

Gas Processing eLearning Course Bundle

for

Operators working in a Gas Processing Facility

Enculturate Operational Excellence into Your Workforce

Workforce performance optimization and improvement includes operator ability to perform rounds, identify the types of equipment, recognize abnormal conditions, perform inspections, tests, and ongoing maintenance necessary to ensure equipment and processes continues to function as per the intended design and implementation.

Invest in Your Operators for World Class Performance

Your assets and the process operators that work in them are your single biggest investment. Protecting these assets and optimizing productivity requires workforce acquisition of the knowledge, skills, and attitudes that mitigate risk, ensure the integrity and reliability of your equipment & processes, and ensures operators perform the tasks associated with their roles safely and competently.

With this in mind, *SMTs' Gas Processing eLearning Course Bundle* provides your operators with cost-effective training that is easy to implement, even with limited resources and reduced budgets. This 50 hour long *Gas Processing Course Bundle* is focused on the tasks performed by process operators working in a gas processing operation. The technical fundamentals, practical operating challenges, and typical practices are presented.

Safety is of primary concern. We understand risk mitigation, compliancy and regulatory training. And we also understand that accidents can happen as a result of ill-equipped or untrained personnel. Don't let that happen to your company.



Contact us for additional information & pricing options
sales@smtplus.com, 805-354-5828 Ext 101

Topics

Introduction – General

Define Natural Gas
Extracting Natural Gas
Introduction to Gas Gathering
Introduction to a Gas Processing Facility

Inlets

Introduction to Inlets
Introduction to Pigging
Introduction to Slug Fingers
Introduction to Inlet Separators
Controlling the Inlet Area
Troubleshooting the Inlet Area

Compression

Introduction to Compressors
Operating the Compressors
Controlling the Compressors

Amine System

Define Sour Gas
Introduction to Amine Systems
Identifying the Equipment
Operating the System
Introduction to Liquid Foaming

Feed Gas Chilling

Introduction to Gas Processing
Define Dew Point
Identifying the Equipment
Operating the Equipment

Refrigeration System

Introduction to the Refrigeration System
Identifying the Equipment
Operating the Refrigeration System
Introduction to Non-Condensables

Glycol Regeneration

Introduction to the Glycol System
Identifying the Equipment

Introduction to Glycol Filters
Operating the Glycol Pumps
Controlling the Glycol System

Glycol Dehydration

Introduction to the Glycol Dehydration System
Identifying the Equipment
Operating the Equipment
Controlling the Process

Gas Recovery System

Introduction to Gas Recovery
Identifying the Equipment
Operating the Equipment

Condensate Stabilization

Introduction to Condensate
Identifying the Equipment
Controlling the Process

De-Ethanization System

Introduction to De-ethanization
Operating a De-ethanizer Tower
Controlling the Process

Sales Gas

Introduction to Sales Gas

Product Storage

Introduction to Condensate Storage
Introduction to Produced Water Storage
Introduction to NGL Storage Bullets
Introduction to Truck Loading

Utilities

Introduction to Heat Medium Heaters
Introduction to Air Compressors
Resetting a Breaker
Load Shedding
Identifying Critical Operational Procedures

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Features & Benefits

The *SMT Plus Gas Processing Course Bundle* provides an intuitive interface with meaningful interactive learning activities.

Features

Courses have a granular course construct. This means that information / knowledge is broken down into individual “objects”. These objects are arranged into a course. Once created, they can be pulled out of the initial course, and repurposed / redeployed in another course.

Courses comprise a generous spread of visual imagery, i.e. computer generated 2D & 3D stills and animations, video, digitized photographs and text only screens.

Courses employ a variety of learning strategies and activities, such as discovery through exploration activities, critical thinking exercises, and short games

The knowledge component of each course includes periodic knowledge checks coupled with remedial feedback.

Each instructional objective has a corresponding test question
There is an even distribution of True/False, Multiple Choice and Interactive Drag and Drop and when possible assessment strategies also include the use of visuals.

The course bundle is platform independent. This means that courses can be launched by 3rd party systems or can be launched standalone.

The course bundle is compliant with the SCORM interoperability standard.

Courses can be updated/edited by course administrators or developers who do not work for SMT Learning. All of the media such as videos, audio files, text, etc. are separate from the presentation logic of each course, which means that it is easier to update the courses after they have been published.

Courses can be hosted by SMT Learning. The SMT hosted solution allows for detailed progress reporting and analysis – student progress, average mark, etc.

Courses include interactive overviews and animated fly-throughs

Each course includes hyperlink test review functionality. This functionality allows learners to review the corresponding knowledge component during a test review. i.e. it allows the learner to link back to the knowledge component thus providing reinforcement

Benefits

Runs on any desktop, laptop, tablet or smartphone

The learning covers skills required to be an effective operator that can execute critical thinking necessary to respond to abnormal process condition and/or upsets

The courses are available on-demand to support the varying schedules of process operators.

Learners choose how they want to learn, by choosing their preferred path. Alternatively, structured and prescribed learning paths can also be predetermined by an administrator.

Knowledge and skills acquired can be put into practice immediately.

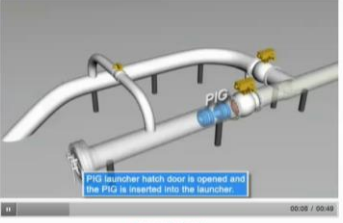
Your organization can continue to world class learning despite challenging market conditions and reduced budgets.

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Screenshots from the SMT Plus Gas Processing eLearning Course Bundle

Inlets

1.3 Identify the components of a typical pig launcher.




3D Interaction

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Inlets

Explain how an operator receives pigs.

Manual valves, typically located on a pig receiver inlet and outlet lines, are normally closed. Consequently, the flow into the plant bypasses the receiver.



Pig Receiving Operation

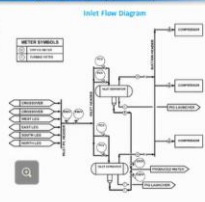
During pigging operations, the bypass valve is closed and the inlet and outlet valves are opened. This action forces the incoming stream through the receiver. When the pig enters the receiver, the inlet and outlet valves are closed and the bypass valve is opened. This traps the pig in the receiver and causes the incoming stream to bypass the receiver en route to the inlet header.

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Inlets

Sketch the inlet area including all inlet pipelines, inlet separators and slug fingers (if applicable).

At a typical gas processing facility, individual inlet lines flow into a common header. The inlet lines transport all the raw gas and liquids from the field and into the plant. From the common header, the feed enters the inlet separator. If there is more than one inlet separator, the common header would branch and the feed would enter each inlet separator.



Inlet Flow Diagram

It is imperative that an operator is able to identify all major pipelines and equipment that is associated with the inlet area. With a trainer or a coach, conduct a walk-down in the field, the operator should be able to describe from memory the inlet area.

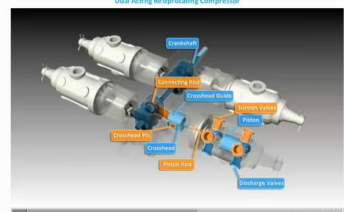
In the Field Activity

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Module 1: Compression

1.3 Describe the term "double-acting" in reference to reciprocating compressors.

A double-acting cylinder compresses gas on the in-stroke and out-stroke of the piston. This requires suction and discharge valves on both ends (head end and crank end) of the cylinder. As gas is being compressed in the head end on the out-stroke, gas is entering the cylinder on the crank end, with the process reversed on the in-stroke.



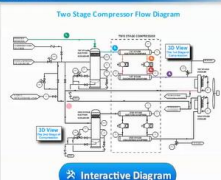
Double Acting Reciprocating Compressor

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Module 1: Compression

1.5 Sketch and describe the flow of gas through a two-stage compressor.

The gas leaving the inlet separator enters the 1st stage suction scrubber (1). The scrubber is designed to remove any liquids that are carried over in the process gas before the gas enters the suction of the inlet compressor. The gas leaving the 1st stage scrubber passes through the 1st stage suction damper (2) before entering the first stage of compression (throws #2 and #4) for the compressor (3). The gas leaving the 1st stage then passes through the 1st stage discharge damper (4) en route to the 1st stage cooler (5). The suction and discharge dampeners reduce the pressure fluctuations in the gas stream.



Two Stage Compressor Flow Diagram

The 1st stage cooler is designed to remove the heat picked up by the process gas during the first stage of compression. The gas leaving the cooler enters the 2nd stage suction scrubber (6). This scrubber is very similar to the first stage scrubber. Although it is somewhat smaller than the first stage scrubber, it serves the same purpose.

The process gas leaving the 2nd stage scrubber enters the 2nd stage suction scrubber (7). With a trainer or coach, complete a walk-down in the field. It is essential that the learner is able to identify the equipment and describe the process and components in the Compression Unit.

Interactive Diagram

In the Field Activity

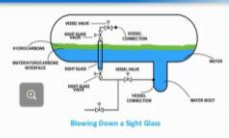
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General

Demonstrate the ability to blow down a sight glass.

The steps to blow down a sight glass are as follows:

1. Close the top and bottom sight glass bridge valves
2. Close the sight glass valves
3. Open the bottom sight glass drain valve to allow liquids to drain to a metal bucket
4. If glass is vapour locked, vent valve at the top of the sight glass. If glass is not vapour locked, close the top vent valve and open the bridge valve (slightly open the top sight glass valve) to allow the vessel pressure to push the liquid out of the glass and into the metal bucket
5. Glass is considered clean when there is no liquids
6. Close sight glass drain and vent valve
7. Slowly open top and bottom bridge isolation valves to the sight glass valves
8. While standing to one side, slowly open the top sight glass valve allowing sight glass to pressure up
9. Open the bottom sight glass valve allowing liquid to enter glass providing vessel liquid level
10. Place sight glass back in service by fully opening the top and bottom sight glass valves



Blowing Down a Sight Glass

Failure to fully open the sight glass valves can result in the possibility of venting gas or liquid to atmosphere. When the sight glass valves are fully open, a ball check in the valve will seat in the event of a glass failure, preventing venting of gases or liquids.

Blowing Down a Sight Glass

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