عنوان مقاله:

Experimental and FEM Analysis of Ribs Defects on Composite Lattice Cylindrical Shells

محل انتشار:

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نویسندگان:

Amin Kolahdooz - *Young Researchers and Elite Club, Khomeinishahr Branch, Islamic Azad University, Isfahan, Iran*

Seyyed Ali Latifi Rostami - *Department of Mechanical Engineering, Khomeinishahr Branch, Islamic Azad University, Isfahan, Iran*

خلاصه مقاله:

In this study, the behavior of a composite lattice cylindrical shell is investigated in the buckling deforming. Also, the distribution of shell buckling response and the stress field is studied after making some defects on the ribs.Therefore using ANSYS software, a 3D finite element model of the shell has been created for the analysis. Material properties and geometrical data of the shell are obtained from the some experimental tests. In fact, these parameters have been extracted from the prototypesthat made with filament winding method. The parameters studied in this study include of the kind of ribs defects on buckling response and the geometrical ratios. Composite shells have been tested under axial force and obtained results are compared with the results of FEM. Based on the parametric study, the structural strength-to-weight ratio is increased around %50 by increasing the thickness of the outer shell. It is observed that in each consecutive buckling test, the buckling load is reduced; however the failed sample had reasonably good resistance to the applied load.

کلمات کلیدی:

Composite Lattice Cylindrical Shell, Buckling Deformation, Rib Defect, Finite Element Analysis (FEA), Experimental Test