This training course is offered under the **Alliance4Training** brand

Training - Operation of a Binary Distillation Column - Level 2

CCDSS-EN-P | **Face-to-face only** | **5 days**

This course provides a deeper understanding of operating distillation columns under all conditions, with a practical understanding of operations and control systems through a hands-on experience

Level

Skilled

Public

Console operators and production supervisors, shift supervisors involved in the operation of distillation column

Objectives

Attendees will be able to implement the following skills:

- Give the meaning of driving parameters
- List the different regulatory systems,
- Identify their advantages and disadvantages in response to disruptions
- Logically present the main steps of stopping and starting a column

Pedagogical & technical resources

- Highly efficient learning process: use of a virtual column modeled on CORYS IndissPlus dynamic simulators
- Exercises are conducted in small groups of 2 to 3 participants, each group operating its own virtual column. Each exercise includes: a pre-discussion of the problem; definition of the target exercise objective; adequate time to run the virtual columns; open analysis of the results, shared with all participants; and practical conclusions related to the operation of the columns
- Attendees are invited to bring descriptions of their specific column control strategies for group discussion and analysis. Conclusions drawn from the exercises on the simulator can be transposed to other actual control schemes
- The content of the exercises can be customized to the needs and specific features of the client site
- Parts of or whole session adaptable to virtual classroom

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

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Program

OPERATING PARAMETERS — 1 day

Behavior of flash mixtures: vaporized fraction, liquid-vapor separation and distribution of components according to their volatility.
Material balance of the column: concepts of cut point, separation quality and fractionation capability.
Heat balance: reflux and reboiling ratios and selectivity assessment.
Column pressure effects: pressure control and pressure profile along the column - Flow rates, concentration and temperature profiles.

FRACTIONATION CAPABILITY — 0.5 day

The trainees will experience these causes and effects on a debutanizer simulator.
Effects of liquid-vapor flow rates, reflux and reboiling ratios on separation - Influence of liquid-vapor traffic on concentration and temperature profiles.
Position of inlet tray.
Fractionation capability and its relationship to energy consumption.

MASS BALANCE & IMPLEMENTATION OF A TEMPERATURE CONTROL — 0.5 day

Impact of reflux and reboiler duty on material balance, and consequences on product specifications.
Impact of disturbances on column mass balance and product purities.
Definition of and how to identify the sensitive tray, and its influence on concentration profiles and products qualities.
Implementation of sensitive temperature control systems, advantages and limitations.

OTHER PROCESS CONTROL PARAMETERS — 1.5 days

Survey of operating disturbances, their common origins and causes - Pressure control and its impact on column stability.
Analysis of disturbances caused by the feed, composition, temperature or flow rate.
Reboiler fouling, loss of condensing, and tray flooding - External and internal reflux control, and reboiling control by means of flowrates or duty.
Optimizing heat balance, influence of additional energy through feed or reboiler, and benefits of low pressure operation.
Implementation of control systems based on quality measurement.

UPSETS — 1 day

Operation of the column at its limits: thermal equipment fouling, cooling water troubles and flooding - Failures of instruments and pumps.

START-UP - SHUTDOWN — 0.5 day

Analysis of the behavior in the column at each step of start-up and shutdown.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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