Isotherms Around a Heated Horizontal Cylinder Embedded in a Porous Medium[1] ÁYAX HERNANDO TORRES VICTORIA, Mexican Petroleum Institute, MARIO SANCHEZ ROSAS, FERNANDO ARAGÓN RIVERA, Instituto Politécnico Nacional, México, FAUSTO ALEJANDRO SÁNCHEZ CRUZ, Universidad Autónoma de Nuevo León, México, ABRAHAM MEDINA OVANDO, Instituto Politécnico Nacional, Nuevo León, México — This work presents an experimental study of free and forced convection phenomena that occur in the vicinity of a heated cylinder embedded in a fluid saturated porous medium. The characteristic distribution of the conformed temperature gradients in the porous medium due to pure free convection, and under the action of a continuous and uniform stream were investigated through the use of four different configurations: first by inducing an air stream from below the heated cylinder, second, by placing an air stream on the left hand side of the heat source, third by an air stream acting from the top of the heat source, and fourth by varying the injection angles. The resulting conformation of the buoyant plumes surrounding the heated cylinder when all phenomena reach the steady state were analyzed with an infrared camera. Correspondence is found with the theoretical and numerical solutions proposed by Kurdyumov and Liñán (2000).

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