

Course Fee: US\$650

Thermal design methods for kettle reboilers and vaporizers have evolved over the years and some old rules-of-thumb no longer apply. New research results, software advances, and feedback from industry all contribute to improved design practices. The course presents the most up-to-date research in kettle design, provides our current recommendation to use *Xist* to model kettles accurately, and discusses future research and software development to improve predictions. Several example problems illustrate recommended good practices for using *Xist*, interpreting warning messages, improving designs, and troubleshooting cases.

Key Topics

- Shellside boiling methods
- Recirculation
- Liquid level and bundle dryout
- Differences between bundle composition and feed composition
- Kettle sizing
- Entrainment
- Vibration
- Fouling

Suggested Participants

Thermal design engineers and heat exchanger experts

HTRI Software

This course will make use of the following HTRI software: *Xchanger Suite*® component *Xist*®. All training materials are based on the current software version.

Course Credits: 6 hours (PDH/CEU)

Outline

- I. Characteristics of Kettles and the Circulation Boiling Model (CBM)
 - Pros and cons of kettles
 - Handling of heat release curves
- II. Kettle-Specific Input Parameters and Thermal-Hydraulic Methods
 - Shellside boiling mechanisms and methods
 - Two-phase pressure drop methods
- III. Entrainment
 - Fundamental principles
 - *Xist* entrainment methods
 - *Xist* kettle sizing and entrainment mitigation
- IV. Design Considerations and Challenges
 - Fouling and buildup of heavies
 - Dry-wall mechanisms
 - Tube vibration
 - Reboiler checklist