

## 1.0 Description

The Centrifugal Compressor Operations course prepares the learner to apply a cause-and-effect analysis to compressor operations for troubleshooting purposes. The course utilizes a generic Operator Training Simulator (OTS) to improve learner knowledge of compressor operations and troubleshooting skills.

Our experienced instructors use a blended learning approach to ensure learners have the pre-requisite knowledge and skills to successfully complete the exercises. The course is 70% hands-on, using the simulator to start-up and shutdown the unit. Troubleshooting scenarios require the learner to identify the potential cause, determine the appropriate corrective action(s) and return the system to normal operating parameters or safely perform a shutdown.

Pre-and Post-course assessments allow each learner to see their learning progress from attending the course. Client training managers receive a detailed report of learner progress.

## 2.0 Training Outcomes

### Desired Knowledge

Upon completion of the Centrifugal Compressor Operations course, the learner will understand the operating cause-and-effect relationships of compressor operations. The learner will experience and become familiar with the effects and changes to:

- Suction/process pressure
- Flare pressure
- Suction/process flow
- Surge conditions

### Desired Skills

The learners will enhance their centrifugal compressor operating ability by improving the following skills:

- Selective attention
- Problem sensitivity
- Time-sharing
- Deductive reasoning
- Resistance to premature judgement
- Visualization
- Speed of closure
- Response orientation

## 3.0 Lesson Objectives

Given: A dynamic process simulator and associated technical documentation

You will: Apply process knowledge and troubleshooting skills to operate a centrifugal compressor upsets and respond to upsets

How Well: With 85% accuracy on a knowledge assessment  
Following written procedures and safety policies  
Successfully completing exercises and scenarios

### Enabling Objectives

1. Explain the principles of operation of a centrifugal compressor
2. Identify and describe the purpose of centrifugal compressor components
3. Relate centrifugal compressor process variables to operational safety
4. Define centrifugal compressor operating terms
5. Explain the purpose and function of centrifugal compressor control system process variables
6. Demonstrate safe and effective centrifugal compressor operations
7. Apply troubleshooting skills to resolve centrifugal compressor process upsets

## 4.0 Outline

- I. Introduction
  - a. Pre-Assessment
- II. Review
  - a. Centrifugal Compressor Operating Components
  - b. Review Operating Terms
  - c. Review Process Variables and Operational Safety
- III. Simulator Orientation
  - a. Starting an exercise
  - b. Controlling from the schematic displays
  - c. Using trend displays
  - d. Responding to alarms
- IV. Centrifugal Compressor Process and Controls
  - a. Process inlet flows
  - b. Process outlet flows
  - c. Design operating values
  - d. Process Variables
- V. Exercises
  - a. Startup
  - b. Shutdown
  - c. Abnormal Situations
- VI. Post Assessment