Xchanger Suite

Rate, simulate, and design heat transfer equipment

*X*changer Suite—considered to be the most advanced thermal process design and simulation software—rates, simulates, and/or designs a variety of heat transfer equipment. HTRI's calculation methods are backed by over half a century of applied research and data collected on industrially relevant heat transfer equipment. Based on the results of this ongoing effort, we update our methods to meet your evolving engineering needs.

All *X*changer Suite components are highly flexible, allowing rigorous specification of the exchanger geometry. This capability makes the best use of HTRI's proprietary heat transfer and pressure drop correlations and allows the most accurate performance predictions possible for all exchangers.

FEATURES

*X*changer Suite includes components for the rating, simulation, design, and/or analysis of

- **tubular-based geometries**
  - air coolers and economizers (***X**ace*®)
  - shell-and-tube (***X**ist*®)
  - hairpin (***X**hpe*®)
  - jacketed pipes (***X**jpe*®)

- **compact heat exchangers**
  - plate-fin (***X**pfe*®)
  - plate-and-frame (***X**phe*®)
  - spiral plate (***X**spe*®)

- **vibration analysis (*X*vib®)**

- **fired heaters (*X*fh®)**

- Modern, graphical user interface allows the user to have multiple case files (containing both text and graphical inputs/outputs) open at the same time.
- Fully incremental calculation modules compute localized heat transfer and pressure drop using local fluid properties.
- Includes VMGThermo®, an extensive and rigorous fluid physical property generator from Virtual Materials Group, Inc.
- Extensive output reports provide detailed results, including local profiles of all important parameters.
- Comprehensive online help provides background information, graphs, explanation of input panels and output reports, user tips, and more.
- Graphs and scaled drawings provide in-depth visualization of calculated results.
- Includes extensive, user-extendable databank for materials of construction.
- Interfaces to
  - process simulators
  - physical property databanks
  - mechanical design programs
  - Exchanger Optimizer™
  - integrated engineering software
  - user-written applications in Microsoft® Excel® and other programming languages
  - CAPE-OPEN compliant applications
- Imports shell-and-tube and plate-fin exchanger input files from HTFS™, Honeywell's UniSim® Heat Exchangers, and Aspen Exchanger Design & Rating products.
- Launches Exchanger Optimizer from within *X*changer Suite to generate comprehensive cost assessments and validate designs based on ASME code calculations.

Xace®

Rate, simulate, and design air coolers and economizers, including natural draft (fans off) and forced draft conditions. *Xace* includes vendor fan selection calculations and options to simulate the effect of flow and temperature maldistribution.

Xist® Xhpe® Xjpe®

Rate, simulate, and design virtually any type of shell-and-tube heat exchanger, including kettles, hairpins, thermosiphons, reflux condensers, and falling film evaporators. *Xist* supports all standard TEMA exchanger types and includes integrated tools for flow-induced vibration calculations and tube layout design.

Xpfe®

Simulate and design multi-stream axial and crossflow plate-fin exchangers using an incremental model with research-based heat transfer and pressure drop correlations. *Xpfe* contains graphical layout tools that make even complex stream arrangements easy to create.

Xphe®

Rate, simulate, and design plate-and-frame exchangers using user-defined plate types or plates selected from an internal manufacturers' databank. *Xphe* contains a port maldistribution model that calculates the flow through each plate channel.

Xspe®

Rate and simulate single-phase spiral plate exchangers using an incremental model with HTRI-validated heat transfer and pressure drop correlations. *Xspe* models cocurrent and countercurrent spiral flow (Type I exchangers).
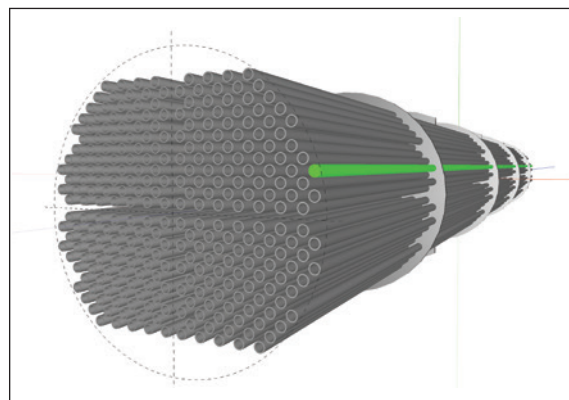
Xvib®

Calculate flow-induced vibration for a tube in a shell-and-tube heat exchanger using a rigorous finite element-based algorithm. *Xvib* considers fluidelastic instability and vortex shedding mechanisms for both plain and U-tubes.

Xfh®

Simulate the performance of cylindrical and box heaters. *Xfh* uses a Hottel zoning method to calculate localized radiant and process-side performance. Additional combustion and convection section modules allow evaluation of a complete process fired heater. For single-zone modeling, use *Xfh*® *Ultra,* our general-purpose fired heater program.
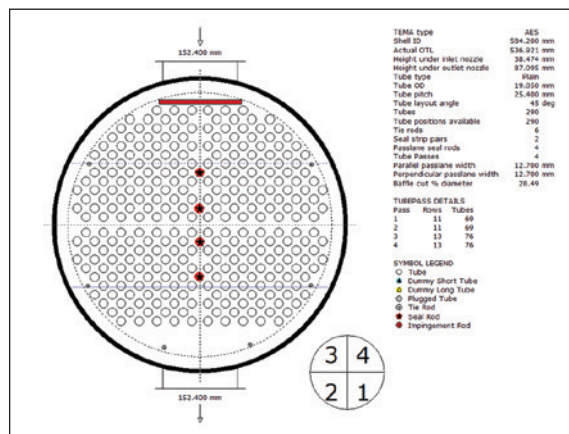
Scaled 3D drawing of shell-and-tube exchanger bundle.
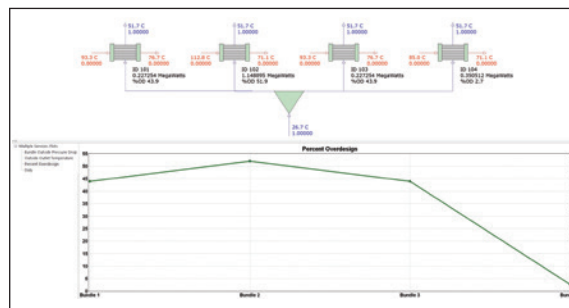
The Multiple Services view for air coolers displays service process conditions and calculated overdesign profile.

Xist interface for creating Xvib case from tube layout.

HTRI®

Heat Transfer Research, Inc.
+1.979.690.5050 • www.htri.net

Contact us at htri@htri.net for more information.