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Guided By

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Project Title

EXPERIMENTAL INVESTIGATION AND MULTIOBJECTIVE OPTIMIZATION OF TIG WELDING PARAMETERS USING FIREFLY ALGORITHM

Abstract:

To improve Welding quality of aluminum (Al) plate, TIG Welding system has been prepared, by which Welding current and shielding gas flow rate can be controlled during Welding process. In the present work, an attempt has been made to study the effect of Welding current, current polarity, and shielding gas flow rate on the tensile strength of the weld joint. Based on the number of parameters and their levels, Response Surface Methodology technique has been selected as Design of Experiment for understanding the influence of input parameters on tensile strength and microstructure of weldment, ANOVA analysis would be carried out. Also to describes and optimize TIG Welding using a new metaheuristic Nature - inspired algorithm which is called as Firefly algorithm which was developed by Dr. Xin-She Yang at Cambridge University in 2007. A general formulation of firefly algorithm is presented together with an analytical mathematical modeling to optimize the TIG Welding process by a single equivalent objective function.

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