عنوان مقاله:

Torsional Fatigue Life Estimation for Steel Thin-Wall Specimens Considering Crack Initiation Phase

محل انتشار:

تعداد صفحات اصل مقاله: 8

نویسنده:

Zohreh Ebrahimi - *Department of Mechanical Enginneering,, Payame Noor University (PNU), P.O.Box ۱۹۳۹۵-۴۶۹۷, Tehran, Iran.*

خلاصه مقاله:

An improved model for fatigue life evaluation of a steel thin-wall tubular specimen based on critical plane theory is presented. This new fatigue model incorporates the crack initiation phase in the life prediction model. The total fatigue life is a combination of both crack initiation and crack propagation lives. The initial crack length is not applied priory, but is calculated within the model. The crack initiation life is evaluated using a critical plane approach base on a modified Smith-Watson-Topper and the Fatemi-Socie criteria. The fatigue lives obtained from the proposed model are validated by experimental results for a thin-wall tubular specimen. Both critical plane criteria gave similar fatigue lives, with the Fatemi-Socie criteria giving a slightly more accurate initiation life. Without consideration of the crack initiation phase, the model absolute error is high. The proposed model indicates that a correct determination of the fatigue life requires consideration of the crack initiation phase.

کلمات کلیدی:

Steel thin-wall specimen, Initial crack length, Torsional load, Critical plane approach

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