

## Production of Paraxylene - Aromatic Plant

5 days

AROE-EN-P

### Overview

#### LEVEL

Skilled

#### PURPOSE

This course provides a thorough technical understanding of aromatics production and paraxylene recovery.

#### LEARNING OBJECTIVES

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

assess the influence of operating parameters on a unit performance,  
optimize the process for achieving the targeted yield in benzene, toluene and paraxylene,  
detect potential deficiencies by troubleshooting in order to solve it easily.

#### WAYS AND MEANS

Applications, teamwork, case studies and interactive workshops based on typical real situations.

#### LEARNING ASSESSMENT

Quiz.

#### PREREQUISITES

To fulfill at least one of the following criteria:

to have 1 year of proven professional experience in a petrochemical site,  
or to be in the process of moving to a position involving knowledge about aromatic complex.

### Agenda

#### SOURCES, OUTLETS & MAIN INDUSTRIAL USES OF AROMATIC INTERMEDIATES

0.25 d

Main sources: catalytic reforming, steamcracker, coke oven gases.  
Outlet and main uses of: benzene, toluene, ethylbenzene and xylenes.

#### AROMATICS COMPLEX SCHEMES

0.25 d

Available layouts related to downstream markets.  
Naphtha to paraxylene typical scheme.  
Alternate schemes.

#### AROMATICS ORIENTED CATALYTIC REFORMING

1 d

Technologies: semi-regenerative and regenerative (CCR).  
Feedstocks - Yield - Severity - Products.  
Operating parameters - Process flow diagram of a continuous catalytic reforming unit - Main equipment.  
Reactions and catalyst - Chemical reactions: thermodynamics and kinetics.  
Catalyst properties: role of the acidic and metallic functions.  
Catalyst composition and selectivity, poisons and ageing factors. Catalyst regeneration.  
Reformate splitter: Different schemes and purposes - C<sub>8</sub> cut composition ex reformate.

## AROMATICS - NON AROMATICS SEPARATION PROCESSES

0.75 d

Liquid-liquid extraction.

Extractive distillation: basic principle and applications in the petrochemical industry - Benzene Recovery Unit.

Advantages and drawbacks of both techniques. Available technologies.

## SEPARATION OF AROMATICS BY CARBON NUMBER

0.25 d

Standard distillation: benzene and toluene fractionation columns, xylenes rerun column, orthoxylene splitter, heavy aromatics column.

## AROMATICS TRANSFORMATION

0.75 d

Overview of the aromatics transformation processes: hydrodealkylation, disproportionation, transalkylation, isomerization and toluene methylation.

Available technologies: focus on XyMax and TransPlus technologies.

Case study on several aromatics production typical schemes.

## C8 AROMATICS SEPARATION

0.25 d

Crystallization.

Adsorption on solid (application to xylenes separation).

## PARAXYLENE RECOVERY UNIT

1.25 d

Principles and details of the ELUXYL process: role of equipment; adsorption technique (solid specificity, solid behavior); main operating parameters.

Downstream separation: extract, raffinate, paraxylene purification, solvent rerun columns.

Available technologies: PAREX.

## TREATMENT OF THE PYROLYSIS GASOLINE FROM THE STEAMCRACKER

0.25 d

Standard pyrolysis gasoline composition.

Treatment process schemes - Aromatics upgrading. Available technologies.