

**Magnetohydrodynamic Free Convention Flow of a Heat Generating Fluid Past a Semi-
Infinite Vertical Porous Plate With Variable Suction**

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ABSTRACT

In this study, a magnetohydrodynamic convection flow of an electrically conducting heat generating fluid past a semi-infinite vertical porous plate with variable suction is considered. The fluid flow is unsteady and a variable magnetic field is transversely applied to the plate.

Evaluation of velocity gradients, temperature gradients and concentration gradients across the plate is done. Observations and discussions of the effects of various parameters on flow variables is done. The non-dimensional parameters observed and discussed are Hall parameter, M ; Magnetic number, M^2 ; Eckert number, Ec ; Rotational parameter, Er ; Suction parameter, S and Injection parameter, w .

The velocity profiles, temperature profiles and concentration profiles are presented graphically for both convective heating and free convective cooling of the plate. The skin friction and rate of heat transfer values are obtained and presented in tables.

For free convective heating and cooling of the plate, the Grashof number is taken as constants - 5 and 5 respectively. Prandtl number is 0.71 which corresponds to air. The variation of the parameters mentioned above is noted to increase or decrease or had no effect on the skin friction, mass transfer, rate of heat transfer, the velocity profiles, concentration profiles and temperature profiles.