

عنوان مقاله:

Evaluation of S/N Diagram in Welded Joints Based on Different Fatigue Failure Criteria

محل انتشار:

مجله بین المللی طراحی پیشرفته و تکنولوژی ساخت, دوره 13, شماره 3 (سال: 1399)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

One of the most important problems in the welded Joints is the low fatigue strength due to the residual stresses. Purpose of this study is to investigate the effect of residual stresses on S/N diagram of the welded joints. For this purpose, welding process of two plates is firstly modeled on a precise and three-dimensional model. This simulation has been carried out in two non-coupled thermal-mechanical steps, including the birth and death of elements technique, presence of molten flow inside melting pool and latent heat generated by phase transformations in the simulator program. Thermal and mechanical results of the program are compared with numerical and experimental results of other researchers, which indicates acceptable accuracy of the program. In the next step, effect of welding process residual stress on S/N diagram is investigated with two different fatigue criteria, which the results indicate a decrease in the fatigue strength. Goodman's modified fatigue criterion shows 88%, and Gerber's criterion shows 78% of reduction. Finally, by examining effect of changes in air flow parameters and preheating, the results showed that .the transient air flow reduced fatigue strength for 5% and preheating, results in a 9% increase in fatigue strength

کلمات کلیدی:

Fatigue Criteria, Residual stress, S/N Diagram, Welding Process

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