

# Aspen HYSYS Study Guide

## Study Guide for Expert Level Certification



## Prove Your Credibility

An Aspen Certified Expert User in Aspen HYSYS demonstrates skills required to build complex models associated to Upstream, Midstream and Safety applications, and interpret results of a simulation with little guidance. For the lab section of the exam, midstream application and column models will be required; however, you will be able to choose between upstream application and safety analysis.



## Exam Scope for Aspen HYSYS

- Midstream Application
- Upstream Application
- Safety Analysis
- Column Models

## Grading

Grade	Weight
Multiple choice questions	30%
Lab task	70%
Total	100%

## 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 2-3).

## 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.

## AspenTech

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SCOPE	TECHNICAL CONTENT	TEST OBJECTIVES
Midstream applications in Aspen HYSYS	Acid Gas Process Overview & Workflow	<b>Identify</b> the components supported by Acid Gas Fluid Packages
		<b>Identify</b> the characteristics of the Acid Gas Fluid Packages
		<b>Demonstrate</b> the key differences between the available Acid Gas Column calculation options and <b>illustrate</b> how to set up the column for these calculations.
		<b>Locate</b> result forms exclusive to the Acid Gas columns
		<b>Troubleshoot</b> common acid gas column convergence issues.
		<b>Summarize</b> the most commonly used unit operations in acid gas cleaning processes.
		<b>Configure</b> case studies using variables from the acid gas unit operations
		<b>Demonstrate</b> how to configure acid gas makeup blocks
	Gas Dehydration Process Overview & Workflow	<b>Perform</b> detailed sizing and rating calculations using the Column Analysis workflow for your acid gas column.
		<b>Recognize</b> which Fluid Packages are suitable for gas dehydration systems
		<b>Review</b> methods for saturating a hydrocarbon stream with water in Aspen HYSYS
		<b>Identify</b> the workflow to calculate Water Dew Point of a stream
		<b>Utilize</b> the Hydrate Formation Analysis to calculate hydrate formation temperatures and pressures
		<b>Identify</b> the supported hydrate inhibitors in Aspen HYSYS
	Sulfur Recovery (SULSIM) Process Overview & Workflow	<b>Set up</b> the necessary unit operations to model a typical gas dehydration unit and study gas saturation.
		<b>Analyze and display</b> the results to further optimize the dehydration process.
		<b>Identify</b> the characteristics for the Sulsim Fluid Package
		<b>Explore</b> the unit operations that conform different stages involved in sulfur recovery process.
		<b>Configure</b> the thermal and catalytic stages process units available in Sulsim.
		<b>Specify</b> Reaction Furnace Parameters and <b>select</b> an Empirical Furnace Model appropriate for your feed conditions.
		<b>Define</b> Degasser and Tail Gas Treating Section unit operations.
		<b>Create or import</b> Sulfur Recovery Unit (SRU) sub-flowsheets.
		<b>Review</b> the performance summary form to explore the various production and efficiency values for the trains and stages.
	<b>Specify</b> an Air Demand Analyzer and how to set up and run it.	
<b>Build</b> the SRU flowsheet using Add Combinations group to add a group of unit operations organized in pre-configured topologies for the thermal, catalytic and tail gas treating sections.		

SCOPE	TECHNICAL CONTENT	TEST OBJECTIVES
Midstream applications in Aspen HYSYS	Sour Water Process Overview & Workflow'	<b>Recognize</b> which Fluid Packages are suitable for systems with acid water
		<b>Identify</b> the characteristics of the Sour Water Fluid Packages
		<b>Identify</b> the phenomena on the components and ions in Sour Water systems
		<b>Identify</b> the key differences between the available calculation options and <b>illustrate</b> how to set up the Sour Water Stripping Column Parameters.
Upstream applications in Aspen HYSYS	Aspen HYSYS Pipe Segments	<b>Identify</b> the different pipe models available in Aspen HYSYS and their respective applications
		<b>Summarize</b> the available pressure drop correlations and the workflow to adjust it in a pipe segment
		<b>Locate</b> the different result sections available in the pipe segment operation
		<b>Identify</b> the available heat transfer calculations to calculate heat loss in a pipe and recognize the workflow to configure each
		<b>Summarize</b> the available flow assurance analyses on the pipe operation and the steps to configure them
		Line Sizing Utility
	Hydraulics	<b>Summarize</b> the workflow to run this analysis
		<b>Distinguish</b> between the key differences of Aspen HYSYS Pipe Segment and Aspen Hydraulics
		<b>Identify</b> the types of systems that can be best represented using Aspen Hydraulics
		<b>Recognize</b> the supported fluid packages in Aspen Hydraulics and the workflow to change the default model
		<b>Identify</b> the available heat transfer calculations to calculate heat loss in a pipe and recognize the workflow to configure each
		<b>Summarize</b> the available flow assurance analyses on the pipe operation and the steps to configure them
	<b>Configure</b> the flowsheet constraints in an Aspen Hydraulics model	

SCOPE	TECHNICAL CONTENT	TEST OBJECTIVES
Safety Analysis in Aspen HYSYS	General	<b>Illustrate</b> the workflow and steps required to create and configure a PSV
	Scenarios	<b>Illustrate</b> the steps that should be followed to configure a scenario
		<b>Recognize</b> the scenarios that allow relieving flow calculations <b>Identify</b> the application of each sizing method based on scenario conditions
	Fire Scenarios	<b>Illustrate</b> the steps that should be followed to configure a fire scenario
		<b>Identify</b> the available flow calculation methods for vessels with Liquid, Vapor and Supercritical fluids
		<b>Illustrate</b> how to obtain the relieving composition for fire scenarios
	Multiple relief devices	<b>Recognize</b> when it is required to use multiple relieving devices to protect an equipment
		<b>Illustrate</b> the workflow to add and configure multiple valves for an equipment
	Line Sizing	<b>Illustrate</b> how to use the Rating and Design Line Sizing section
	PSV Datasheets	<b>Illustrate</b> the workflow to create a PSV Datasheet (V11 onwards)
Column Models in Aspen HYSYS	Column Operations in Aspen HYSYS	<b>Identify</b> the information and workflow required to build a Column operation in Aspen HYSYS
		<b>Summarize</b> the method to modify stage efficiencies and the different efficiency types available in Aspen HYSYS
		<b>Locate</b> all the available forms to read column results, both for product streams and for the column internal profiles
	Troubleshoot Columns	<b>Summarize</b> the different convergence algorithms available for Columns and the workflow to control it
		<b>Identify</b> troubleshooting parameters and tips to allow columns to converge
	Modeling External Unit Operations for Columns	<b>Recognize</b> the different methods to model a column condenser/reboiler without using the default operations
		<b>Export</b> stage internal data outside of the column environment and identify which streams are appropriate to model an external condenser/reboiler
	Column Internals in Aspen HYSYS	<b>Identify</b> the workflow required to add tray/packing information to an Aspen HYSYS column
		<b>Summarize</b> the specifications for internal trays and packing for each column section
		<b>Visualize</b> internal results, both for overall sections and tray by tray
		<b>Identify</b> hydraulic plots and identify common errors/warnings
		<b>Identify</b> what results can be sent back to the column specs and the workflow to perform this

## 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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