Finite Element Modeling and Numerical Simulation of Welding at the Repair of Gas Pipelines with Steel Sleeve

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This article deals with simulations of the welding process for applications of practice using SYSWELD software. Simulation of welding at the repair of high-pressure gas pipeline with steel sleeve with composite filling is presented in this paper. Two welds connecting the distance ring and gas pipe were simulated. Structure of programme SYSWELD and repair of high pressure gas pipeline with steel sleeve is described in theoretical part of article. Preparation of boundary conditions for numerical simulation on real sample and numerical simulation of welding is in experimental part. Thermal fields, residual stresses and hardness were simulated. The results of the numerical model, which are listed in article except for residual stresses are compared to real experiments. This article mainly describes the numerical simulation capabilities in welding simulation programme SYSWELD.

Keywords: Sysweld, Steel L360NB, Numerical simulations, Repair of gas pipeline

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