عنوان مقاله:

A numerical and experimental study on buckling and post-buckling ofcracked plates under axial compression load

محل انتشار:

دو فصلنامه تحقیقات کاربردی در مهندسی مکانیک, دوره 4, شماره 1 (سال: 1393)

تعداد صفحات اصل مقاله: 12

نویسندگان:

m Shariati - *Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

a.m Majd Sabeti - *Department of Mechanical Engineering, Shahrood University of Technology, Shahrood, Iran*

h Gharooni - *Department of Mechanical Engineering, Shahrood University of Technology, Shahrood, Iran*

خلاصه مقاله:

Existence of cracks in industrial structures is one of the important causes oftheir failure, especially when they are subjected to important axial compressiveforces that might lead to buckling. Therefore, it must be considered in stressanalysis and designing and loading of such structures. In this paper, thebuckling and post-buckling behaviors of stainless-steel cracked plates underaxial compression load were investigated both experimentally and numericallyand effects of the geometrical and mechanical parameters, such as crack length,crack angle, crack position, plate imperfection, load band, and plate thicknesson the critical buckling load were studied. In the experimental study,mechanical properties and plastic behavior of stainless steel plates weredetermined for the subsequent numerical study. Numerical modeling wascarried out by ABAQUS finite element software. Numerical predictions werecompared with the experimental results and the reliability of the numericalsolution was proven. Results .demonstrated the considerable effects of thementioned parameters on the critical buckling load of plate

کلمات کلیدی:

Cracked plate,Buckling,Post-buckling,Experimental method,FEM