

Organised by Global Technology Forum

Hydrocracking



11 – 13
October 2011

London
gtforum.com/hydrocracking

Key topics:

- Hydrocracking basics
- Catalysts
- Practical reactor kinetics
- Feed effects
- Process variables
- Monitoring and troubleshooting
- Residue conversion
- Q&A session



Introduction, who should attend and learning objectives

The ERTC Hydrocracking course is a comprehensive core skills course for professionals dealing with all aspects of Hydrocracking units.

The course will be highly valuable to all personnel and engineers involved in the operation, design and troubleshooting of Hydrocracking facilities.

Additionally, the course will be useful to any technical personnel wishing to gain a perspective of how Hydrocracking fits into the operation of a complete refining plant. Those who are experienced in other fields and seek a review of the fundamentals of Hydrocracking will also find this course most beneficial.

Upon completion of this course, participants will have a solid understanding of the key elements associated with the design, operation and troubleshooting of Hydrocracking units.

This will include the impact of feed quality, catalyst, operating condition and process configuration on product qualities. In addition the course provides some very practical insights into troubleshooting, optimisation and safe operation.

Course presenters

Jake Gotham Lead Process Engineer, Chevron

Jake Gotham provides technical service for Chevron Lummus Global's customers in Europe and Russia. He also acts as a hydroprocessing consultant for Chevron's refineries in the UK and South Africa. Prior to his current role, Jake worked for Chevron at their Pembroke refinery in the UK as a process engineer supporting hydroprocessing, distillation and thermal cracking units. He has also worked in refinery business planning.

Michel van der Laan Technical Consultant, Chevron

Michel is a Technical Consultant working for Chevron Lummus Global. In this role he is responsible for providing technical support to CLG's EMEA client base in the field of hydrocracking, hydrotreating and dewaxing. Prior to his current role, Michel worked at BP's Rotterdam refinery as the lead project engineer for the FCCU area. He previously worked as a process engineer supporting the refinery's hydroprocessing, reforming, isomerisation, alkylation and MTBE processes.



Course programme (registration 8.30am, course starts 9.00am, course ends 5.00pm)

Tuesday 11 October

Introduction and basic terminology

What is hydroprocessing? / Hydrocracking vs hydrotreating / Typical flow diagram / Typical process conditions / Terminology and acronyms

Hydrocracking basics

What is a hydrocracker? / History of hydrocracking / Hydrocracking licensors

Hydrocracking chemistry

Typical molecules / Desirable reactions – pretreating, aromatic saturation, hydrocracking / Undesirable reactions – recombination, PCA build-up, thermal hydrocracking / Hydrogen consumption and heat release

Process configurations

Single stage once through / Single stage recycle / Two stage recycle / Other flow-schemes

Hydrocracking catalysts

Characteristics / Properties / Components / Manufacture / Layering / Regeneration

Kinetics

Basic kinetic theory and formulae / Why normalise operating data? / Worked example of normalisation / Examples of advanced normalisation techniques

Feed effects

Feed cut-point / Straight-run versus cracked feed / Effect of nitrogen / Effect of feed contaminants

Wednesday 12 October

Process variables

Effect of variation in:
Feed rate / Partial pressure / Gas-to-oil ratio / Reactor temperature / Temperature profile / Recycle cut-point / Per pass conversion

Reactor internals

Why do reactors have multiple beds? / Purpose of reactor internals / Examples of reactor internals

Product recovery

Fractionation basics / Fractionation troubleshooting / Fractionation optimisation / Fractionation performance monitoring

Shutdown guidelines

Short-term shutdowns / Medium-term shutdowns / Long-term shutdowns

Catalyst changeouts

Importance of well-managed catalyst changeouts / Catalyst unloading / Process inspection / Catalyst loading

Start-up guidelines

Introducing oil to dry catalyst / Sulphiding / Titration / Reduction of noble-metal catalysts

Thursday 13 October

Emergency guidelines

How to respond to unit upsets:
Loss of makeup gas / Loss of recycle compressor / Loss of feed / Temperature excursion

Monitoring, troubleshooting and optimisation

Monitoring techniques for:
Feed quality / Rotating equipment / Heat exchangers / Furnace / Reactor / Air-coolers
Maximising utilisation / Maximising upgrading / Energy optimisation

Residue processing

Typical feedstocks / Residue processing chemistry / Fixed bed, moving bed and ebullating bed processes / Resid catalysts and deactivation

Metallurgy and corrosion

Typical materials of construction / Common corrosion mechanisms / Corrosion mitigation strategies



Training course fee (per delegate)

For bookings received before 2 September 2011 Course Fee = **£1999 +20% VAT**
A late booking supplement of £300 +20% VAT will be applied to all bookings received after 2 September 2011

Reservation form

Please make a reservation for the following delegate:

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Training

2011 Course listings

Blending

7 – 9 March 2011, London
www.gtforum.com/blending

Improving refinery profit margins

21 – 23 March 2011, London
www.gtforum.com/refineryprofit

Introduction to refining

4 – 6 April 2011, London
www.gtforum.com/introrefining

Distillation

4 – 6 May 2011, London
www.gtforum.com/distillation

Fluid Catalytic Cracking

1 – 3 June 2011, London
www.gtforum.com/fcc

Wastewater treatment

September 2011, London
www.gtforum.com/wastewater

Technology selection and implementation

22 – 23 September 2011, London
www.gtforum.com/technology

Catalytic reforming

September 2011, London
www.gtforum.com/reforming

Hydrocracking

11 – 13 October 2011, London
www.gtforum.com/hydrocracking

Energy efficiency

9 – 11 November 2011, London
www.gtforum.com/energy

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For more information, please visit the individual website listed above or send us an enquiry via training@gtforum.com



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