

Combine the best of Aspen HTFS™ and Aspen B-JAC™ with AspenTech's New Application for Design, Checking (Rating) and Simulation of Air-cooled and Other Crossflow Heat Exchangers

Overview

Aspen Acol+ is a versatile tool for detailed simulation and optimized design of process air-cooled heat exchangers. Offering sophisticated optimization logic and multiple simulation options, Aspen Acol+ allows you to:

- Design the most economical exchanger for your application
- Take assurance of operational performance that derives from Aspen HTFS+™ proprietary research-based methods
- Handle a wide range of exchanger services, from multi-component condensing to boiling heat recovery and de-humidifying
- Easily “plug” your crossflow exchanger designs into AspenTech's steady-state simulator so you can accurately evaluate performance in the context of your overall process

Design

Aspen Acol+ uses sophisticated optimization logic to select the minimum cost exchanger to meet your specified process conditions and geometric constraints.

Check (Rate)

Aspen Acol+ allows you to determine quickly if a given exchanger will have sufficient area to achieve a specified duty.

Simulate

Aspen Acol+ offers multiple simulation options, including:

- Outlet temperatures on both sides
- Process inlet and X-side outlet temperatures
- Outlet temperatures on both sides, and X-side flow (natural convection) for “fans off” case
- Process flow and X-side outlet temperature
- X-side flow and X-side outlet temperature
- Process fouling resistance and X-side outlet temperature
- Outlet temperatures on both sides (X-side flow given as velocity and estimated from pressure drop)

In addition, Aspen Acol+ can evaluate the operating point, in terms of X-side flow and thermal duty, for a defined fan performance curve.

Aspen Acol+ has a high-level run-time interface with Aspen Plus® allowing you to evaluate accurately the performance of actual heat exchangers within a plant or process.



Process Applications

Aspen Acol+ provides flexibility that enables a variety of industries – including oil & gas, chemicals, petrochemical and power, as well as engineering contractors and equipment fabricators – to use it on a routine basis. Key process capabilities include:

- **Process stream on the tubeside may be either single-phase or two-phase, heated or cooled**
- **Any mixture (with or without non-condensable gases) in any condition (superheated vapor, saturated vapor, two-phase, saturated or subcooled liquid) may be handled**
- **Crossflow stream, X-side, may be either dry or humid air, or a mixture of gases**

Physical Properties

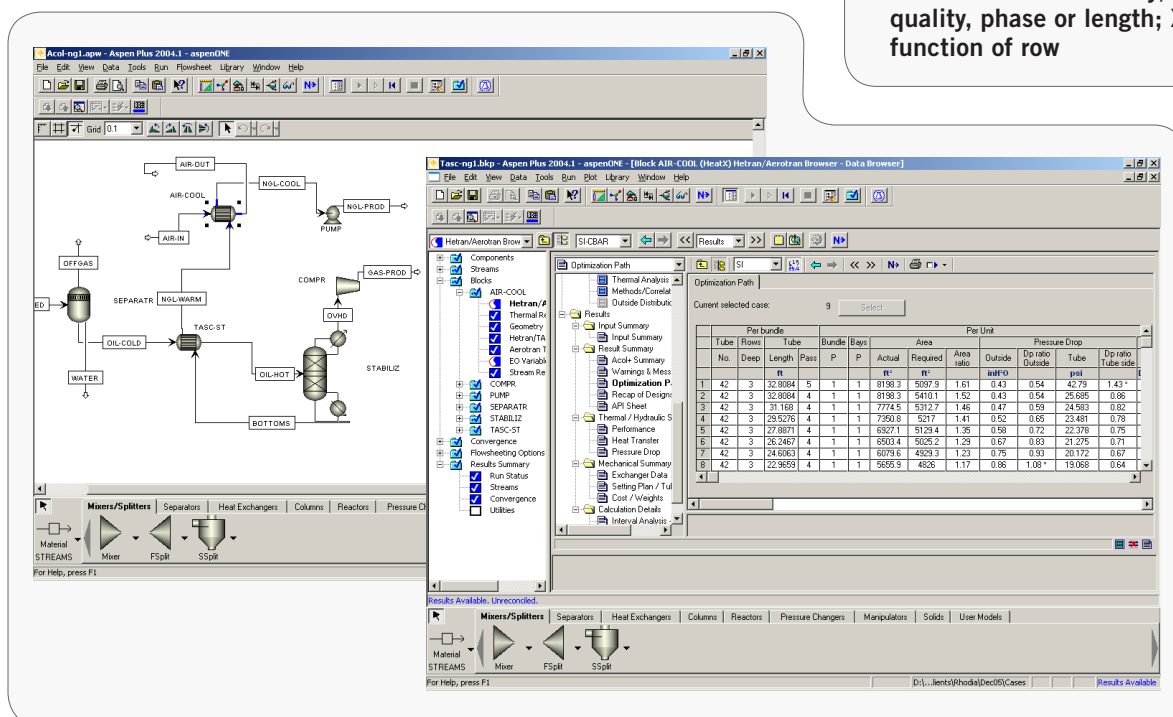
Aspen Acol+ offers three databases that collectively contain over 2500 component properties and more than 30 industry-standard VLE methods and mixing rules:

- **Aspen Properties[®], widely used in the chemicals sector**
- **Aspen COMThermo[®], the leading physical property database in oil & gas processing**
- **Aspen B-JAC[™] properties package**

Aspen Acol+ allows you to use the installed property databases, and import properties from process simulators or from your own properties software. You may also specify properties directly.

Aspen Acol+: Key Technical Features

- **Application selections.** Air-cooled heat exchangers, heat recovery, air conditioning, charge air coolers, A-frame and V-frame configurations
- **Tubes/types.** Plain, high fin, low fin, serrated fin, studs, tube-in-plate (up to four different tube types in each bundle)
- **High fin types.** Integral, G, L, extruded, bi-metallic, shoulder grooved
- **Header types.** Box, cover plate, D-header, manifold, U-tube
- **Passes.** Up to 50 in simple and complex arrangements
- **Bundle size.** Two to 100 rows, with multiple bundles per bay and multiple bays per unit
- **Draught.** Forced, induced, no fans
- **Process side.** Single-phase heating or cooling, boiling or condensing
- **Tubeside enhancements.** Specified on a pass basis, twisted tapes, enhancement factors, j and f input
- **Specification of inlet distributions of temperature and velocity, storage and use of performance of proprietary surfaces, inclusion of radiative heat transfer**
- **Fouling.** Standard resistance or tubeside as a function of velocity, temperature, quality, phase or length; X-side as a function of row



Output

Aspen Acol+ uses the power and flexibility of the Microsoft Windows® environment to allow you to explore all aspects of exchanger performance. In addition, Aspen Acol+ is designed to support “drag & drop” interfacing with Microsoft® Excel, as well as high level communication with other software. Thermal output includes:

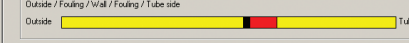
- Summary of exchanger thermal-hydraulic performance
- Optimization path that identifies the most economical design selection, possible alternate designs, and controlling design constraints
- Extensive warning and error reporting, alerting you to potential operational problems
- Fully completed API data sheet, including actual material specifications
- Interactive tube layout, allowing for rapid specification of simple and complex pass arrangements
- Setting plan drawings for API-type units and tube pass layout drawing
- Weight and budget costing estimates
- Detailed tubeside, X-side and nozzle pressure drops
- Detailed tabulation of incremental calculations
- X-side installation and fan noise data

Debut_COMThermo - Aspen HTFS - Design System 2004.2 - aspenONE - [Acol - Results, Thermal / Hydraulic Summary, Performance]

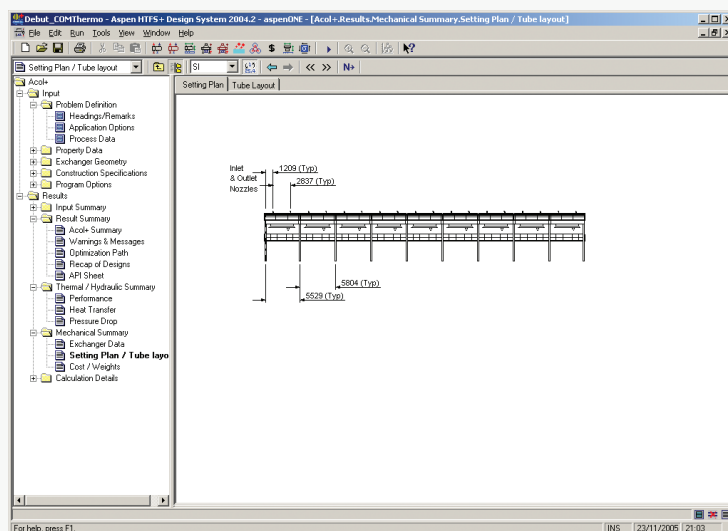
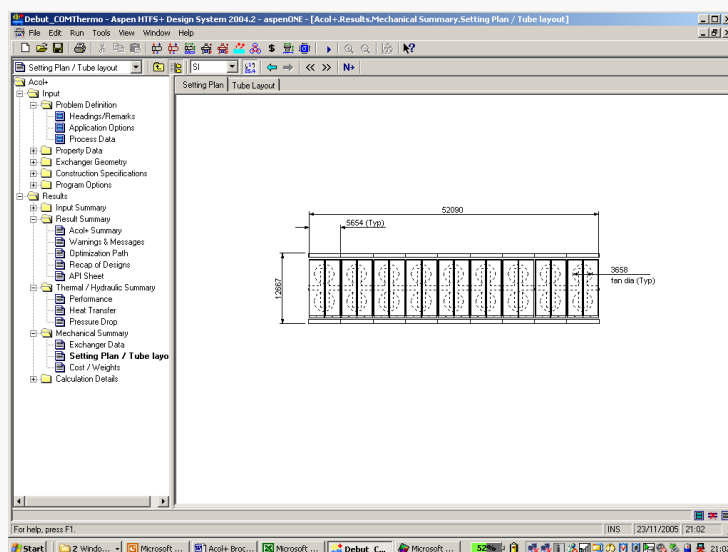
Overall Performance | Resistance Distribution

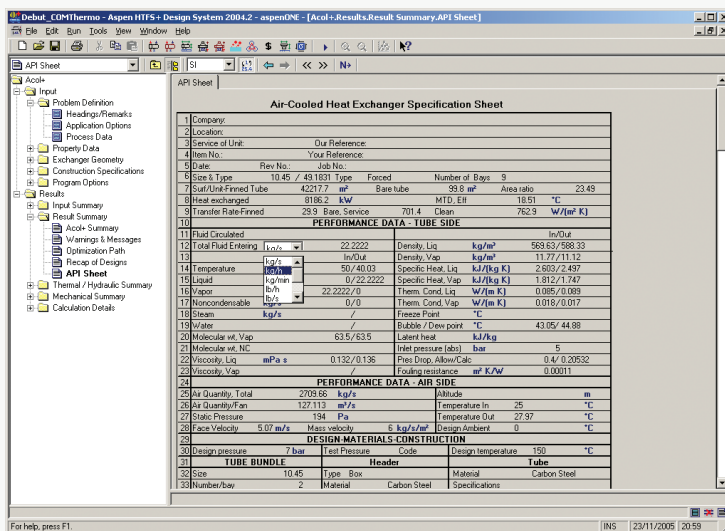
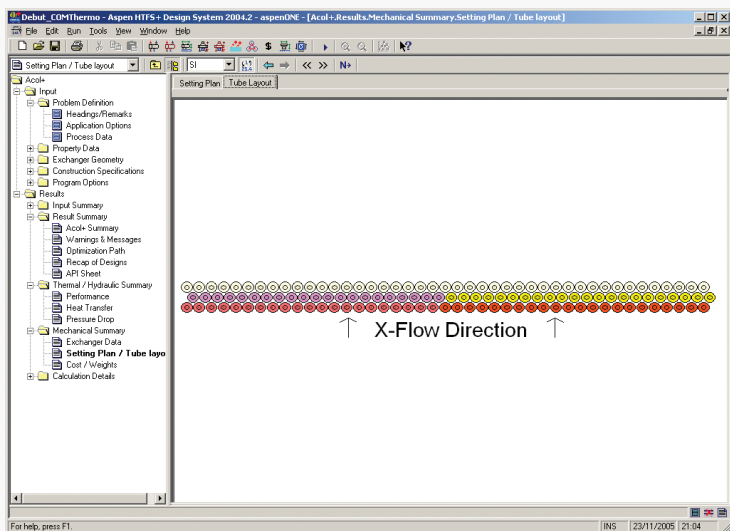
		Outside	Tube Side
Total mass flowrate	kg/s	2709.66	22.2222
Vapor mass	kg/s	2709.66	0
Liquid mass	kg/s	0	22.2222
Vapor mass quality		0	0
Temperature	°C	25	44.88
Dew / bubble point temperatures	°C	27.97	43.05
Humidity ratio		5	4.79468
Operating pressure	Pa / bar	101326	101326
Film coefficients	W/(m² K)	1295.2	1963.4
Fouling resistance	m² K/W	0	0.00011
Velocity (highest)	m/s	9.91	6.36
Pressure drop (allow/calc.)	Pa / bar	200 / 194	0.4 / 0.20532
Total heat exchanged	kW	8186.2	25.4
Overall coeff. (dirty / clean)	W/(m² K)	701.4 / 762.9	1.65
Effective surface area	m²	42217.7	129
Effective MTD	°C	18.93	3
Duty ratio: actual/required		1	0.28
		Fans/bay	Fin frequency
		2	433

Heat Transfer Resistance
Outside / Fouling / Wall / Fouling / Tube side

Outside  Tube side

For help, press F1. INS 23/11/2005 21:00





About AspenTech

Aspen Technology, Inc. provides industry-leading software and professional services that help process companies improve efficiency and profitability by enabling them to model, manage and control their operations. AspenTech's integrated aspenONE™ solutions are aligned with the key industry business processes, providing manufacturers the capabilities they need to optimize operational performance, make real-time decisions and synchronize the plant and supply chain. Over 1,500 leading companies already rely on AspenTech's software, including Bayer, BASF, BP, Chevron Corporation, DuPont, ExxonMobil, Fluor, GlaxoSmithKline, Sanofi-Aventis, Shell, and Total. For more information, visit www.aspentech.com.

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