

Sittichai Boonprasert : A Comparative Study of Various types of Heat Exchanger used in Small Home Air Conditioners.
Thesis Advisors : Asst.Prof.Veera Chanvattana, Asst.Prof. Dr.Bundit Fungtammasan, Dr.Tirachoon Muangnapoh, 1989.

This report describes a comparative experimental study of the performance of four types of packaged cross-flow heat exchanger, which are commonly used in small, home air-conditioners. The data which were obtained from measurements performed on an experimental set-up simulating near-real working conditions of the air-conditioners, indicate that the grooved tube and slit-fin have the highest rate of heat transfer in the range of $0.1516 \text{ kW/m}^2\text{-K}$ to $0.233 \text{ kW/m}^2\text{-K}$ at mass flow rate of R-22 $119.99 \text{ kg/m}^2\text{-s}$ to $197.00 \text{ kg/m}^2\text{-s}$ and temperature differentials of 5.5°C to 8°C for evaporator. As for condenser, the rate of heat transfer is in the range of $0.325 \text{ kW/m}^2\text{-K}$ to $0.461 \text{ kW/m}^2\text{-K}$, at mass flow rate of R-22 $119.99 \text{ kg/m}^2\text{-s}$ to $164.76 \text{ kg/m}^2\text{-s}$ and temperature differentials of 9°C to 10.5°C . The results also agree well with predicted data calculated numerically, on the basis of annular two-phase flow and filmwise condensation.