

Notch S-N Curve Method for fatigue life analysis of notch components of metals in low/medium/high cycle fatigue regime

xiangqiao yan¹

¹Harbin Institute of Technology

January 27, 2023

Abstract

From the author's recent studies, it was found that, in low/medium/high cycle fatigue(LHCF) regime, the Wöhler Curve Method is well suitably employed to perform the fatigue life assessment of metals, in which the **stress-based intensity parameter** calculation is based on the **linear-elastic analysis**. In this study, an attempt is made through many fatigue test data of notch components of metals from the literature to illustrate that, in LHCF regime, the Notch S-N Curve Method is well suitable for fatigue life analysis of notch components of metals, in which the *stress-based intensity parameter* calculation is based on the **linear-elastic analysis**. By concepts of the critical stress and the critical distance by Taylor and by two calibration fatigue failure curves of a smooth specimen and notch specimen by Susmel and Taylor, further, a local approach for predicting the notch S-N curve is proposed based the linear elastic stress fields ahead of notches. Accuracy of the Notch S-N Curve Method is proven by many fatigue test data of notch components of metals from the literature in LHCF regime.

Hosted file

The W\selectlanguage[ngerman]öhler curve method for fatigue life analysis of notched components of metals available at <https://authorea.com/users/301726/articles/621420-notch-s-n-curve-method-for-fatigue-life-analysis-of-notch-components-of-metals-in-low-medium-high-cycle-fatigue-regime>