HYDROTREATMENT PROCESSES (3 days)

PURPOSE

To deepen understanding of the operating, monitoring and optimizing of hydrotreatment units.

AUDIENCE

Level: ADVANCED

Engineers, senior operation personnel or technical supervisory staff interested or involved in the operation of hydrotreatment units. Engineers from research centers and engineering companies involved in the different aspects of the operation and process control of these units.

LEARNING OBJECTIVES

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

- Grasp the essence of hydrotreatment processes.
- Analyze the operation and optimization of hydrotreatment units.
- Manage the hydrogen balance in relation with the hydrogen network.
- Detect potential deficiencies by troubleshooting.
- Assess how to meet main breakthroughs for ultra-low desulfurization requirements.

WAYS AND MEANS

- Applications, teamwork, case studies and interactive workshops based on typical real situations
- Use of a simulator by the trainer to illustrate the evolution of the operating variables.

AGENDA

OBJECTIVES OF HYDROTREATMENT PROCESSES — *0.25 day*

Impurities in petroleum cuts and products; their impact on health, environment and on other refining processes. Highly refractory compounds.

Recent regulations and future trends: quality specifications of petroleum products and fuels in relationship with concerns mentioned above.

Aim of the various treatments with hydrogen and integration in the refining scheme: hydropurifications of straight run cuts, stabilization or saturation of cracked cuts.

CHEMICAL REACTIONS AND HYDROTREATMENT CATALYSTS — *0.5 day*

Characteristics of the chemical reactions involved: thermodynamic and kinetic aspects, consequences on the operation of units, side reactions and optimum operating conditions to deplete their evolution, specific features of reversion reactions.
Characteristics of the catalysts for hydro-purification and for hydrogenation: effect of molybdenum, cobalt and nickel, importance of the substrate, selection criteria for a hydrotreatment problem. Top gradings.
Loading of the catalyst. Internals in the reactor.
Presulfiding procedures: role, steps and details of the different methods.

OPERATION OF A DISTILLATE HYDROTREATMENT UNIT — *0.75 day*

Operating conditions and compositions of the main streams; mass balance and yields, sulfur balance and hydrogen balance and consumption.
Significance of the operating variables and their influence on the process: mean temperatures and profile, pressures, partial pressure of hydrogen, recycle rate, quench ratio, feed flow rate and space velocity.
Advanced process control and optimization of the process.
Management of the hydrogen network in the refinery. Effect of feed composition and origin. Catalyst follow up and cycle length optimization, ageing and deactivation.
Regeneration steps and monitoring.
Maximizing the performances of the unit under constraints or limit conditions.

DISTURBANCES, INCIDENTS AND TROUBLESHOOTING — *0.75 day*

Causes of quality decrease and corresponding actions.
Main automatic safety systems.

Feed pump failure, heater failure.
Compressor failure: fresh gas or recycle, adapted reaction and safe shut down.

PERFORMANCE OF THE VARIOUS HYDROTREATMENT UNITS *0.5 day*

For each of the following processes, the operating parameters and the specific operating features are explained.
Naphtha desulfurization for catalytic reformer and isomerization feed. Cracked gasoline treatments, special hydrotreatments for the FCC gasoline. Stabilization of the pyrolysis gasoline.
Hydroisomerization of the C4 cut out of the FCC to feed alkylation unit. Hydrotreatment of middle distillates: kerosene and gas-oil, LCO processing. Desulfurization of vacuum gasoil to FCC units.
Residues demetallization processes. Hydrotreatments in lube oil manufacturing. Hydrogen manufacturing or enrichment processes.

SPECIFIC DEVELOPMENTS TO MEET THE ULTRA-LOW DESULFURIZATION OF GASOLINE AND DIESEL FUELS *0.25 day*

High performance catalysts, grading materials, advantage of the dense loading, technology of the reactor and exchangers, operating conditions, recycle gas treatment, hydrogen purification, advanced process control.

Language	Location	Date	Fee (Euro)	Registration Contacts
English	CBC Training Center	31 July -2 August 2017 ۹-۱۱ مرداد ۹۶	به ازای هر نفر ۹۵۰ یورو	Training@cbcoilandgas.com 0912-0848343 ,021-88558601 نگین صنایع / مدیر برنامه/ مهندس فرآیند

- محل برگزاری دوره ، مرکز آموزشی CBC واقع در تهران می باشد.
- حداکثر ظرفیت تعداد شرکت کنندگان ۲۷ نفر می باشد.