International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 6 No. IV (July, 2012), pp. 117-129

MAGNETOHYDRODYNAMIC FLOW THROUGH NON-DARCIAN POROUS MEDIUM IN A COAXIAL DUCT WITH COMBINED EFFECT OF RADIATION AND DISSIPATION

D. CHITTI BABU[1] AND D. R. V. PRASAD RAO[2]

[1]Department of Mathematics,
Govt.College(A), Rajahmundry, A.P., India
[2]Department of Mathematics,
S.K. University, Anantapur, A.P., India

Abstract

In this paper we investigate the flow through porous medium in coaxial cylindrical duct making use of Brinkman, Frochheimer-extended Darcy equation. The flow is subjected to radial magnetic field, the viscous dissipation and radiation taken into account in the energy equation. The velocity and temperature distributions are analytically evaluated and their behaviour is discussed computationally for variations in the governing parameters and also we calculated the shear stress and the Nusselt number on the inner and outer cylinders.

Key Words : *Non-Darcian, Porous medium, Radiation, Dissipation, MHD flow.*

AMS Subject Classification : 76R10,76S05,76W05.