

Aspen HYSYS® Study Guide

Study Guide for Expert Level Certification



Prove Your Credibility

An **Aspen Certified Expert User in Aspen HYSYS** demonstrates the skills required to build complex models associated with 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%

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Step 1: Complete the Prerequisites

- [Aspen HYSYS: Advanced Process Modeling Topics](#)
- [Ensure Process Safety with BLOWDOWN™ Technology and PSV Sizing in Aspen HYSYS](#)

You must also hold the [Aspen HYSYS User Certification Exam](#), or have solid hands-on experience with Aspen HYSYS, typically gained over 5-10 years of industry use.

Step 2: Review Scope and Objectives

This **study guide** covers **all the objectives** for the Aspen HYSYS Expert User Certification exam and serves as both a study tool and an on-the-job reference.

Step 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.

SCOPE	TECHNICAL CONTENT	TEST OBJECTIVES
Midstream applications in Aspen HYSYS	Acid Gas Process Overview & Workflow	Identify the components supported by Acid Gas Fluid Packages
		Identify the characteristics of the Acid Gas Fluid Packages
		Demonstrate the key differences between the available Acid Gas Column calculation options and illustrate how to set up the column for these calculations.
		Locate result forms exclusive to the Acid Gas columns
		Troubleshoot common acid gas column convergence issues.
		Summarize the most commonly used unit operations in acid gas cleaning processes.
		Configure case studies using variables from the acid gas unit operations
		Demonstrate how to configure acid gas makeup blocks
		Perform detailed sizing and rating calculations using the Column Analysis workflow for your acid gas column.
	Gas Dehydration Process Overview & Workflow	Recognize which Fluid Packages are suitable for gas dehydration systems
		Review methods for saturating a hydrocarbon stream with water in Aspen HYSYS
		Identify the workflow to calculate Water Dew Point of a stream
		Utilize the Hydrate Formation Analysis to calculate hydrate formation temperatures and pressures
		Identify the supported hydrate inhibitors in Aspen HYSYS
		Set up the necessary unit operations to model a typical gas dehydration unit and study gas saturation.
		Analyze and display the results to further optimize the dehydration process.
	Sulfur Recovery (SULSIM) Process Overview & Workflow	Identify the characteristics for the Sulsim Fluid Package
		Explore the unit operations that conform to different stages involved in sulfur recovery process.
		Configure the thermal and catalytic stages process units available in Sulsim.
		Specify Reaction Furnace Parameters and select an Empirical Furnace Model appropriate for your feed conditions.
		Define Degasser and Tail Gas Treating Section unit operations.
		Create or import Sulfur Recovery Unit (SRU) sub-flowsheets.
		Review the performance summary form to explore the various production and efficiency values for the trains and stages.
		Specify an Air Demand Analyzer and how to set it up and run it.
		Build 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'	Recognize which Fluid Packages are suitable for systems with acid water
		Identify the characteristics of the Sour Water Fluid Packages
		Identify the phenomena on the components and ions in Sour Water systems
		Identify the key differences between the available calculation options and illustrate how to set up the Sour Water Stripping Column Parameters.
Upstream applications in Aspen HYSYS	Aspen HYSYS Pipe Segments	Identify the different pipe models available in Aspen HYSYS and their respective applications
		Summarize the available pressure drop correlations and the workflow to adjust it in a pipe segment
		Locate the different result sections available in the pipe segment operation
		Identify the available heat transfer calculations to calculate heat loss in a pipe and recognize the workflow to configure each
		Summarize the available flow assurance analyses on the pipe operation and the steps to configure them
	Linse Sizing Utility	Illustrate the functionality of the Line Sizing utility
		Summarize the workflow to run this analysis
	Hydraulics	Distinguish between the key differences of Aspen HYSYS Pipe Segment and Aspen Hydraulics
		Identify the types of systems that can be best represented using Aspen Hydraulics
		Recognize the supported fluid packages in Aspen Hydraulics and the workflow to change the default model
		Identify the available heat transfer calculations to calculate heat loss in a pipe and recognize the workflow to configure each
		Summarize the available flow assurance analyses on the pipe operation and the steps to configure them
		Configure the flowsheet constraints in an Aspen Hydraulics model

SCOPE	TECHNICAL CONTENT	TEST OBJECTIVES
Safety Analysis in Aspen HYSYS	General	Illustrate the workflow and steps required to create and configure a PSV
	Scenarios	Illustrate the steps that should be followed to configure a scenario
		Recognize the scenarios that allow relieving flow calculations
		Identify the application of each sizing method based on scenario conditions
	Fire Scenarios	Illustrate the steps that should be followed to configure a fire scenario
		Identify the available flow calculation methods for vessels with Liquid, Vapor and Supercritical fluids
		Illustrate how to obtain the relieving composition for fire scenarios
	Multiple relief devices	Recognize when it is required to use multiple relieving devices to protect an equipment
		Illustrate the workflow to add and configure multiple valves for an equipment
	Line Sizing	Illustrate how to use the Rating and Design Line Sizing section
	PSV Datasheets	Illustrate the workflow to create a PSV Datasheet (V11 onwards)
	BLOWDOWN™	Use BLOWDOWN™ in Aspen HYSYS to predict process conditions inside vessels and associated valves during pressure let-downs and emergency scenarios
		Size single pressure safety valves and blowdown valves to safely meet the relief conditions in your process
Column Models in Aspen HYSYS	Column Operations in Aspen HYSYS	Identify the information and workflow required to build a Column operation in Aspen HYSYS
		Summarize the method to modify stage efficiencies and the different efficiency types available in Aspen HYSYS
		Locate all the available forms to read column results, both for product streams and for the column internal profiles
	Troubleshoot Columns	Summarize the different convergence algorithms available for Columns and the workflow to control it
		Identify troubleshooting parameters and tips to allow columns to converge
	Modeling External Unit Operations for Columns	Recognize the different methods to model a column condenser/reboiler without using the default operations
		Export 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	Identify the workflow required to add tray/packing information to an Aspen HYSYS column
		Summarize the specifications for internal trays and packing for each column section
		Visualize internal results, for overall sections and tray by tray
		Identify hydraulic plots and identify common errors/warnings
		Identify 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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