Hydrotreating & Hydrocracking Process Technology

Date		($)Fees	
23 February -27 February 2025	Kuala Lumpur	3500	Register Now

Why Choose this Training Course?

This comprehensive course overlays the process fundamentals and sound knowledge of Hydro-treating and Hydro-cracking processes where Hydrogen is a key material in the upgrading and treatment of refinery products and fractions. A review of the state-of-the-art in process design, energy and mass integration will be presented as potential key improvements.

In-depth practical review of Hydro-treating/cracking technologies is provided across the course topics. The contents focus on the Hydro-conversion of heavy products, distillates, diesel, and naphtha into other hydrogenated/lower molecular weight products, besides saturated products with enhanced Cetane number, free of sulphur, nitrogen and metals. The course also discusses some process design/chemistry and engineering principles for such processes and presents scope for improvements.

This course is valuable to engineers/scientists, designers and researchers involved in the industry of Hydro-conversion in refiners. Yet it is most beneficial to those professionals with experiences in other fields and willing to acquire knowledge in Hydro-conversion processes.

This course will feature:

- Lectures, exercises and team work in some areas of process design and improvement
- Real studies that exhibit improvement solution for energy/environment
- Knowledge transfer of instructor’s extensive engaged industrial consultations
- Practice of Excel-based design tools for mass/energy integration in refining plants
- Open discussion on actual problems/data for design and improvements

What are the Goals?

By the end of this course, participants will be able to:

- Develop deep understanding of mass/H2/energy balance in refining processes
- Gain in-depth knowledge of the state-of-the-art of material and energy integration
- Evaluate different flow schemes for hydro-treating and hydro-cracking processes
- Manipulated process design and operation variables for better H2-conversion performances
- Master experiences of chemistry/kinetics, function of catalysts, clean production, environmental issues of very typical upgraded fuel productions

Who is this Training Course for?

The course is of great significance to process/operational engineers, technicians, control engineers, designers, scientists and researchers working closely in the refining industry in general or particularly Hydro-cracking, Hydro-treating processes. It is also substantially beneficial to other professionals and experts who have considerable experiences in other fields of business and keen to gain a sufficient knowledge in the particular industry of Hydro-conversion. All levels of professionalism are eligible for the course, ranging from young-fresh personnel to highly experienced ones.

This course is suitable to a wide range of professionals but will greatly benefit:

- Process and development engineers
- Plant managers
- Operational engineers/control personnel
- Researchers/scientists
- Project and design engineers

How will this Training Course be Presented?

This course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes course materials, proposed reading/state-of-the-art of the course content, lecture talks, exercises, team works and discussions, and solved applications. The nature of the course will be interactive and a practice of how to think, not what to think will be mastered. The philosophy of the course delivery will be:

- Development of a deep understanding of the-state-of-the-art of all contents and topics
- Analysis and improvement of some case studies with respect to economics and environment
- Practices in process design/simulation of specific applications based on Excel or commercial packages if available

The Course Content

Day One: Introduction: The Basics

- Fundamentals of Mass/Hydrogen and Energy Balance in Refineries
- State-of-the-Art of Material and Energy Integration
- Fundamentals of Petroleum Refinery Processing: Downstream Crude Oil Refining
- Products’ Specifications and Characteristics
- Process Design/Optimisation and Heat Integration Schemes
- Environmental and Economic Issues

Day Two: Hydro-Treating – Fundamentals and Principles

- Introduction to Hydro-Conversion Processes and H2 Sources
- Process Flow Schemes
- Process Chemistry and Kinetics
- Catalysts/ Heat of Reactions
- Operating Conditions, Principles and Design Considerations
- Hydrogen Requirements for Hydro-treating

Day Three: Hydro-Treating – Advanced Processing

- Reactors Design
- Applications to Naphtha, Middle Distillate, Gas Oil and
- Atmospheric Residue Desulphurisation
- Saturation of Benzene in Gasoline
- Potential Improvements for Material and Energy Savings
- Clean Diesel Hydro-treating Process Technology – Critical Issues

Day Four: Hydro-Cracking – Fundamentals and Principles

- Feed Stocks and Products
- Process Chemistry/Kinetics
- Catalysts/De-activation and Re-Generation
- Products Quality and Yields: Process Configuration, Catalyst Type and Operating Process Variables and Parameters
- Reactors Technology for Hydro-cracking
- Single Stage Hydro-cracking Process Technology

Day Five: Hydro-Cracking – Advanced Processing

- Two Stage Hydro-cracking Process Technology
- Process Design Features
- Hydrogen Balance and Consumption
- Scope for Process Integration Improvements
- Hydrogen Balance/Integration and Management
- Steam/Methane Reforming

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