

Course Code : ME 725

Course Title : Thermal Equipment Design

Credit Hours : 3

Course Description

Introduction to heat exchangers and their classifications, Mixed type heat exchangers and design of cooling towers, Regenerative heat exchangers design and its applications, Double pipe heat exchangers design, Shell and tube heat exchangers (thermal design, hydrodynamic design), Thermal economical parameters for heat, Plate type heat exchangers and compact heat exchangers design and applications, Steam pipeline design, Steam pipeline fixation and construction, Expansion joints selection, Steam traps selection, installation and testing procedures, Cooling coil design, Hot water and fire tube boiler design.

Course Objectives

The aim of this course is to enable students perform design calculations of various types of heat exchangers. The student should be able to design shell-and-tube, regenerative heat exchangers, double pipe, plate-type and compact heat exchangers. Carry out specifications and tenders for thermal equipment.

Course Topics

- Week no. 1: Introduction to heat exchangers and their classifications
- Week no. 2: Mixed type heat exchangers and design of cooling towers
- Week no. 3: Regenerative heat exchangers design and its applications
- Week no. 4: Double pipe heat exchangers design
- Week no. 5: Shell and tube heat exchangers: thermal design

- Week no. 6: Shell and tube heat exchangers: hydrodynamic design

- Week no. 7: Thermal economical parameters for heat exchangers / 7th week evaluation.

- Week no. 8: Plate type heat exchangers and compact heat exchangers design and applications.

- Week no. 9: Steam pipeline design.

- Week no. 10: Steam pipeline fixation and construction.

- Week no. 11: Expansion joints selection.

- Week no. 12: Steam traps selection, installation and testing procedures / 12th week evaluation

- Week no. 13: Cooling coil design.

- Week no. 14: Hot water and fire tube boiler design

Week no. 15: Presentation on Selected Topics.

Week no. 16: Final Examination

References

D.B. Spalding and J. Taborek (eds.), "Heat exchangers design", Hemisphere publications, 1983.

- VDI Heat Atlas