International Journal of Industrial Engineering & Technology (IJIET)
ISSN(P): 2277-4769; ISSN(E): 2278-9456
Vol. 5, Issue 4, Dec 2015, 7-18
TJPRC Pvt. Ltd.

THEORITICAL AND NUMERICAL ANALYSIS OF CENTRAL CRACK PLATE WITH DIFFERENT ORIENTATION UNDER TENSILE LOAD

LATTIF SHEKHER JABUR

Department of Mechanical Technics, Southern Technical University, Technical Institute of Nasiriya, Iraq

ABSTRACT

Finite element analysis software used to calculate the Stress Intensity Factors, KI and KII, for a central crack in a plate subjected to uniform tensile load for different crack lengths and orientations. Also for inclined crack the SIFs of kinked crack was investigated. For acceptance of FEM model used in computation analysis, Numerical results were compared with theoretical results which getting by solutions of selected equations and good agreement had been found between them. The present study shows that the main important role affects on stress intensity factors is the inclination crack angle (β). For kinked crack, both of Mode I & Mode II of SIFs are strongly depend on the value of (β + α) and there is no effect found when one of them (β or α) change. Furthermore maximum value of Mode II of SIF of kinked crack is found at about [(β + α) = (50o – 60o)].

KEYWORDS : SIFs, Inclined Crack, Kinked Crack, Kinked Angle

Received: Nov 11, 2015; **Accepted:** Dec 09, 2015; **Published:** Dec 12, 2015; **Paper Id.:** IJIETDEC20152

Original Article