

**Course Fee: US\$450**

Because vibration can cause critical operating problems in heat exchangers, it is important to analyze the potential for flow-induced vibration.

This workshop teaches you how to develop an input file, interpret results, and obtain accurate prediction of the vibration potential for installed units. Using *Xvib* you'll practice determining if a heat exchanger is susceptible to vibration damage.

**Key Topics**

- Analysis methods for fluidelastic instability and vortex shedding
- Velocity profile development
- Vibration susceptibility

**Suggested Participants**

Engineers responsible for the mechanical condition of shell-and-tube heat exchangers

**HTRI Software**

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

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

**Outline**

- I. Fundamentals of Vibration Analysis
  - Introduction
  - Vortex shedding
  - Fluidelastic instability
- II. Getting Started with *Xvib*
  - Purpose of *Xvib*
  - Data input
  - Build a case in *Xvib* using *Xist* results
- III. *Xvib* Calculations
  - Calculation approach
  - Compare *Xist* vibration analysis with *Xvib*
  - Guidelines to implement the velocity profile
  - Build an *Xvib* case
- IV. Straight Tube Analysis
  - Interpret *Xvib* reports
  - Guidelines to assess vibration severity
  - Analyze process condenser with parallel baffles
- V. U-Tube Analysis
  - Discuss U-tube configurations
  - Analyze vibration potential for U-tube exchangers
  - Analyze an H-shell with no baffles