

## Air Separation Unit

3 days  
Overview

ASU-EN-P

### LEVEL

Skilled

### PURPOSE

This course reminds the basic background and knowledge of Air Separation Unit technology and operation.

### LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:  
describe the main equipment associated with the Air Separation Unit and their function,  
explain the operating parameters and the product management,  
grasp safety concerns and safe operation of ASU,  
detect abnormal situations by troubleshooting and implement preventive measures.

### LEARNING ASSESSMENT

Quiz.

### PREREQUISITES

To fulfill at least one of the following criteria:  
to have 1 year's of proven experience in the petrochemical or chemical industry,  
or to be in the process of being moved to a position in an air separation unit.

## Agenda

### PRINCIPLES OF AIR SEPARATION UNIT

0.5 d

Overview on the air separation technology along the relevant process units:  
Introduction to air separation technology.  
Basics of the separation process.

### PROCESS UNIT DETAILS, DESCRIPTION, TECHNOLOGY & OPERATING PARAMETERS

1.5 d

Air filtration system.  
Air compression.  
Pre-cooling system.  
Front end purification.  
Brazed alumina heat exchanger.  
Distillation columns.  
Vapor/condenser.  
Cryogenic pumps/expander.  
Storage and backup vaporization.

### THE SPECIFIC RISK OF OXYGEN/NITROGEN

0.5 d

Introduces to oxygen risk, reactivity of material with oxygen, design of O<sub>2</sub> installation.  
Review of incidents in air separation units, causes and preventive measures.

Safe operation and maintenance of equipment.  
Anoxia, deficient atmosphere.

## BASIC CONTROL PRINCIPLE

0.5 d

Main control loops.

Safety loops, elements important for safety.

Transition phase: start-up, load change, shutdown.