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STUDY OF VISCOUS DISSIPATION WITH NATURAL CONVECTION AND VARYING WALL TEMPERATURE IN VERTICAL ANNULAR CYLINDER EMBEDDED WITH POROUS MEDIA

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Abstract

In this paper, we studied the effect of viscous dissipation with natural convection and varying wall temperature on the heat transfer by supplying the heat to the saturated porous medium embedded in a vertical annular cylinder at lower half of the annulus. FEM has been used to solve the governing equations. Influence of aspect ratio (A_r) and radius ration (R_r) on Nusselt number is presented. The effect of Rayleigh number, viscous dissipation, varying wall temperature on heat transfer behavior is discussed.

Key Words : *Viscous dissipation, Nusselt number, Power law exponent, Aspect ratio, Radius ratio and Rayleigh number.*