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MM424 MECHANICAL ENGINEERING APPLICATIONS II PROJECTS

THE MEASUREMENT AND EXPERIMENTAL INVESTIGATION OF STEADY STATE HEAT TRANSFER FROM FLAT MATERIALS

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Guarded hot plate device provides the steady state heat transfer measurements on the samples in the form of a flat plate, and the calculation of heat transfer characteristics of test pieces.

The purpose of guarded hot plate device, in test pieces in the uniform plate with flat and parallel surface parts, it is to determine one-way uniform heat flux density which is an endless plate between two flat and parallel isothermal surfaces in terms of the steady state conditions.

Guarded hot plate device is formed by cooling unit, heating unit, sample (or test piece), copper plate, aluminum plate, thermocouples, insulation materials, compression system, voltage-measurement device, and temperature-measurement device. The operating phases of the device is that firstly voltage-measurement device is set and thermocouples are connected to temperature-measurement device. After that, the system is activated and operated. Secondly, the cooling unit is activated. When the system is in the steady-state condition, temperature measurements are taken. After all these operations, the necessary procedures are carried out and heat transfer coefficient is calculated.



