



Hydrocracking

Consultant / Trainer:

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The **Petrogenium**. Hydrocracking course is an extensive awareness programme for engineers and operational staff dealing with all aspects of hydrocracking units. In addition planning, scheduling and procurement staff will find the course valuable as aspects and pitfalls of the catalyst testing and procurement best practices are discussed.

Participants

This **Petrogenium**. course can be tailored for awareness/inexperienced staff, for intermediate and for experienced personnel. Furthermore the course can be customized for a specific refinery, plant or unit. The option for post-course consultancy/help-desk support is also available.

Participants may include: oil refining personnel especially those involved with hydrocracking; researchers & professionals who work in hydrocracking; catalyst manufacturing staff, especially those involved in the production & research of hydrocracking catalysts; staff involved in refinery optimization & maximizing synergies between refinery processes.

Learning Objectives

How to make optimal use of hydrocracking units; understanding the types of reactions & kinetics, including reaction calculations; catalyst explanations, manufacture & commercially available catalysts; feedstocks; catalysts handling & testing; corrosion; safety aspects; troubleshooting; tenders & technical offers; technical forecasts based on pilot plant data.

Programme

Day 1

- Hydrocracking schemes
- Product properties
 - Types of reactions and kinetics
 - Kinetics: HDN, HDS, Hydrogenation, cracking
 - Reaction Mechanism - Normalisation
- Catalysts
 - Composition - Hydrogenation function - Acidity - Amorphous - Silica-Alumina - Zeolites
 - Properties of catalysts (e.g. SA, PV, MPD, strength etc)
- Catalyst manufacture
 - Support- Zeolite- Extrusion- Calcination- Impregnation - QC & Analyses
- Commercially available hydrocracking catalysts
 - Topsoe- ART- Axens- Criterion / Shell

Day 2

- Feedstocks
 - Type - Contaminants
- Catalyst handling
 - Reactor loading - Presulphiding procedures - Unloading
- Catalyst testing
 - Best Practices pretest - WABT Temperature profile - WHSV - Recycle cutpoint - Pressure
 - Gas to oil ratio - Critical Measurements
- Calculations
 - Conversion- Hydrogen consumption- Normalizations of WABT's

Day 3

- Corrosion
 - High-temperature - Aqueous - Wash-water injection to prevent corrosion
- Safety aspects
 - Catalysts - H₂S - Polycyclic Aromatics - NH₃- Sulphiding Compounds- Ni(CO)₄
- Troubleshooting
 - Reasons for malperformance in- How to identify/rectify malperformance
 - Invitation to tender/Technical offer preparation
 - How to prepare a technical forecast based on pilot plant data