

FEM Application on Dissimilar Metals Welding

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ABSTRACT

For the welding process simulation and temperature field prediction, finite element method is a very actual and useful instrument. In this paper two welding simulation cases are presented:

1: thermal source moving on the common boundary of the joint;

2: thermal source moving closer to the material having higher thermal conductivity.

Carbon steel and austenitic stainless steels are used in the analysis. Using thin plates, temperature variation in the thickness direction is negligible and heat flow is considered two-dimensional. Thermo-physical properties depending on the temperature, different distributions of heat flux in front and back of the thermal source, heat loss by convection and radiation are considered in finite element modelling. Temperature field, temperatures transverse distribution graph for quasi-stationary phase and some estimation curves for each base metal are comparatively presented for the both simulation cases.

References

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