

عنوان مقاله:

Thermodynamic analysis of a magnetohydrodynamic oldroyd λ -constant fluid in a vertical channel with heat source and slippage

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خلاصه مقاله:

Thermodynamic analysis of a steady state flow and heat transfer of an Oldroyd λ -constant fluid with effect of heat source, velocity slip and buoyancy force under tranverse a magnetic field is is carried out in this paper. The model for momentum and energy balance is tackled numerically using Method of Weighted Residual (MWR). Partition method is used to minimize the associated residuals. The results obtained were compared with that obtained using inbuilt numerical solver in MAPLE ۱۸ to validate the method used and the convergence of the method is discussed. The results obtained from the momentum and energy balance were used to compute the entropy generation rate and the irreversibility ratio. The effects of controlling parameters such as non-Newtonian parameters, slip parameters, Grashoff number parameter, Brinkmann number, Hartmann, heat source parameter on the non dimensional velocity, temperature, entropy generation rate and irreversibility ratio are presented graphically and discussed. It is observed that irreversibility due to fluid friction dominates over the heat transfer when the non Newtonian parameter is kept constant for various values of λ , while irreversibility due to heat transfer . dominate over fluid friction for various values of λ with fixed value

کلمات کلیدی:

Oldroyd λ -constant fluid, Entropy Generation, Bouyancy effect, Heat source, Bejan number :

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