


Undergraduate Thesis and Co-Op Work

Thermal and Fluid Sciences: Infrared heating equipment (Research Inc. 1992-1994), and development of an air-to-air heat exchanger evaluation facility ('94-'95), fulfilling requirements for undergraduate honors.

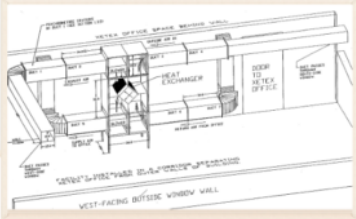


Bachelor's in Mechanical Engineering

Emphasis in thermal-fluid sciences, design and controls

Development of an Air-to-Air Heat Exchanger Evaluation Facility

Undergraduate Honors Thesis
Submitted by: Michael J. Tienness
July 28, 1995
Advisor: Professor E. M. Sparrow, Mechanical Engineering Department
Company support: Xerox, Incorporated, Minnesota



eq 3: Total Effectiveness - Enthalpy Exchangers

$$\epsilon = \frac{m_{a1}(h_{a1} - h_{a2})}{m_{a2}(h_{a1} - h_{a2})}$$

where
 h_a = moist air enthalpy per unit mass of dry air,
 m_{a1} = mass flow of dry air, stream 1 and
 m_{a2} = mass flow of dry air, minimum flow stream.

eq 4: Mass Transfer Effectiveness - Enthalpy Exchangers

$$\epsilon = \frac{m_{a1}(\omega_1 - \omega_2)}{m_{a2}(\omega_1 - \omega_2)}$$

where
 ω = specific humidity,
 m_{a1} = mass flow of dry air, stream 1 and
 m_{a2} = mass flow of dry air, minimum flow stream.

Shrink Tubing Furnace for Wire Harness Assembly:
Research Incorporated Model 4825 *Tube Toaster*
Design Progress Report

