DEVELOPMENT OF HEAT SINK METHOD IN GMAW WELD TO REDUCE DISTORTION

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ABSTRACT

Efforts to minimize distortion of welding results need to be done in welding, considering that distortion can reduce the accuracy of the weld dimensions, increase the repair process and increase production costs. This study aims to reduce distortion by the heat sink method and its effect on mechanical properties.

The treatment of the heat sink method is applied in conjunction with the GMAW welding process by liquid nitrogen coolant with a variable contact area of ??the heat sink (stage 1). The heat sink contact area is designed in 3 sizes namely 10 L, 20 L, and 30 L. The heat sink is placed on the surface of the plate with a distance of 10 mm from the welding line.

The results showed that the contact area of ??the heat sink affects the quality of the weld joint. Based on visual tests, the greater the contact area of ??the heat sink increases the defect of the "lack of penetration" type. The greater the contact area of ??the heat sink, it is more effective to reduce welding distortion, especially distortion in the longitudinal direction. The contact area of ??the heat sink has little influence on the hardness and microstructure of the weld metal and HAZ, but does not affect the tensile strength of the weld joint.

Kata Kunci: heat sink, GMAW welding, distortion