International J. of Engg. Research & Indu. Appls. (IJERIA). ISSN 0974-1518, Vol.2, No. VII (2009), pp 29-42

## NATURAL CONVECTION HEAT TRANSFER FROM HORIZONTAL RECTANGULAR INVERTED NOTCHED FIN ARRAYS

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## Abstract

Variables for natural convection cooling with the help of finned surfaces are orientation and geometry. In lengthwise short array (L/H~5), where single chimney flow pattern is present, stagnant zone is created at the central bottom portion of fin array channel and hence it does not contribute much in heat dissipation. Hence it is removed in the form of inverted notch and added at fin top to modify its geometry for enhancement of heat transfer. An experimental setup is developed for studying the investigation on normal and inverted notched fin arrays (INFAs). Fin spacing, heater input and %of area removed in form of inverted notch are the parameters. To study the effect of emissivity, lamp black coating is applied on fin surfaces. It is found that INFAs with compensation of notched area provide more channel area for inflow from both sides improves the average heat transfer coefficient; nearly 30 to 40 % higher values are obtained than normal arrays. Lampblack coated arrays gives less surface temperature.

Keyword: Heat transfer enhancement, Natural convection, inverted notched fins, Single chimney flow