21CR Project 611-20021

Flat-Tube Heat Exchangers in Air-Conditioning and Refrigeration Applications – Phase II

Updated 30 August 2006

Objective:

Validate the air-side performance characteristics of several styles of serpentine fins used in conjunction with flat tubes in a fluid-to-air heat exchanger.

Information/items expected to result from this project:

(1) Laboratory testing of extruded-tube heat exchangers to establish parameters important to fin performance
(2) Investigation of condensate shedding and its relation to exchanger inclination angle, tube orientation, air velocity, fins pitch & thickness, and tube thickness
(3) Investigation of frost development in relation to fin geometry, air velocity and inlet temperature difference
(4) Performance evaluation for selected fin parameters
(5) Development of correlations useful to heat exchanger designers

How are the results likely to be applied:

The results will be used by HVAC&R equipment manufacturers to assess the potential benefit of flat-tube heat exchangers in air conditioning and refrigeration applications.

Research subcontractor:

University of Illinois, Champaign, IL (Principal Investigator: Anthony M. Jacobi, Ph.D.)

Status:

The project has been completed. The draft final report is approved for release. The final report is available to down load at no cost from the ARTI website.

Responsible 21CR Subcommittee: HVAC&R Energy Efficiency