

SEPARATION TECHNIQUE IN OIL/PETROLEUM INDUSTRIES



PCE111
Process and
Chemical
Engineering

COURSE TITLE

SEPARATION TECHNIQUE IN OIL/PETROLEUM INDUSTRIES

COURSE DATE/ VENUE

24th Feb- 28st Feb 25'

London, UK

COURSE REFERENCE

PCE111

COURSE DURATION

05 days

DISCIPLINE

Process and Chemical Engineering

COURSE INTRODUCTION

This workshop covers the basic concepts and techniques necessary to design, specify and manage oil field separation facilities. It provides a clear understanding of the equipment and processes used in common separation and oil and water treating systems as well as the selection of piping and pumping systems. The gathering, separation and final treatment systems for crude oil, before transport to refinery are discussed field and fiscal measurements error is explained. Hydrocarbon reconciliation and allocation of produced fluids to the contributing reservoirs are explained. Exercises are used to cement the learning of the various topics treated.

This workshop will enable participant to develop a “feel” for the important parameters of designing and operating oil and gas separation production facility. The participant will understand the uncertainties and assumptions inherent in designing and using the equipment in these systems and the limitations, advantages and disadvantages associated with their use.

As some of workshop participants may have no background in production facility design other than what they have learned in the introductory petroleum engineering workshops, the workshop will start with an overview explaining the goals of the oil separation facility with pictures of the equipment. Then the instructor will discuss how the equipment is put together into a process system before explaining process calculations and equipment designing procedures.

The instructor will assign a project at the start of the workshop and have the participants take it another step forward as each day is completed. As there are many correct answers in facility process and equipment design, no two projects will be identical, but the participant should be able to defend his/her selection in an oral presentation at the last day of the workshop

COURSE OBJECTIVE

Upon successful completion of this course, the delegates will be able to:

- ✓ Apply physical and thermodynamic property correlations and principles to the design and evaluation of oil production and processing facilities.
- ✓ Evaluate oil and gas separation processing configurations for different applications.
- ✓ Recognize and develop solutions to operating problems in oil production facilities.
- ✓ Attendees completing this course will enhance their understanding of process design and gain practical skills and knowledge in the design of process separators.

Solution for gas oil separation processes will be discussed as well, though at a relatively high level. In addition to the engineering aspects of oil production facilities, practical operating problems will also be covered including emulsion treatment, sand handling, dealing with wax and asphalt etc.

COURSE AUDIENCE

This course is designed for Junior Engineers, Senior Operators, and Operators who are working in Oil Production Facilities and Oil Refineries.

Technical personnel involved in the activities of oil desalting. Specifically, technical, operations and maintenance personnel who had limited exposure to this area, or professionals involved in other areas of the gas/oil industry who require a comprehensive overview of natural gas processing will find this course ideally suited for them.

COURSE CONTENT

Introduction

Separation Process

Principles of Separation

- Gravity Separation
- Separation System Problems
- Factors Affecting Separation

Phases Separation

- Primary Separation
- Secondary Separation
- Mist Extraction
- Liquid Accumulation
- Oil and Water Separation

Terminology and Applications:

- Vessels Terminology
- Separator Application

Stage Separation

Separators Classification

- The Vessel Shape
- The Number of Fluids to be Separated

Separator Internals

- Inlet Configuration
- Intermediate Configuration
- Outlet Configuration

Separator Sizing

- Definitions

- Sizing Knock Out Drum
- Sizing Liquid Accumulators
- Sizing Vapor Liquid Separators

Separation Operation and Troubleshooting

- Separator Control
- Troubleshooting

Operating Problems

- Foamy Crudes
- Paraffin
- Sand
- Emulsion
- Slugging

Fundamentals of Separation in Towers

- Distillation
- Principles of Distillation
- Reflux
- Reboiling



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Crude Distillation

- Process Description
- Product Specifications
- Crude Distillation Operation

Reflux Rate Changing

- Feed Temperature Changing
- Side Product (Draw off) Rate Changing

Fractionator Control

- Feed Surge Control
- Feed Temperature (Thermal Condition)
- Column Pressure Control
- Reboiler Control
- Variable Feed Tower

Operating Difficulties

- Fouling
- Temperature Profile
- Operation near Critical Properties
- Use of Grid Trays
- Loads in Rectifying Section
- Way of Introducing Feed
- Reboiler

Troubleshooting Operating Problems

- Flooding
- Dry Trays
- Damaged Trays
- Water in Hydrocarbon Column
- Foaming
- Condenser Fogging
- Suspect Laboratory Analysis



COURSE CERTIFICATE

TRAINIT ACADEMY will award an internationally recognized certificate(s) for each delegate on completion of training.

COURSE FEES

£5,500 per Delegate. This rate includes participant's manual, Hand-Outs, lunch, coffee/tea on arrival, morning & afternoon of each day.

COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice

type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions

