THESIS TITLE : THE STUDY OF AN INTERNALLY FINNED THERMOSYPHON HEAT PIPE

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ABSTRACT

An internally finned thermosyphon heat pipe of 37 mm internal diameter and 1230 mm length with 20 fins was tested in this research. The fins were added to double the internal wall area as compared to the normal pipe of the same size. The lengths of the evaporating , adiabatic and condensing zones are 280 , 500 and 450 mm , respectively. Heat was added and removed at constant temperatures using water jackets installed at evaporating and condensing zones. The temperature ranges used in this experiment were 30-70 ^{0}C and 20 -40 ^{0}C for the evaporating and condensing zone , respectively. Two types of working fluids , R-22 and R-134a , were used. The experiments shown that the average heat transfer efficiency was about 90% . R-134a was superior to R-22 due to a slightly higher heat transfer efficiency and much lower pressure produced in the pipe. The heat pipe was originally aligned in vertical direction or 90^{0} measured from horizontal. The pipe was rotated to the angles of 45^{0} and 65^{0}. The maximum heat out put was observed at 65^{0} angle with about 10% improvement over those of the other angles.