

**Course Fee: US\$650**

Learn the fundamentals of condensation mechanisms and how they apply to condenser design! Apply guidelines to develop *Xchanger Suite* cases for accurate assessment of performance. This course provides a foundation for understanding the basis for thermal design of typical industrial heat exchangers.

**Key Topics**

- Film condensation of pure components
- Relationship between pressure drop and saturation temperature
- Condensing flow regimes: Vertical units/Horizontal units, tube side and shell side
- Specifying pure component condensers in *Xist*
- Noncondensables and mixture condensation
- Specifying mixture condensers and inerts in *Xist*
- Vapor phase coefficient
- Desuperheating and subcooling
- Bulk-equilibrium vs. two-layer subcooling model
- Venting inerts
- Drainage
- Baffle design in condensers
- Condensation with enhanced heat transfer surfaces
- Vacuum condenser design challenges

**Suggested Participants**

Engineers who design and evaluate condenser equipment

**HTRI Software**

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

**Course Credits:** 6 hours (PDH/CEU)

**Outline**

- I. Pure Component Condensation
  - Filmwise condensation
  - Pressure drop vs. saturation temperature
  - Condensing flow regimes
- II. Noncondensables and Mixture Condensation
  - Vapor-phase coefficient
  - Diffusion function
- III. Desuperheating and Subcooling
  - Dry-wall vs. wet-wall desuperheating
  - Bulk equilibrium vs. two-layer subcooling model
- IV. Design Considerations
  - Is it clean? Is it vented? Is it drained?
  - Baffle design
  - Enhanced surfaces
  - Vacuum condenser design challenges