

The Effect of Stress Intensity Factor Models on Inspection Intervals

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Abstract. *Population of the world's largest database of stress intensity factor (K) solutions began in 2002 with the calculation of 5.6 million K solutions for diametrically opposed unsymmetric corner cracks at a straight shank hole in a finite width sheet subject to remote tension, remote bending, and bearing loading. For the last 20 years, the well-known Newman/Raju K solutions have been used for predicting fatigue life for the case of two cracks of the same shape and size. Differences between the Newman/Raju solutions and new K's exist and the effect on inspection intervals and fatigue lives is assessed. In addition, the accuracy of engineering assumptions required to use the Newman/Raju solutions are evaluated. Overall, the correlation between the two solution sets was quite poor.*