

Developments in High Temperature Assessment

Peter Carter

ABSTRACT:

Two new assessment methods are suggested for high temperature components. First, in addition to creep damage, the calculation of the rupture failure probability rate provides information on the changes in risk over time. This is particularly helpful for aging components when the minimum properties creep damage calculation may have predicted cracking which has not occurred, sometimes significantly earlier. Second, the increasing importance of cyclic loading requires an effective analysis technique. A simplified shakedown analysis method is described which is significantly easier to perform than detailed cyclic creep analysis. It provides conservative results and allows the likely thermal-mechanical causes of reduced creep and fatigue life due to cycling to be identified. It also assists the performing of the full and detailed cyclic creep analyses.

Carter, Peter, "Developments in High Temperature Assessment" Proceedings of EPRI International Conference: Advances in Condition And remaining Life Assessment for Fossil Power Plants, October 17 – 19, 2012, Hilton Head, SC.