THE THICKNESS EFFECTS OF CLADDING TOWARDS DEVIATION AT ANGLE OF REFRACTION, ATTENUATION AND VELOCITY OF SOUND WAVES IN WELD JOINT IRON STEEL TO STAINLESS STEEL

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Abstract
This final project are prepared to know how the effect of deviations from the angle of refraction factor, attenuation and velocity of sound waves in the welded joints between carbon steel and stainless steel coated with nickel and stainless steel. This study uses ultrasonic examination as a method of representing the three factors above.

Thickness variation in this study for 3mm, 4mm, 5mm and 6 mm in nickel and stainless steel. The specimen have thickness is 30 mm, a width is 100 mm and length is 120 mm.

The result of nickel and stainless steel have effect on the inspection from hole of weld discontinuities. Value deviations of the average value calculated from the distance is 6.1% in stainless steel and 6.09% in the measurement of nickel. At 2.5 mm diameter hole discontinuity using the method of beam spread is the deviation value at 3 mm layer of nickel is 40%, 4 mm is 60 %, 5 mm amounted to 40% and 6 mm is 80%, while in the stainless steel 3 mm layer is 40%, 4 mm is 60%, at 5 mm amounted to 60% and 6 mm is 80%. DAC (Distance Amplitude Correction) Methods comparing with calibration block have deviation values obtained at 3 mm layer of nickel is 31%, at 4mm is 17%, at 5 mm is 29% and at 6 mm is 7.3%, while in the stainless steel at 3 mm layer is 6.27%, at 4 mm is 6.87%, at 5 mm is 4.18% and at 6 mm is 1.17%.

Keyword : Ultrasonic testing, Cladding, Internal discontinuity hole, Beam Spread and DAC