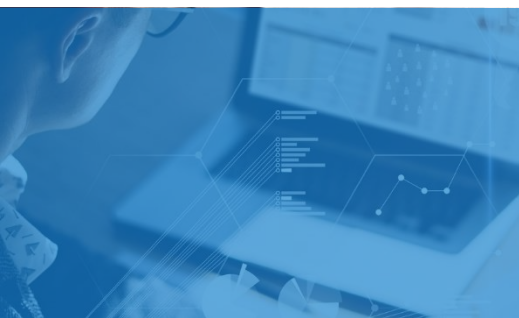


35%

Aspen HYSYS® with Aspen Flare System Analyzer™

Study Guide for Certification



Prove Your Credibility

An Aspen Certified user in Aspen HYSYS demonstrates skills in: building process simulations including defining the properties environment, developing flowsheets with unit operations, and utilizing available tools for analysis and reporting. The user also demonstrates fluency with some more advanced skills such as troubleshooting and modeling flare system networks using Aspen Flare System Analyzer.



Exam Scope for Aspen HYSYS with Aspen System Flare Analyzer

- ☐ Properties Environment
- ☐ Simulation Environment
- ☐ Reporting
- ☐ Troubleshooting
- ☐ Documentation
- ☐ General
- ☐ Theory
- ☐ Customize
- ☐ Calculation Settings
- ☐ Physical Properties
- ☐ Calculation Modes
- ☐ Process Flowsheet
- ☐ Input
- ☐ Results

Practice

AspenTech training is highly recommended though not required.

This guide contains 100% coverage of all objectives for the certification exam. You can use it as both a study tool and an on-the job reference (read pages 2-10).

Get Certified

In-person and remote testing are available. Please make sure that you select the correct Location/Time Zone.

After passing the exam you will receive an email to post your certificate and digital badge on social media, which is a cross-industry recognition of technical skills you may share on LinkedIn, as well as in your email signature. [View the instructions](#) on how to post your credentials on LinkedIn profile.

Grading

Grade	Weight
Multiple choice questions	40%
Lab task	60%
Total	100%

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SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN HYSYS
Explore Properties Environment	Component List	Create a component list
		Identify the different component databases available
		Add hypothetical components
	Physical Property Package	Define a fluid package
		Identify the different property methods databases available
		Assign component list to specific property method
	Petroleum Assays	Identify the methods available in Aspen HYSYS for characterizing crude assay
		List the necessary steps to characterize a crude assay
		Recognize the differences between the two methods available for characterizing crude assay
Explore Simulation Environment	Unit Sets	Recognize the default unit sets
		Customize unit sets
	Manipulate Flowsheet	Connect material streams to unit operations
		Illustrate flowsheet object color scheme
		Display stream labels
		Identify transferring process information and objects options
		Configure and customize user preferences, options and default settings
		Illustrate case management options
		Create and install a template file

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN HYSYS
Explore Simulation Environment	Mathematical / Logical Operations	Identify various logical operations available
		Optimize the simulation by using adjust operation and other logical operations
	Unit Operations	
	Separation Operations	Identify the key differences in the three separator operations
		Illustrate pressure drop specifications across the vessel
		Specify and calculate heat loss in the vessel
		Configure and calculate the carry over model in separator operations
		Define and specify geometry and orientation of vessel
		Configure a component splitter to separate component steams based on split fractions specified
	Heat Transfer Options	Identify various heat transfer operations
		Determine parameters required to solve a cooler
		Describe the different heat exchanger models
		Analyze the performance of the heat exchanger
		Identify the heat transfer operations that can be integrated with Aspen Exchanger Design and Rating (EDR) tools
		Perform rigorous heat transfer calculations using EDR

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN HYSYS
Explore Simulation Environment	Piping Operations	Recognize pressure drop correlation options for different phases
		Identify different heat transfer options for pipe segment
		Identify different flow assurance for pipe segment
		Build a piping network using pipe segments
	Column Operations	List the available column templates
		Determine parameters required to solve a column
		Identify different types of column specifications available
		Analyze the Degrees of Freedom (DOF) of different column templates
		Identify the side operations available to be added to a column
		Explain the function of column internal analysis
		Build different types of columns using column input expert and manipulate the column specification to meet the process objective
		Develop the column using Sides Ops input expert
	Rotating Equipment	Identify the rotating equipment in HYSYS
		List the different compressor operating modes in HYSYS
		Identify what kind of compressor curves can be added in the model
		Build a compressor flowsheet using compressor performance curves to simulate an existing compressor
		Illustrate linking compressors and expanders

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN HYSYS
Explore Simulation Environment	Attached Analysis Tools	
	Stream Analysis	List the different stream analysis types
		Identify the different ways to add the stream analysis
		Perform stream analysis to acquire more stream information
	Equipment Design	Identify the calculation type for pipe sizing
		Identify the available specification for vessel sizing
	General Analysis Tools	
	Case Study	Identify four case study types and their differences
		Identify case study reporting tools
		Monitor the key process variable response to other changes in process using case study
Reporting	Common Reporting Options	List the common reporting options
		Identify what kind of reports can be added to the flowsheet
	HYSYS Workbook	Identify the ways of exporting workbook reports
		Customize the workbook to view additional properties and add it to the flowsheet
	Report Manager	List what kind of reports can be exported by Report Manager and Datasheets
	Correlation Manager	Identify how to manage the properties/correlations displayed for a stream
		Customize properties/correlations for all streams using Correlation Manager
	Data Tables	Monitor the key process variables of any type in the simulation by using Data Table
		Identify the ways of using Data Table

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN HYSYS
Troubleshooting	Common Errors	Recognize the various troubleshooting tips
		Identify the methods of troubleshooting
		Explain the Consistency Error table
		Troubleshoot the prepared simulations using common methods
Documentation	General	Use the Help Menu

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN SYSTEM ANALYZER
General	Overview / GUI	Explain the current scenario selection
		Define the calculation mode
		Test the input setup using the Check Model button
		Recognize the model palette
		Manipulate objects (flip / rotate) to organize the flow-sheet
		Define the units of measurement
		Customize the stream result labels
		Identify error messages
		Use the trace window
Theory	Solve Scheme	Identify required boundary conditions
	Backpressure	Illustrate constant superimposed + variable superimposed + built-up pressures
Customize	Databases	Summarize the Components Editor
		Summarize the Pipe Schedule Editor
		Summarize the View Fittings Editor
		Develop custom pipe fittings
	Pipe Classes	Identify schedules and nominal diameters used for the design and debottleneck calculation modes
Calculation Settings	General	Customize the external conditions - atmospheric pressure used as a boundary condition at the flare tip
		Use the heat transfer options
		Use the energy balance - include kinetic factors
		Calculate rated flow for tailpipes and inlet pipes
	Scenarios	Identify the active scenarios

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE FOR ASPEN SYSTEM ANALYZER
Calculation Settings	Methods	Define the VLE and Enthalpy property methods
		Define the pressure drop methods (one-phase vs two-phase)
	PSV Sizing	Recognize the sizing methods
		Predict inlet pipe pressure drops
	Warnings	Customize the design issues to be evaluated (mach no, choked flow, min metal temps, rho v2, etc.)
Physical Properties	Components	Build a component list
		Define the composition basis by molecular weight or fractions
	Property Packages	Use a property method
Calculation Modes	Design	Interpret the mode - minimum pipe sizes calculated by software
	Rate	Interpret the mode - existing pipe sizes evaluated
	Debottleneck	Interpret the mode - allows portions of the flare network to be re-sized while others are held constant (performed to remove scenario violations)
Process Flowsheet	General	Develop pipe segments
		Develop nodes
		Develop sources
		Optimize existing designs
		Perform copy and paste actions on PFD sections
	Import and Export	Define the data to be exported
		Describe the differences between the available file types
Input	Pipes	Identify the required input
		Use the resizable option for design and debottleneck modes
		Analyze the single-phase and two-phase methods

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE
Input	Pipes	Design lengths, elevation changes, diameters, materials, and schedules
		Illustrate the length multiplier option to account for fitting losses
		Identify tailpipes
		Interpret the results
		Develop fittings
	Scenarios	Identify the required input
		Customize the active sources per each scenario
		Develop constraints for the scenarios
		Plan alternate scenarios
	Sources	Identify the required input
		Explain the actual versus rated mass flow for relief valves
		Describe MABP and calculated back pressures
		Summarize the composition options
		Describe the different relief valve types
		Analyze the inlet line pressure drop
		Perform orifice sizing
		Define contingency types
		Customize valve flange sizes
		Use source data imported from other files (HYSYS, Plus, etc.)

SCOPE	TECHNICAL CONTENT	COMPETENCY OBJECTIVE
Input	Nodes	Identify the required input
		Test pressure drop curves for flare tips
Results	Messages	Interpret warning and errors
		Analyze the data echo for information that was used
		Monitor the solver for steps that were executed
		Summarize the sizing including which pipe diameters were changed
	Pressure / Flow Summary	List data associated with each pipe
		Modify settings to display total pressure
	Physical Properties	Monitor a list of properties
	Compositions	Monitor a list of compositions
	Profile	Plot source-to-flare tip pressure profiles, sound profiles, etc.
	Flow Map	Plot flow regimes for multiphase systems
	Scenario Summary	Analyze the data table
	KO Drums	Analyze the data table
	Source Summary	Analyze the data table
	Reports	Produce standard (PDF, txt, and Excel) and custom reports
Troubleshooting	General	Resolve common issues
	Best Practices	Recognize tips and tricks
Documentation	General	Use the Help menu

About Aspen Technology

Aspen Technology (AspenTech) is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets safer, greener, longer and faster. Visit [AspenTech.com](https://www.aspentech.com) to find out more.

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