High temperature fatigue behavior of notched Inconel 825 steel under constant amplitude and two step loading

Prakash Gope[1] and Chetan Mahar[1]

[1]College of Technology

April 28, 2020

Abstract

In the present investigation temperature dependence fatigue strength behaviour of Inconel 825 super alloys is investigated. Based on the experimental results different S-N models have been derived and suitable model for the prediction of fatigue strength have been proposed. An inverse power and exponential relation between fatigue strength and absolute temperature is demonstrated. The proposed models are used to predict the fatigue life using well known Palmgren-Miner rule. Based on high to low and low to high load steps test data sets under identical test conditions, Miner rule based statistical damage constant is stochastically modeled for fatigue life prediction at different level of probability and validated. The modeling process combines a probabilistic fatigue damage accumulation and a stress-life-temperature relation technique.

Hosted file

paper_chetan_April_2020.pdf available at https://authorea.com/users/311588/articles/442289-high-temperature-fatigue-behavior-of-notched-inconel-825-steel-under-constant-amplitude-and-two-step-loading