

THERMAL FIELDS AND RESIDUAL STRESSES IN WELDED JOINTS: FEA AND EXPERIMENTS

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ABSTRACT

The paper introduces the thermal field and residual stresses, numerically modelled by the finite element method, and compare them to the experimentally determined data obtained by thermography and tensometry measurements. The finite element analysis was carried out in two steps. First, the thermal field was modelled, followed by the stress analysis, as the obtained temperatures distribution constituted the load for the structural analysis, the analysis of which gave the stress state of the welded joint. An error diagram was drawn, thus comparing the experimentally determined values to those resulted from modelling.

KEYWORDS: Thermal field, residual stresses, finite element analyses

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