

An Experimental Study on the Effect of Heat Input on the Weld Efficiency of TIG-MIG Hybrid Welding of Type-304 Austenitic Stainless Steel

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Abstract : Welding is described as the process of joining metals so that bonding can be created as a result of inter-atomic penetration. This study investigated the influence of heat input on the efficiency of the welded joints of 304 stainless steel. Three welds joint were made from two similar 304 stainless steel plates of thickness 6 mm. The tensile results obtained showed that the maximum average tensile strength of 672 MPa is possessed by the sample A1 with low heat input. It was discovered that the tensile strength, % elongation and weld joint efficiency decreased with the increase in heat input into the weld. The average % elongation for the entire samples ranged from 28.4% to 36.5%. Sample A1 had the highest joint efficiency of 94.5%. However, the optimum welding current of 190 for TIG- MIG hybrid welding of type-304 austenite stainless steel can be recommended for advanced technological applications such as aircraft manufacturing, nuclear industry, automobile industry, and processing industry.

Keywords : microhardness, microstructure, tensile, MIG welding, process, tensile, shear stress TIG welding, TIG-MIG welding

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