

عنوان مقاله:

Bending Response of a Rotating Viscoelastic Functionally Graded Porous Disk with Variable Thickness

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خلاصه مقاله:

The analysis of the bending behavior of rotating porous disks with exponential thickness variation consisting of viscoelastic functionally graded material is illustrated. The study of bending in the porous disk was done using the first-order shear deformation theory. The porous disk is under the effect of a combination of mechanical stresses and thermal distribution. All material factors for the porous disk change across the thickness as a power law of radius. To solve the mathematical structure by using the semi-analytical technique for displacements in the porous disk, and then to treat the structure model with viscoelastic material by the correspondence principle and Illyushin's approximation manner. Numerical outcomes including the effect of porosity parameter, inhomogeneity factor, and relaxation time are presented with three different sets of boundary conditions for the solid and hollow disks. A comparison between porous and perfect disk with numerous values of porosity parameters and different inhomogeneity factors have been shown to emphasize the importance of complex mathematical structure in modern engineering mechanical designs.

کلمات کلیدی:

inhomogeneity, Porosity, semi-analytical technique, Illyushin' s method, Viscoelasticity

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