

UniSim® Shell-Tube Exchanger Modeler



The Challenge

Properly designed and maintained heat exchangers play an important role in plant operations. Over designed exchangers cost unnecessary capital spending, and under-performing exchangers may lead to compromised product quality, reduced productivity, increased utility cost, and even the danger to people's lives and millions of dollars worth of assets.

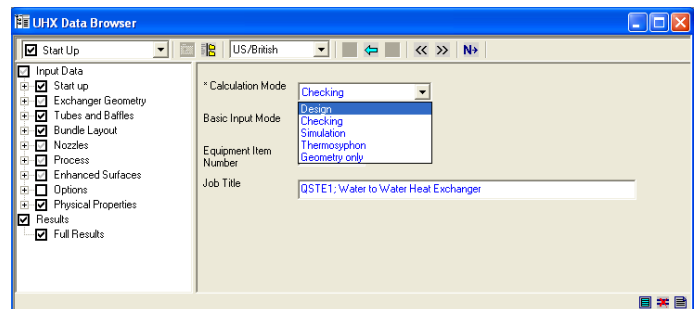
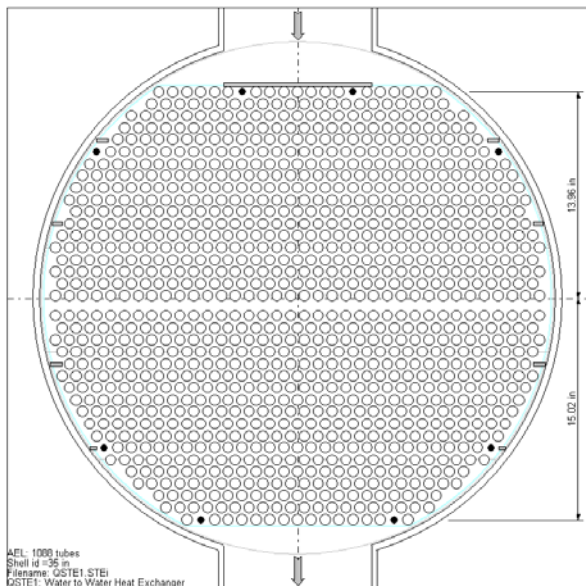
The Solution: UniSim Shell-Tube Exchanger Modeler

UniSim Shell-Tube Exchanger Modeler is a member of the Honeywell UniSim Design Suite. It provides detailed thermal design, checking or simulation of shell and tube heat exchangers for industrial applications. It can be used standalone by the thermal specialist for exchanger design or as an integrated product with UniSim Design for process simulation.

technologies behind this product enable users to design new shell and tube exchangers; check whether an existing exchanger will satisfy the required process conditions; and examine how an existing exchanger fits in to a given process. It is commonly used by operating companies and EPC companies in Oil & Gas, Petrochemicals, and Exchanger Manufacturing industries for a wide range of applications, such as: different types of shell and tube exchangers, kettle reboiler, thermosyphon reboiler, condenser, reflux condenser, partial condenser, falling film evaporator, and multi-shell, multi-phase feed-effluent trains.

Features

UniSim Shell-Tube Exchanger Modeler enables four distinct thermal calculations:



Benefits

UniSim Shell-Tube Exchanger Modeler allows users to identify the most appropriate exchangers for their process needs. Supported by decades of industrial driven research work, the

Design: To design a shell and tube exchanger with optimized heat transfer area in order to meet user-specified process conditions and geometrical constraints.

Checking (Rating): To determine whether a given shell and tube exchanger has adequate surface area to achieve the user-specified process duty requirement and outlet conditions.

Simulation: To determine the heat load, pressure changes and stream outlet conditions that will occur with a specified shell and tube exchanger, with given stream inlet conditions.

Thermosyphon: To determine the circulation rate and duty of a specified exchanger, operating as a vertical or horizontal thermosyphon reboiler, with user-specified liquid height in the column, and the pipework connecting the exchanger to the column.

A Variety of Exchanger Geometries

The UniSim Shell-Tube Exchanger Modeler supports a variety of geometries:

Exchanger Geometries	
Shells/Channels	TEMA Shell Types, E, F, G, H, J and I (inverted J). Kettle reboilers. X-shells . Double-pipe exchangers . Multi-tube hairpin exchangers. TEMA front and rear head types A, B, C, L, M, N, P, S, T, U, V, W. Falling film evaporators. Reflux condensers. Shells in parallel. Shells in series (up to 12).
Nozzles	Plain. Axial. Vapour belts. Impingement plates.
Baffles	Single segmental. Double segmental. Unbaffled exchangers. Rod baffles. Intermediate support baffles. Blanking baffles on U-tubes.
Tube Bundles	Single pass. Multi-pass (up to 16). Full bundle (no tubes removed under nozzles). Normal bundle. No-tubes-in window designs.
Tubes	Plain tubes. Lowfin tubes (database included). Longitudinal fins in double-pipe and unbaffled exchangers. Twisted tape inserts.

More Information

For more information on UniSim, visit www.honeywell.com/ps/UniSimDesign or contact your Honeywell account manager.

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Wide Range of Process Applications

The UniSim Shell-Tube Exchanger Modeler can perform heat transfer and pressure drop calculations on single or two-phase streams, involving sensible heating or cooling, boiling or condensation, or any of their combination, for single component or multi-component systems.

Comprehensive Physical Properties

Physical property data can be imported from process simulators, such as UniSim Design, or generated from the UniSim Thermo package, which contains data for over 1000 compounds and a range of methods for determining vapour-liquid equilibrium and mixture properties. It is comprehensive and flexible to use. Users also have the option of importing physical properties and process data from their own physical property software with preconfigured interface.

Flexible and User-Friendly Output Functionality

The calculation results are presented in both text and graphical formats. Users can choose to view specific information of their interest, or the full results output which provides comprehensive information on the exchanger geometry, the process conditions, the physical properties, and other parameters determined during the calculation. The built-in graphical feature enhances users' experience in visual interpretation of the output information.

Other Important Features

- The Setting Plan – a scale drawing of the exchanger, with some basic dimensions showing overall exchanger size, location of the nozzle, and shell support. A scaled drawing of tube layout is also generated for each calculation run.
- The Word Specification Sheet – allows users to edit and save their design/simulation results into Word format.
- The built-in Lowfin Tube Databank – provides the information for a list of lowfin tubes.

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