

Mean Stress Effect for Welds under Fatigue Loading

Abstract

Welding processes are widely used in automotive industry. Fatigue design and analysis for welded structure is fundamental. Unlike solid materials, the fatigue behaviour for joints is less understood. Mean stress effect is one of the important factors which is always ignored in the current analysis. The mean stress effect for both seam and discrete welds were explored using aluminium laser welded and ARPLUS welded test coupons in the current work. It is evident that significant mean stress effect existed for both types of the welds. Walker's equation can be used to account for the mean stress effect for the welds. Neglect of this effect will lead to an inaccurate result in design and analysis.