

Forced Heat Transfer Convection in a Porous Channel with an Oriented Confined Jet

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Abstract : The present study is an analysis of the forced convection heat transfer in porous channel with an oriented jet at the inlet with uniform velocity and temperature distributions. The upper wall is insulated when the bottom one is kept at constant temperature higher than that of the fluid at the entrance. The dynamic field is analysed by the Brinkman-Forchheimer extended Darcy model and the thermal field is traduced by the energy one equation model. The numerical solution of the governing equations is obtained by using the finite volume method. The results mainly concern the effect of Reynolds number, jet angle and thermal conductivity ratio on the flow structure and local and average Nusselt numbers evolutions.

Keywords : forced convection, porous media, oriented confined jet, fluid mechanics

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