Numerical Analysis of T-Joint Welding with Different Welding Sequences

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Numerical simulation of welding is an efficient tool for prediction of temperature distribution during welding process, residual stresses and final distortions of the welded parts. Importance of numerical analysis can be even higher during optimization of the large structures welding, in which preparing of the experimental samples is more expensive. Numerical analysis of T-joint welding for bridge construction parts in SYSWELD software is presented in the article. Welding simulation was prepared for two welding sequences with the same welding parameters required to ensure penetration of the weld metal. Obtained thermal analysis results were compared to measurement by thermocouples, and final distortions were compared with contactless measurement by TRITOP system. Lower distortion were obtained by simulation and experiments in welding at once by the two welding devices, while the second device followed the first one with technological delay of 25 seconds.

Keywords: Finite element modelling, Sequence of welding, Welding simulation, Welding distortions

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