

Study of the Effect of Inclusion of TiO₂ in Active Flux on Submerged Arc Welding of Low Carbon Mild Steel Plate and Parametric Optimization of the Process by Using DEA Based Bat Algorithm

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Abstract : Submerged arc welding is a very complex process. It is a very efficient and high performance welding process. In this present study an attempt have been done to reduce the welding distortion by increased amount of oxide flux through TiO₂ in submerged arc welding process. Care has been taken to avoid the excessiveness of the adding agent for attainment of significant results. Data Envelopment Analysis (DEA) based BAT algorithm is used for the parametric optimization purpose in which DEA Data Envelopment Analysis is used to convert multi response parameters into a single response parameter. The present study also helps to know the effectiveness of the addition of TiO₂ in active flux during submerged arc welding process.

Keywords : BAT algorithm, design of experiment, optimization, submerged arc welding

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