PROCESS HEAT TRANSFER LAB

Course Code : 15CH1116

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Course Outcomes:

On successful completion of the laboratory course, the student should be able to

CO 1 Operate conduction, convection & radiation laboratory test equipments.

CO 2 Compare theoretical and experimental heat transfer coefficient based on convection equipments.

CO 3 Estimate the effectiveness of heat transfer in a double pipe heat exchanger.

CO 4 Examine the temperature distribution along the length of pin-fin apparatus.

CO 5 Estimate the critical heat flux in pool boiling.
*Student should also submit a detailed report for all the above laboratory practicals.

LIST OF EXPERIMENTS:

1. Determination of total thermal resistance and thermal conductivity of composite wall.
   Major equipment - Composite wall Assembly
2. Determination of thermal conductivity of a metal rod.
   Major equipment - Thermal Conductivity apparatus
3. Determination of natural convective heat transfer coefficient for a vertical tube.
   Major equipment - Natural convection heat transfer apparatus
4. Determination of critical heat flux point for pool boiling of water.
   Major equipment- Pool boiling apparatus

5. Determination of forced convective heat transfer coefficient for air flowing through a pipe
   Major equipment – Forced convection heat transfer apparatus
6. Determination of overall heat transfer coefficient in double pipe heat exchanger.
   Major equipment - Double pipe heat exchanger apparatus
7. Study of the temperature distribution along the length of a pin-fin under natural and forced convection conditions
   Major equipment - Pin fin apparatus
8. Estimation of un-steady state film heat transfer coefficient between the medium in which the body is cooled.
   Major equipment - Heat transfer coefficient determination apparatus
9. Determination of Stefan – Boltzmann constant.
   Major equipment - Stefan Boltzmann apparatus
10. Determination of emissivity of a given plate at various temperatures.
    Major equipment - Emissivity determination apparatus
11. Determination of radiation constant of a given surface.
    Major equipment - Emissivity determination apparatus.