

عنوان مقاله:

Numerical Investigation of Effect of Preheating on Thermal Stresses of Submerged Arc Welding Pipes with FEM

محل انتشار:

بیست و هفتمین کنفرانس سالانه بین المللی انجمن مهندسان مکانیک ایران (سال: 1398)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

This paper presents a three dimensional numerical analysis of heat transfer and thermal stresses in the submerged arc welding (SAW) of pipes used in the oil and gas pipelines network. A finite element analysis is performed using the ANSYS Parametric Design Language (APDL) provided by ANSYS commercial FE code. In this analysis, preheating of pipes is modeled. Also, the effect of preheating condition, which consist of thermal stresses, are considered in the analysis. The model provides a full description of the temperature distribution on pipe with preheating pipe and without preheating, as well as calculation of different thermal stresses. It is found that the quality of the submerged arc welding is affected by the preheating. Results show that with utilized preheating in pipes, thermal stresses decrease.

.For oil and gas pipeline networks, it is suggested to use pipe with preheating to increase the strength

کلمات کلیدی:

preheating, pipe, finite element method, thermal stresses, submerged arc welding

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/921300>

