World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:13, No:03, 2019

Operational Advantages of Tungsten Inert Gas over Metal Inert Gas Welding Process

Authors : Emmanuel Ogundimu, Esther Akinlabi, Mutiu Erinosho

Abstract : In this research, studies were done on the material characterization of type 304 austenitic stainless steel weld produced by TIG (Tungsten Inert Gas) and MIG (Metal Inert Gas) welding processes. This research is aimed to establish optimized process parameters that will result in a defect-free weld joint, homogenous distribution of the iron (Fe), chromium (Cr) and nickel (Ni) was observed at the welded joint of all the six samples. The welded sample produced at the current of 170 A by TIG welding process had the highest ultimate tensile strength (UTS) value of 621 MPa at the welds zone, and the welded sample produced by MIG process at the welding current of 150 A had the lowest UTS value of 568 MPa. However, it was established that TIG welding process is more appropriate for the welding of type 304 austenitic stainless steel compared to the MIG welding process.

Keywords : microhardness, microstructure, tensile, MIG welding, process, tensile, shear stress TIG welding, TIG-MIG welding
Conference Title : ICAMENS 2019 : International Conference on Advanced Mechanical Engineering and Nanomaterials Science
Conference Location : Dubai, United Arab Emirates
Conference Dates : March 21-22, 2019