

Catalytic Reforming

A Eurotek training course



ERS Catalytic Reforming

An introduction:

ERS Reforming is a comprehensive core skills course for professionals dealing with all aspects of the Reforming Units.

The course will be highly valuable to all engineers involved in the operation and design of Reforming facilities.

Additionally, the course will be useful to any technical personnel wishing to gain a perspective of how the Reformer fits into the operation of a complete refining plant. Those who are experienced in other fields and seek a review of the fundamentals of Reforming will also find this course most beneficial.

Learning objectives:

Upon completion of this course, participants will have gained a solid understanding of the key elements associated with the design, operation and troubleshooting of Reforming Units.

- The importance of Reformer operations in the economic optimisation of the refinery mogas pool.
- How to optimise, debottleneck and troubleshoot their Reforming Units.
- The impact of feed quality, catalyst, operating conditions and unit design on product qualities.
- In addition they will have gained some valuable insight into catalyst activity and run lengths.



Who should attend?

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Description:

The petroleum industry uses Reforming as a primary process for quality improvement to meet final fuel specifications as well as hydrogen and LPG production for many intermediate processing units. This course covers the core elements of Reforming technology.

Key variables that affect product yields and properties are described and their impact on the optimisation of the unit operation discussed. A framework is presented for troubleshooting operating problems and, throughout this discussion, participants are encouraged to describe their specific challenges.

The scope of the course includes the core of most Reforming problems and attempts to cover solutions useful to design and operating engineers. Recent concerns associated with processing for clean fuels are covered. This course will provide an overview of the diverse nature of the Reforming processes, depending on the feedstocks used, products made and the environmental issues. It will address process integration issues, which are vital for economic viability. The course is designed to complement and supplement material presented in other ERS courses



Course Presenter

Lee Bamon is a Consultant for an International catalyst manufacturing company, with over 40 years experience in a wide range of chemical, refinery and petrochemical processes. He has worked for various companies including Dow Corning, Exxon and Stone & Webster, on the commissioning of units, including fluidised bed reactors, Cryogenic LNG plants and Ethylene Crackers. With Engelhard (now BASF) as Technical Manager, he supervised the commissioning and troubleshooting of all the licensed processes for the company, covering catalytic reforming, C5 and C6 isomerisation, oxidation and hydroprocessing operations, worldwide.

When he became Senior Sales Manager for the same company, his expertise extended to include FCC catalysis. For a number of years, his work as a Consultant has been in the FCC, catalytic Reforming areas, as well as an advisor for the Insurance Industry. Lee attended the University of Wales, where he gained a C & G in Chemical Operations and Engineering.



Course programme

Day 1

Introduction to Catalytic Reforming
Historical Development of Catalytic Reforming
Refining Processes
Unit Design Semi-Regen and Continuous Processes
Chemistry of Reforming Process
Support Functions
Reaction Chemistry
Metal/Acid Functions
Environmental Control

Day 2

Reforming Catalysts
Catalyst Composition and Types
Commercial Catalysts, Mono and Multi Metal
Evaluation of Catalyst Change-outs – Economic
Evaluation
Choice of Timing
Monitoring of Reforming Process
Feed/Catalyst Sampling and Analyses
Performance Evaluation
Operating Variable Effects
Water/Chloride Balance

Day 3

Unit Configuration and Design Semi-Regen
Reactor Designs
Review of Licensed Processes.
Continuous Reforming Units
CCR Processes
Economic Considerations for CCR
Catalyst Composition and Types
Reformer Operating Schemes
Unit Optimisation
Aromatics Production
Revamp Options

Day 4

Continuous Reforming Systems
Reforming Catalyst Procedures
Unit Start-up Techniques
Catalyst Regeneration for Semi-Regen Units
Safety and Unit Protection during Carbon
Removal Process
Carbon Removal in CCR Units
Reformer Troubleshooting
Feed Contaminants
Catalyst Problems

Day 5

Reformer Process Simulation
Basis for a Reformer Model
Accuracy Considerations
Applications and Benefits
Naphtha Reforming
Naphtha Sources
Reforming Reactions
Catalyst Compositions and Selection
Process Variables
Troubleshooting
Sulphur Guard
Role of Sulphur in Reforming
Sulphur Guard Units and Catalyst
Types
Liquid vs. Vapour Phase Operation
Economic Evaluation
-Q&A.





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