

Prediction and Verification of TA Welds in Gamma Titanium Aluminide

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Abstract

Welding parameters such as welding current have a strong effect on the dimensions of the weld pool. This eventually leads to changes in the microstructure and mechanical properties of the resultant weld. A mathematical model was developed to predict the nature of weld penetration for GTA welding using various welding parameters. Verification of this model is essential for its further application. In this study, extensive experimental validation of the mathematical model has been conducted for a range of welding parameters. The lightweight, high temperature application gamma titanium aluminide was used as the test material for validating the model. A computer based data acquisition hardware and software was used to collect dynamic data during welding for variations in welding current, arc gap, and welding time. The experimental results were in agreement with the results predicted by the model.