techniques. For the probe, the criteria of selection for Phased Array technique are frequency and the number of elements. Normally, the frequency is 5 MHz and the number of element used 32 elements. For Conventional technique, the addition of criteria is the angle used, which is the angle set to 60°. The test samples used in this project are PL14960, PL14962 and PL14971. The types of these samples are V-butt weld plate and each sample has different type of artificial defect that are central line crack, slag inclusion and lack of side wall fusion (LOSWF). The results were evaluated based on the value of percentage error. This study proved that the percentage error for the slag inclusion using conventional techniques is 20% while using phased array technique is 36%. For LOSWF, the percentage error using conventional technique is 7.14% while using phased array technique is 17.9%. For central line crack, percentage error using conventional is 6.67%, while using phased array is 3.33%. It was proven that for slag inclusion and LOSWF, conventional technique provides a better sizing result compared with phased array technique. However for central line crack, phased array gives a better result compared with conventional. This may be influenced by the thickness of the plate and the way the inspector interpreted the data.

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