# Estimation of Natural Convection Heat Transfer from Plate-Fin Heat Sinks in a Closed Enclosure

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**Abstract :** This study applies the inverse method and three-dimensional CFD commercial software in conjunction with the experimental temperature data to investigate the heat transfer and fluid flow characteristics of the plate-fin heat sink in a closed rectangular enclosure for various values of fin height. The inverse method with the finite difference method and the experimental temperature data is applied to determine the heat transfer coefficient. The k-ε turbulence model is used to obtain the heat transfer and fluid flow characteristics within the fins. To validate the accuracy of the results obtained, the comparison of the average heat transfer coefficient is made. The calculated temperature at selected measurement locations on the plate-fin is also compared with experimental data.