

Fundamentals of the Petrochemicals Industry

Part One Ethylene and Derivatives

Part Two Aromatics and Derivatives

Introduction

This two part seminar program was designed to serve as a guide to understanding the petrochemical industry.

Part one of the seminar program focuses on one of the core building blocks of the petrochemical industry; ethylene and its derivatives. Sectors covered include; 1) Ethylene Plants, 2) Ethyl Benzene / Styrene Plants, 3) Ethylene Oxide / Glycol Plants, 4) Vinyl Chloride Plants, 5) Ethanolamine Plants and 6) other Ethylene Derivatives.

Part two of the seminar program focus on a second core building block of the petrochemical industry; aromatics and its derivatives. Sectors covered include 1) Catalytic Reformers, 2) BTX Separation Plants, 3) Xylene Separation Plants and 4) Aromatics Derivatives.

Course Objectives

This seminar's goals are to provide an understanding of the two key building blocks of the petrochemical industry. This seminar would be beneficial to those directly or indirectly involved in the petrochemical industry. To those with experience in the petrochemical industry, this seminar can reinforce their practical experience and broaden their data base. To those new in the petrochemical industry this seminar can serve as a platform to build their data base of experience.

Course Outline

Day One

Introduction

- **Overview of the Petrochemical Industry**
- **Chemistry of the Petrochemical Industry**
- **Fundamentals of Distillation**
- **Optimize Distillation Column Design for Improved Reliability in Operation and Maintenance**
- **Catalyst Evaluation Techniques**

Ethylene Plants

- **Overview of Ethylene Plants**
- **Process Variables**
- **Ethylene Furnace Review**
- **Ethylene Furnace Trouble Shooting**
- **Ethylene Distillation Review**

Day Two

Ethylene Plants Continued

- **Designing Distillation Columns for Fouling Service**
- **Acetylene Reactor Catalyst Review**
- **Ethylene Plant Economics and Optimization**
- **Flare Safety Review**

Ethyl Benzene / Styrene Plants

- **Overview of Ethyl Benzene Plant**
- **Process Variables**
- **Overview of Styrene Plants**
- **Process Variables**
- **Catalyst Review**
- **Designing Columns for EB / Styrene Plants**

EO / EG Plants

- **Overview of Ethylene Oxide Plant**
- **Overview of Ethylene Glycol Plant**
- **Process Variables**
- **Designing Columns for Vacuum Service**

Day Three

VCM Plants

- **Overview of Vinyl Chloride Plant**
- **Process Variables**
- **Design Distillation Columns for VC Service**
- **Environmental Concerns**

Ethanolamine Plants

- **Overview of Ethanolamine Plants**
- **Process Variables**
- **Design distillation columns for Ethanolamine Plants**
- **Design Guidelines for improved products and recoveries**

Catalytic Reformer Plants

- **Overview of Catalytic Reformer Plants**
- **Process Variables**
- **Hydro De-Sulphurization (HDS) units**
- **Current Advancements in Catalyst**
- **Designing columns for Catalytic Reformers**

Day Four

BTX Separation Plants

- **Overview of BTX Separation**
- **Liquid / Liquid Extraction versus Extractive Distillation**
- **Process Variables**
- **2nd Stage Gasoline Hydro Treater Units (GHU)**
- **Designing columns for BTX Separation Plants**
- **Designing Extractive Distillation Columns**
- **Benzene and Toluene Derivative Overview**

Xylene Separation Plants

- **Overview of Xylene Separation**
- **Crystallization versus Adsorption**
- **Process Variables**
- **Designing columns for Xylene Separation Plants**
- **Xylene Derivative Overview**

Summary

Who Should Attend:

- **People who are making decisions regarding operation, design, and economics of petrochemical plants;**
 1. **Plant Managers,**
 2. **Process Support Engineers,**
 3. **Operations Engineers**
 4. **Design Engineers,**
 5. **Senior Plant Supervisors.**
- **Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Petrochemical Operations.**
- **Other professionals who desire a better understanding of subject matter**

What you can expect to gain:

- **The operation, control and trouble shooting of a petrochemical units and their associated equipment,**
- **An understating of petrochemical distillation design concepts,**
- **Catalyst evaluation techniques**
- **Ethylene Unit Overview**
- **EB / Styrene Overview**
- **Ethylene Derivatives Overview**
- **Catalytic Reforming Overview**
- **BTX Separation Overview**
- **Aromatics Derivatives Overview**