

NUMERICAL ANALYSIS OF RECTANGULAR FIN ARRAYS WITH 30% AREA REMOVED NOTCH

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Abstract

The heat transfer from fins has been the subject to numerous experimental and theoretical investigations. However, no work is reported on notched fin arrays except by Sane et al^[1,2]. One of the first numerical studies on this subject was carried out by Sane and Sukhatme. Governing equations were solved numerically using finite difference method. The present work investigates the effect of wide range of geometrical parameters to the heat transfer from horizontal rectangular fin arrays with notch. Effect due to changes in fin spacing, input wattage and area removed in the form of notch is studied. The effect of aspect ratio L/H on the performance of fin arrays is also investigated for different percentage of area removed and for four spacing(S / H). The three dimensional elliptical governing equations were solved using finite volume based computational fluid dynamics (CFD) code.

Keywords : Natural convection heat transfer, Notched fins, CFD