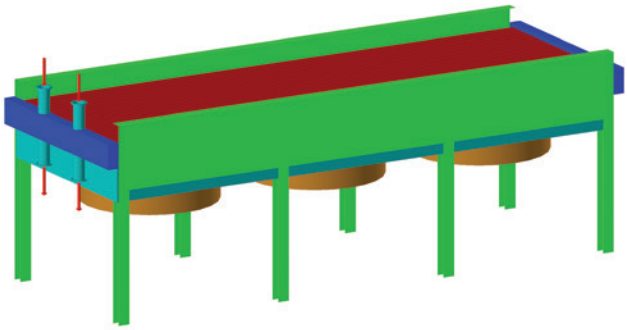
Rate, simulate, and design air coolers and economizers

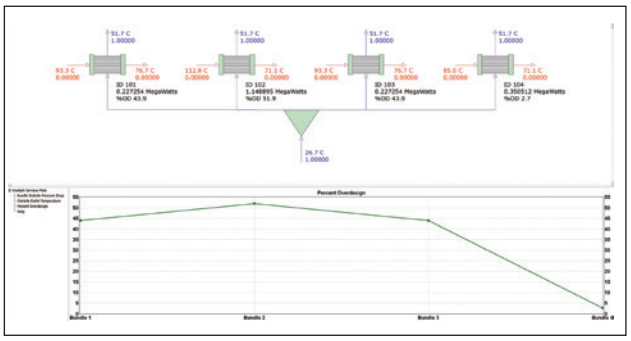
***X**ace* is an incremental program that rates, simulates, and designs crossflow heat exchangers, such as air coolers and heat recovery bundles. The heat transfer and pressure drop correlations are continually improved as a result of our ongoing research.

As a module in ***X**changer Suite*®, ***X**ace* lets you quickly transfer applicable case data to other components like ***X**ist*® or ***X**hpe*®.

FEATURES



Scaled 3D drawing of air-cooler geometry.



The Multiple Services view for air coolers displays service process conditions and calculated overdesign profile.

- Models virtually any bundle arrangement.
- 3D incrementation calculates localized profiles for heat transfer, pressure drop, and flow regimes.
- Detailed output reports provide overall and localized results.
- Extensive visualization tools show exactly how the exchanger is performing.
- Integrated physical property system eliminates requirement for additional property generation software. ***X**changer Suite* includes VMGThermo®, an extensive and rigorous fluid physical property generator from Virtual Materials Group, Inc.
- Includes built-in interface to most process simulators and mechanical design software.
- Supports embedding as a unit operation in any CAPE-OPEN compatible process simulator.
- Displays both input and output in multiple unit sets, including user-defined sets. Dynamic display of values in all unit sets.
- Integration with Exchanger Optimizer™ provides embedded costing feature, which includes fabrication, installation, and operational estimates for design cases.

Xchanger Suite®

GEOMETRY SPECIFICATIONS

- Forced and induced draft, A-frame, and no-fan configurations
- Horizontal, vertical, and inclined tubes
- Up to nine different tube geometries per bundle
- High-finned, low-finned, continuous-finned, stud-finned, and plain tubes
- Twisted tape inserts and internal micro-finned tubes
- Staggered and inline arrangements with any combination of transverse and longitudinal pitch
- Up to 99 tuberows per bundle
- Automatic or user-specified bundle layouts
- Single bundle, multiple bays, bundles in parallel, and multiple bundles/services options
- Split-pass headers with up to 24 tubepasses in each tuberow

CALCULATION FEATURES

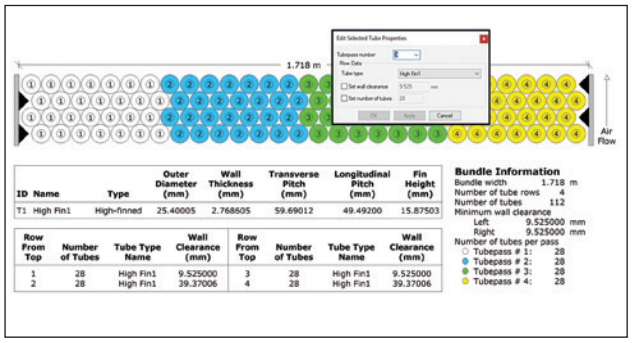
- Rigorous heat transfer and pressure drop calculations using a 3D incrementation scheme that divides the exchanger into a large number of zones
- Flexible process input allowing specification of known process information (temperature, weight fraction vapor, and/or flow rate) with the program calculating missing information based on energy balance
- Three modes: rating (known duty and geometry), simulation (unknown duty and known geometry), and design (known duty and unknown geometry)
- Forced- and natural-draft calculations
- Option to switch on/off effects of gray gas radiation
- Airside flow and temperature maldistribution models
- Integrated vendor-supplied fan selection software
- HTRI research-based methods or ESCOA methods for high-finned tubes

DESIGN TOOLS

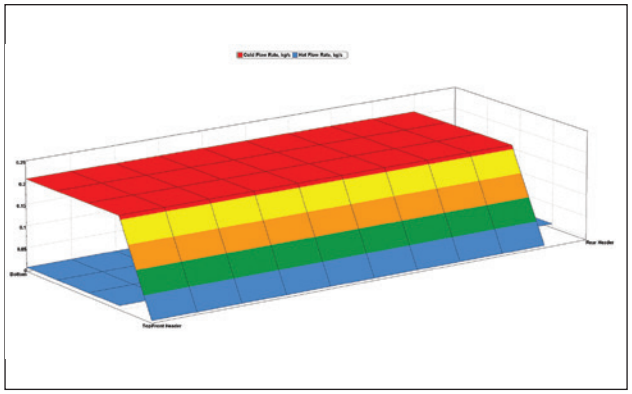
- Automatic optimization of tuberows, bundle width, tubepasses, and airside face velocity
- Grid design option to vary geometry over user-specified ranges and step sizes
- Design constraints to prevent selection of undesirable designs

OUTPUTS

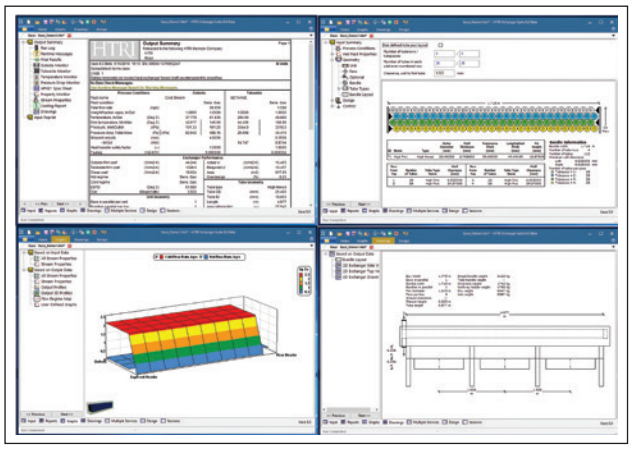
- Extensive set of spreadsheet-style output reports for printing or exporting to Microsoft® Excel®
- Summary reports with overall results in one or two pages
- Detailed reports for local profiles of all important parameters (temperature, pressure, heat transfer coefficients, heat flux, etc.)
- Standard API 661/ISO 13706 style specification sheet
- 2D and 3D scaled drawings provide visual confirmation of exchanger geometry
- Bundle layout drawing illustrates exact tube placement, including tubepass and tube type
- User-defined graphs for easy accessibility



Bundle layout tool allowing complete customization of bundle.



3D plot displaying local air flows for natural draft unit.



Display of multiple output views for single unit.

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