

Abstract

The unsteady (MHD) flow of two immiscible fluids in a horizontal channel bounded by two parallel porous plates in the presence inclined magnetic field has been investigated. The flow is driven by the movement of the upper plate and a pressure gradient imposed in direction parallel to the plates. In this study the fluids in the two regions have been assumed immiscible and incompressible. The momentum and energy equations that describe the discussed problem under the adopted assumption are then solved using finite difference approximation. Solution for the velocity and temperature area obtained in the both fluid regions of the channel followed by a graphical presentation of the results. It was found that the fluid velocity and the temperature distribution are influenced significantly by the changes in the above mentioned parameters. Increase in Hartmann number was found to decrease velocity and the temperature of the fluid in the both regions. However, the effect was found to be pronounced more in the lower region containing the fluid which was more electrically conducting. Increasing the suction parameter led to reduction of flow velocity in the both fluid regions however, in the lower region the temperature was found to decrease while that in the upper region increased. Moreover increasing the magnetic inclination angle increased both velocity and the temperature of the fluid in the both regions.