

▲ Who should attend?

Shift leaders, graduate engineers, and technical supervisory staff involved in these two octane boosting processes.

The technical content of the course also makes it suitable for the staff of refineries, research centers, oil companies and engineering firms concerned by the different aspects of the operation of these processes.

▲ Duration

5 days

▲ Dates & Location

June 16 to 20, 2008
Rueil-Malmaison (Paris)

▲ Tuition Fees

€ 1,900

▲ Course Coordinator

Gérard Pierre

Ref. **PTF / CAREF-E**

CATALYTIC REFORMING - ISOMERIZATION

OBJECTIVES

To give the participants a **broader technical understanding of the process** of the units and also to present how the catalyst can be **operated** and **optimized**.

On completion of the course, the participants:

- have an increased knowledge of the influence of the operating parameters on the performances of the unit through a thorough explanation of the **behavior of the catalyst** and the respective chemical reactions
- have got a better understanding of the purpose and implementation of the main steps of the regeneration of the catalysts for catalytic reforming
- have got a better view of the potential origins of troubles and their respective remedies.

COURSE CONTENT

REFINERY OCTANE POOL

0.25 day

Quality specifications of gasolines related to engine operation and environment protection; reformulated gasoline and future trends.

Octane number: definitions, standard tests (RON, MON), chemical origin.

Octane improving processes, integration within the refining schemes.

ISOMERIZATION

1 day

Feedstock and product properties, minimum benzene schemes.

Comparison of different process schemes and performances.

Fundamentals of isomerization chemistry: chemical reactions and different generation of catalysts.

Process parameters of isomerization unit

Material balance and hydrogen consumption

Operating variables: temperature, Δt , H_2/HC ratio, WHSV

Feed and make-up gas drying

Downstream separation: deisohexanizer or adsorption separation.

Unit operation: influence of operating variables on performances; temperatures, feed flowrate, feed composition, hydrogen recycle.

Troubleshooting: high benzene in feed.

REFORMING PROCESSES: CATALYST OPERATION

2 days

Feedstock origins and characteristics (N+2A, IBP, FBP, impurities), product properties.

Process parameters of catalytic reforming units: regenerative or semiregenerative

Process flow schemes, operating conditions.

Material balance and energy consumption (heaters and compressors).

Definition and significance of the operating variables: WABT, WAIT, WHSV, H_2/HC ratio, recycle gas and hydrogen rich gas composition, flash drum conditions.

Fundamentals of catalytic reforming reactions.

Catalyst properties: role of the two functions and the support, water/chlorine balance and management.

Catalyst composition and selectivity, poisons and ageing factors.

Catalyst survey and cycle length prediction.

Step by step description of **catalyst regeneration**.

Unit operation: influence of operating variables, monitoring and optimization, cycle management.

CCR TECHNOLOGIES AND REGENERATION LOOPS

1 day

Low pressure technology: feed-effluent exchanger, heaters, reactors, recontacting section.

Catalyst circulation: lifts, ΔP control, seal legs, reactor internals, ...

Special features for CCR catalyst: regenerability and mechanical properties. Catalyst sampling and monitoring.

Catalyst regeneration: regeneration tower, N_2 circulation, O_2 control, washing, drying...

Regeneration of reforming catalysts: differences between CCR and SR units.

TROUBLESHOOTING FOR CATALYTIC REFORMING

0.75 day

RON decrease: causes, diagnostic and remedies.

Moisture in the feed, sulfur peak, chlorine peak: diagnostic and remedies.

Recycle or separation problems, recycle gas analysis.

Reactors temperature run-off.

Specific troubles of CCR units: catalyst circulation, regeneration loops chilling system, nitrogen lift pollution.

CCR operation with catalyst regeneration problems.

Der Vortrag über dieses Thema kann auch auf Deutsch gehalten werden.