BECHT TECHNICAL TRAINING

Course Content

Title: Heat Exchanger Design and Maintenance

Code: 30778 Code ED: AEM021-00 No of Days: 0 PDH: 16 Fee: $1600.00

Schedule: 9/27/2021 to 9/29/2021 Start Time: 8:00 AM CDT **End Time:** 5:00 PM CDT

Venue: Virtual Training - GoToTraining

Description:

This course discusses the mechanical design requirements of shell-and-tube heat exchangers for process plant applications based on ASME Code, TEMA, and API-660 requirements. It also highlights the primary features of air-cooled, double-pipe, and plate-and-frame exchangers. Upon completion of this applications-oriented course, participants will be able to evaluate the mechanical design of shell-and-tube heat exchangers and have an overall understanding of typical heat exchanger maintenance requirements.

Outline:

- Main types of heat exchangers and their primary components
  - TEMA-type
  - Air-cooled
  - Double-pipe
  - Plate-and-frame
- Primary process functions of heat exchangers
- Principal applications and limitations of shell-and-tube and air-cooled heat exchangers
- Primary factors affecting heat transfer duty
- Specifying design requirements
- Design of primary exchanger components
  - Girth flanges
  - Pass partition gaskets
  - Flat channel cover
  - Tubesheets
  - Internal floating heads
  - Tubes
  - Pass partition plates
  - Nonpressure-containing parts
- Vibration considerations
  - Causes of vibration
  - Possible types of damage
  - Design and operating parameters affecting vibration
  - Potential solutions to vibration problems
- Maintenance and repair
  - Evaluating the suitability of corroded components
  - Typical maintenance and inspection procedures
    - Locating leaks
    - Leak repairs
    - Retubing considerations
    - Typical cleaning methods
    - Tube inspection techniques
    - Rerating exchangers

- Workaidsandprocedurestoassistinevaluatingheatexchangers
- Sample Problems and Supplementary Exercises are included throughout the course to enhance participants' understanding of the material that is covered

Instructor:

Don Kurle has over 30 years experience in mechanical design and analysis of pressure vessels and heat exchangers in the chemical and petrochemical industries. He also has experience in minimum design metal temperature (MDMT), fitness for service (FFS), reratings and minimum thickness evaluations of pressure vessels and heat exchangers.

Mr. Kurle spent several years with a major pressure vessel and heat exchanger computer software company as a technical support engineer assisting clients with technical issues related to application of the program. He also developed and presented training classes in the use of the vessel design program and ASME Code.

Mr. Kurle holds a BS degree in Mechanical Engineering from the South Dakota School of Mines and Technology, Rapid City, SD. He is a member of the American Society of Mechanical Engineers (ASME) and the American Welding Society (AWS). Mr. Kurle is a co-owner of a patent for a tubular reactor in the US and Europe. Mr. Kurle's ASME Code Committee activities include Vice Chair Subgroup External Pressure (BPV II), member Subgroup Design (BPV VIII), Vice Chair Subgroup Toughness (BPV II & BPV VIII) and member Subgroup Heat Transfer Equipment (BPV VIII). Mr. Kurle is a past member of Repair and Testing (PCC) and Special Working Group Bolted Flanged Joints committees.