Optimization of Process Parameters Influencing Lack of Fusion Defect in TIG Welding of SS 304 Thin Sheet

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Abstract

Tungsten Inert Gas (TIG) welding or Gas Tungsten Arc Welding (GTAW) process is widely used in many appliances due to its versatility in industry. For GTAW process, metal like stainless steel is widely used in all positions. Butt joint, lap joint, T-joint, edge joint and corner joint are the common types of joints used in welding. The incompletely fused spot ike porosity that occurs after welding is known as lack of fusion that leads to undesirable results, and to overcome this, changes in welding techniques and parameters within the limits are required. Nowadays, a large number of resources are used for reworking the welds. But it causes higher cost of production and delay in completing the work. Higher amount of rejection of product may occur if lack of fusion is not controlled physically during welding. The paper aims at predicting and reducing lack of fusion with TIG welding process parameters. Using design of experiment method, straight and indirect effects of the process parameters can be determined and process parameters can be optimized.

Keywords: TIG welding, SS 304, Lack of fusion, Process parameter, Design Of Experiment (DOE)

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