Operator Training & Simulation: Fundamentals – Centrifugal Compressor Operation

Course Overview
Course number: OTS-0010-AT  
Course length: 3 days (self-paced with 10 days to complete)

Need to acquire knowledge and develop centrifugal compressor operation skills?

This e-learning course provides participants the ability to build knowledge and enhance skills for the role of centrifugal compressor console operator:

- Develop fundamental operating knowledge and skills
- Develop knowledge of unit operations and management
- Operate process plant under normal conditions
- Anticipate and respond to abnormal conditions

The course is offered for self-paced exploration and learning using a generic centrifugal compressor process simulation model typical of a wet gas compressor commonly found in refinery Fluidized Catalytic Cracking (FCC) or Coker fractionator operations. The Centrifugal Compressor model compresses overhead vapor from the column overhead accumulator, from where it is recontacted with liquid product, before being transferred to the downstream unit. The centrifugal compressor simulation model consists of the following three major sections:

- Recontacting Section
- Lube Oil System
- Seal Oil System

The student follows a structured lesson plan while interacting with the virtual process plant training simulator using an emulated console, schematics and faceplates. The course begins with an orientation presentation which provides an introduction to the process model along with an overview of the course objectives, tools and how to ask for help. The introduction is followed by four self-paced lessons.

- Lesson 1: Introduction to the process
- Lesson 2: Key process variables, Instrumentation and Control including anti-surge control - Gain an understanding of the process response when a change is made to key operating variables.
- Lesson 3: Process Disturbances. Learn to adjust the operating strategy in order to compensate for equipment failure or out of specification stream conditions.
- Lesson 4: Start-up and Shutdown Operating Procedures - Practice startup and shutdown of the unit using detailed operating procedures.

Each lesson starts with statement of the lesson objective. The student then progresses through a learning session, application session and review session in sequence. The application session involves a practical exercise using a simulation of the plant and operator console. This type of interactive learning has been shown to be the most effective for knowledge transfer. The evaluation session provides the student with timely relevant feedback in the form of a quiz. Immediate feedback is another key success factor for effective knowledge transfer.

Course Benefits

Working at their own pace participants acquire a better understanding of process plant operations including start-up, shutdown, and normal operations. Trainees experience abnormal situations and practice responding to upsets and emergency situations.

- Use best in class UniSim Competency Suite products
- Conveniently accessible through the web
- Use the UniSim Operations Operator Training Simulator to improve knowledge transfers effectiveness

Course Delivery Options

- Asynchronous Training (AT)

IMPORTANT – Prior to registration for the e-learning courses (AT, RT, VILT, and VT), you must perform the User Readiness Test. Go to Asynchronous Training, Recorded Training, Virtual Instructor-Led Training, and Virtual Training Access Requirements to perform this test.

Who Should Take This Course?

Console Operators, Process Engineers, Operations managers and supervisors in the process industry. Participants benefit from the development of process related competencies and become more effective in their job roles.

Prerequisite/Skill Requirements

Prerequisite Course(s)
- None

Required Skills and/or Experience
- Basic process plant operations knowledge or experience ideally in a refinery context
• Basic knowledge of process plant control and safety systems ideally in a refinery context
• Basic knowledge of process plant control console features ideally in a refinery context

Desirable Skills and/or Experience
• Experience of centrifugal compressor operations
• Familiarity with centrifugal compressor procedures and DCS console functions

Course Topics
Familiarization with centrifugal compressor process equipment and controls.

Key centrifugal compressor process variables and control:
• Compressor capacity control
• Compressor anti-surge control
• Recontacting section control systems
• Lube Oil control systems
• Seal Oil control systems

Process disturbance and recovery:
• E-2002 Fin Fan Trip
• Lube and Seal Oil Pump Trips
• Loss of Gas Flow

Start-up and Shutdown Operating Procedures

You will
• Learn about the fundamentals of centrifugal compressor process plant operation though practical application using simulation technology
• Identify key process variables and controls encountered in operation of centrifugal compressors and gain an understanding of process interactions
• Learn about centrifugal compressor start-up and shutdown and practice the procedures in the safety of the simulated plant.
• Respond to the challenge of abnormal situations and learn how to recover from the impact of external influences.
• Receive immediate feedback using short quizzes
• Gain confidence to tackle day to day real world operations challenges

Additional Training
To increase your knowledge and skills, there are additional courses available from Automation College.

For more information and registration, visit www.honeywellprocess.com/en-US/training.