

## عنوان مقاله:

Hygrothermal creep and stress redistribution analysis of FGMEE rotating disc

## محل انتشار:

بیست و نهمین همایش سالانه بین المللی انجمن مهندسان مکانیک ایران و هشتمین همایش صنعت نیروگاه های حرارتی (سال: 1400)

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## خلاصه مقاله:

The aim of this paper is to analyze the time-dependent stress redistribution of a rotating functionally graded magneto-electro-elastic (FGMEE) disc. The disc is supposed to be placed in an axisymmetric temperature and moisture fields. Besides, the disc is under a centrifugal body force, an induced electric potential in addition to magnetic potential. Using equilibrium, electrostatic and magnetostatic equations, strain displacement and stress-strain relations together with hygrothermal equations, a differential equation is obtained in which there are creep strains. Primarily, disregarding the creep strain, an analytical solution for the initial radial and hoop stresses, electric and magnetic potentials and radial displacement is developed. Then, using Prandtl-Reuss relations, an analytical solution has been derived to obtain creep stress rates and electromagnetic potentials rates in steady state temperature and humidity boundary condition. Finally, the history of radial and hoop stresses, electric and magnetic potentials and radial displacement is obtained by means of an iterative method.

## کلمات کلیدی:

FGMEE, Hygrothermal loading, Time dependent creep, Rotating disc

## لینک ثابت مقاله در پایگاه سیویلیکا:

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