Course Content

Title: Shell and Tube Heat Exchangers Basics, Operations, and Design

Potential PDH: 12 **Code:** BTT072

Description:

This course is intended for engineers in operating plants who deal with heat exchangers – process, mechanical, inspection, reliability, maintenance, projects, debottlenecking. It can also serve as the first broad exposure to heat exchangers for those seeking to become specialists and are in the 0-5 year experience range.

All heat exchanger related topics will be covered to some depth. The objective is to enable plant-based engineers to understand operation, mechanical and thermal design choices, failure mechanisms and remedies, and methods to improve performance. All types of services will be discussed – liquids, gases, condensers, reboilers.

The focus will be on understanding of the equipment and how it works, and not on design formulas and methods. We will also cover how to improve thermal performance and some basics about fouling and fouling mitigation.

Outline:

1. Introduction to S&T Heat Exchanger
2. TEMA Types
3. Mechanical Aspects and Design
4. Heat Transfer and Pressure Drop
5. Operational and Maintenance Issues
6. Thermal & Hydraulic Design – Initial Decisions
7. Thermal & Hydraulic Design – Single Phase
8. Thermal & Hydraulic Design – Condensers
9. Thermal & Hydraulic Design – Reboilers, Steam Generators
10. Fouling and Fouling Mitigation
11. Monitoring
12. Heat Transfer Enhancement
13. Specification and Standards
14. Safety Aspects

Instructor:

Himanshu Joshi worked for 34 years as a heat exchanger and fouling specialist with two major oil companies. His courses are delivered with a practical mindset, developed over the years with assignments in four countries and two operating facilities. He has dealt with all aspects of Oil & Gas heat exchangers from selection and design, specification and procurement, to operational troubleshooting and improvements. He served for 10+ years on Standards writing committees of API for different types of heat exchangers and as a member of the Technical Committee for HTRI. He has developed and delivered training classes for heat exchanger design and troubleshooting, and a workshop on the practical aspects of fouling and fouling mitigation, at several worldwide locations. He was the Subject Matter Expert for fouling and heat transfer enhancement with both employers and has made several presentations at professional conferences including Keynote Lectures, and published papers in Heat Transfer related journals.