

عنوان مقاله:

Semi-elliptical crack with different positions in the pipe

محل انتشار:

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خلاصه مقاله:

since the creation of the simplest tools, man has faced the phenomenon of failure in bodies, and because of the advancement of technology in the new age, this issue is more important than the past. Since fracture in the past decades has led to the failure and destruction of many structures, including spacecraft and airplanes, and so on, resulting in many economic and financial losses, the need for more attention to mechanical Proof of failure. Therefore, the analysis of such a failure, in particular for structures that are very sensitive and accurate, is inevitable. Calculation of the stress intensity factor (SIF) for safety used in various structures such as water transfer pipes, oil and gas transmission pipes, etc. is a very important topic. In the present research, the SIFs for pipe with a thickness ratio (outer diameter of cylinder/wall thickness) of 5, 7.5 (thick-walled), 15, 20 (thin-walled) and 10 with circumferential and longitudinal semi-elliptical cracks in the internal and external surfaces of pipe investigated using ABAQUS software in three aspect ratios of 0.2, 0.4, 1 and at three relative depths were 0.2, 0.5 and 0.8 respectively. The results showed that in the fixed aspect ratio, increasing the relative depth of the SIFN increased, and at a constant relative depth, the SIFN decreased with increasing aspect ratio.

کلمات کلیدی:

Fracture Mechanics, Longitudinal Crack, Semi-elliptical Crack, Aspect Ratio, Circumferential Crack, Stress Intensity Factor.

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