

Residual Stress And Its Effects On Fatigue And Fracture

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Simplified fracture mechanics based assessment methods are widely used by the industry to determine the structural integrity significance of postulated cracks, manufacturing flaws, service-induced cracking or suspected degradation of engineering components under normal and abnormal service loads. In many cases, welded joints are the regions most likely to contain original fabrication defects or cracks initiating and growing during service operation. Various procedures provide upper bound residual stress profiles for various classes of welded joints that can be used in fracture assessments, but these often give very conservative results. Recently, the option to use more realistic profiles has been adopted, but only where such profiles are based on finite element residual stress simulations supported by detailed residual stress measurements. Rapid advances in the capability of residual stress measurement techniques, such as the contour and deep hole drilling techniques as well as the neutron and synchrotron X-ray diffraction methods, now readily allow residual stresses and strains to be mapped on defined planes within a structure. The contents of this book have been grouped into three topic areas covering theoretical /numerical and experimental analyses of residual stress and its effects on fatigue and fracture. EAN/ISBN : 9781402053290 Publisher(s): Springer Netherlands Format: ePub/PDF Author(s): Youtsos, A.G.

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