Virtual Classroom This course is available in face-to-face mode - Advanced Certificate

Distillation Certification - Optimization & Troubleshooting - Remote training

Practical Simulator Training (CORYS IndissPlus simulator)

5 days **DSS-EN-D**

Overview

LEVEL

Expert

PURPOSE

This course provides a comprehensive understanding of efficient distillation columns operation as well as optimization strategies implementation.

LEARNING OBJECTIVES

Upon completion of the course, the participants will be able to:

know about all parameters and profiles for the analysis of a distillation column operation,

master the concepts necessary to optimize the operation of a column,

identify the performances and limits of different control systems,

detect deficiencies, find their origin and solutions.

WAYS AND MEANS

Highly efficient learning process: operation of a virtual column using a dynamic simulator that models the main physical phenomena of distillation.

Troubleshooting case studies to illustrate process 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.

LEARNING ASSESSMENT

Individual quiz.

Handling a situation of operation: finding the settings for tuning a column.

PREREQUISITES

To fulfill at least one of the following criteria:

to have a Master degree or equivalent in process, engineering, industrial chemistry,

or to have knowledge of liquid-vapor equilibria and the main principles of operation of distillation columns,

or to have more than 3 years' proven technical experience in the refining industry,

or to have a new position requiring competences in distillation.

WHY AN IFP TRAINING CERTIFICATION?

- An international recognition of your competencies.
- A Advanced Certificate delivered.
- An expertise confirmed in Distillation Certification - Optimization & Troubleshooting - Remote training.
- Ready-to-use skills.

MORE INFO

Realizado en Español si requerido.

Agenda

OPERATING PARAMETERS: DEFINITION & SIGNIFICANCE — 0.5 d

Material balance of the virtual column: cut point, separation quality and concept of fractionation capability.
Column pressure: pressure control and pressure profile along the column.
Heat balance. Reflux and reboiling ratio and selectivity assessment.
Internal flow rates profiles, concentration and temperature profiles. Concentration peaks.

FRACTIONATION CAPABILITY OF AN INDUSTRIAL DISTILLATION COLUMN — 0.5 d

Impact of the parameters related to the fractionation capability:
Liquid-vapor internal flow rates, associated with reflux and reboiling ratios.
Number of theoretical stages and internal equipment efficiency.
Position of feedstock inlet related to feed characteristics.
Fractionation capability and related energy consumption.
Each item is illustrated by practical exercises conducted by trainees on a dynamic simulator.

PROCESS CONTROL PARAMETERS — 3 d

The simulator handling scenario covers the different aspects of operation and control of columns. It starts with a simple control system and implements increasingly sophisticated control systems on increasingly complex columns: from binary to a multiple draw-off column (crude oil distillation).
Survey of operating disturbances; origins and causes.
Process control strategy and optimization targets.
External or internal reflux control, reboiling control with flow rates or duty monitoring.
Material balance control: sensitive tray, temperature control systems.
Optimization of the heat balance: additional energy through the feed or the reboiler, low pressure operation and energy savings.
Implementation of more complex control systems.
Analysis of disturbances caused by the feed and systems for feed forward control.
Implementation of process control in multi-column trains.
Specific case of multiple draw-off columns:
Quality tuning through material balance (temperature, flow rate or level control).
Heat balance monitoring (role of pumparounds and vaporizing refluxes, optimization of the fractionation capability).
The participants can provide diagrams of their distillation columns, the methodology will be applied to confirm that a change of operating parameter does not have the same consequence according to the control scheme implemented.

EQUIPMENT TECHNOLOGY & TROUBLESHOOTING — 1 d

Trays: technology; high efficiency trays, performance and flexibility.
Packings and distribution systems: flooding, fouling, mechanical damage and remedies.
Reboilers and condensers: implementation and working principles, various control strategies, problems and related origins, possible solutions.
The items in this chapter are exemplified by case studies corresponding to actual industrial problems and related solutions.