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Study of Natural Convection Heat Transfer of Plate-Fin Heat Sink

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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 rectangular closed enclosure. The inverse method with the finite difference method and the experimental temperature data is applied to determine the approximate heat transfer coefficient. Later, based on the obtained results, the zero-equation turbulence model is used to obtain the heat transfer and fluid flow characteristics between two fins. To validate the accuracy of the results obtained, the comparison of the heat transfer coefficient is made. The obtained temperature at selected measurement locations of the fin is also compared with experimental data. The effect of the height of the rectangular enclosure on the obtained results is discussed.

Keywords : inverse method, fluent, heat transfer characteristics, plate-fin heat sink
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