عنوان مقاله:

The Effects of an Imposed Magnetic Field on Natural Convection in a Tilted Cavity with Partially Active Vertical Walls:Numerical Approach

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خلاصه مقاله:

The effect of imposed magnetic field on natural convection in a tilted cavity with partially active walls was investigated numerically. The active part of the right side wall was at a higher temperature than the active part of the left side wall and were moving on vertical walls relative to each other. The top, the bottom and the remaining parts of the side walls were insulated. The magnetic field was perpendicular to the side walls. The SIMPLER algorithm was used to indicate the pressure gradient in the momentum equations. Flow field and heat transfer were predicted for fluid with Pr = ۰.۷۱ and a wide range of the governing parameters such as Rayleigh number between ۱۰۴ and ۱۰۶, Hartmann number between ۰ and ۱۰۰, aspect ratio between ۰.۵ and ۲ and inclination angle between ۰°and ۹۰°. The average Nusselt number decreased with an increase of Hartmann number and increased with an increase of Rayleigh number. The maximum heat transfer rate was occurred for the middle–middle thermally active locations while heat transfer was poor for the bottom-top thermally active locations.

کلمات کلیدی:

Magnetic field, Natural convection, Partially Active Walls, Cavity

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