



Process Design Fundamentals

Potential PDH: 40

Description:

Design methods and criteria are presented and discussed to familiarize process engineers with practical techniques (including short-cut methods) for sizing, design, and selection of the main types of process equipment for refineries, petrochemical, and related process plants. The course covers description and definition of hydrocarbons and mixture properties, characterization parameters, and their significance in design of equipment. Basic calculation procedures for design of process equipment with sample examples are presented and discussed to enhance skills in design techniques. Procedures for preparation of process data and equipment design specification requirements, evaluation of proposals, and interaction with equipment manufacturers are discussed. The material will be divided into the four major areas shown below. Each section's duration may vary, depending on scope and content.

Outline:

1. Fixed Equipment
 - Heat Exchangers
 - Fired Heaters
 - Fractionation
 - Extraction
 - Strainers, Filters, and Coalescers
 - Pressure Safety Devices
2. Rotating and Motive Equipment
 - Pumps and Drivers
 - Compressors
 - Fans and Blowers
 - Eductors and Ejectors
 - Mixing Equipment
 - Equipment Protection
3. Fluid Flow and Controls
 - Fluid Flow
 - Piping
 - Valves
 - Utility Systems



- Materials
- Sampling
- Flare and Safety Systems

4. Instrumentation and Regulations

- Instrumentation
- Process Control
- Analyzers

5. Miscellaneous Design

- Utility Systems
- Materials
- Sampling
- Safety Topics
- Regulations, Permits, and Emissions
- Basic Design Calculations