Training - Cracking and Chemical Treatments of Purification

RCIVAPO-EN-P | **Face-to-face only** | **5 days**

This course brings technical information on the steamcracker sections focused on chemical transformations: feed cracking, cracked gas purification, hydrogenations or purification stages on a solid (drying)

Level

Skilled

Public

Operating personnel in steamcracking plants: experienced filed operators, panel operators, shift leaders and all technicians involved in the operation of these sections

Objectives

Attendees will be able to implement the following skills:

- Identify key physicochemical characteristics of the process
- Describe the process steps
- Justify process and operating safety measures

Pedagogical & technical resources

- The content of this course can be adapted to the customer's needs. The pedagogy is focused on the units concerned, under cover of a secrecy agreement if necessary
- Case studies done in groups based on typical running situations presented in the course
- Possible contribution of experienced staff in the daily operation of the plant

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

BLOCK DIAGRAM OF THE STEAMCRACKER UNIT — 0.25 day

Roles of the various sections.
Feedstock origins, products types, yields.

MAIN PETROCHEMICAL INTERMEDIATES — 0.25 day

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Definition of hydrocarbon families. Feedstock composition.
Potential outlets and main industrial uses of olefinic, diolefinic and aromatics hydrocarbons.

CHEMICAL REACTIONS & CATALYSIS — 1 day

Chemical reactions, chemical reaction uses for the mass balance.
Studies of the thermodynamic conditions to make the chemical reaction feasible.
Chemical reactions limited by the chemical balance, rules to shift the chemical balance.
Rate of chemical reactions. Effect of a catalyst, catalyst behavior. Poisons and inhibitors.
Nota: these basic elements have been provided throughout the course as they enhance the understanding of the different topics.

STEAMCRACKING — 1 day

Onsite unit description; operating conditions of the different sections, product yields.
Analysis of technical characteristics of desired transformations.
Elements of pyrolysis monitoring: definitions of the severity and the selectivity.
Influence of the operating parameters/pressure, temperature, flowrate, steam dilution ratio on the unit performances.
Impact of the feedstock origin on product yields.
Regulation and advanced process control.

CRACKED GASES PURIFICATION — 0.25 day

Main washing systems for cracked gases: selection of systems implemented.
Amine washing system: absorption and regeneration.
Caustic washing system and treatment of waste caustic stream.
The sequence of washing stages in the scrubber.
Influence of the operating parameters on the quality of washing.

DRYING OF CRACKED GASES — 0.25 day

Adsorption-desorption balance.
Operation of cracked gases dryers during the drying and regeneration steps, drying optimization (temperature/run length relationship).

TREATMENTS WITH HYDROGEN — 1.5 days

Role and purpose of the different hydrogenation processes, chemical reaction characteristics, main types of catalysts implemented.
Purification of hydrogen by methanation (if relevant).
Studies of selective hydrogenation units for C2, C3 and C4 cuts and hydrotreatment units for pyrolysis gasolines: analysis of the operating conditions of the unit, operating parameters of the plant, case studies for unit adjustment.

DISTURBANCES - INCIDENTS — 0.5 day

Incidents on the furnace: loss of feed flowrate, high temperature on one or more coils - Loss of firing - Loss of quench water...
Incidents on cracked gases scrubber : loss of caustic make-up, abnormal temperature of the caustic, loss of water washing at the top of the scrubber.
Incidents on dryers: insufficient regeneration, moist gas at outlet.
Incidents in the methanation section (if relevant): loss of the cold box and breakthrough of ethylene to the reactor.
Incidents on selective hydrogenations: management of feedstock inhibitors, changes of hydrogen quality, loss of catalyst activity and/or selectivity.
Nota: this part is delivered through case studies and analysis of feedback of on-site incidents.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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