

DISSIMILAR METALS WELDING - FEA AND EXPERIMENTS

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ABSTRACT

Several theoretical and experimental investigations on heat transfer in copper - low carbon steel welded joints are presented in this paper, assuming an elliptical heat source. Finite element method analysis is availed for the temperatures prediction in the welded joints. Temperature variation over thickness is negligible and heat flow is considered two-dimensional, when using thin sheets. Convection and radiation influence and thermo-physical properties, depending on the temperature, are considered in the mathematical model developed by authors. Several measurements and visualization of the temperatures distribution have been made during welding process, using infrared thermography, as non-contact measurement method. Conclusions on the element finite method analysis and the experimental measurements of temperatures field are finally presented.

KEYWORDS: Dissimilar metals welding, mathematical modelling, experiments.

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