

Organised by Global Technology Forum

Hydrocracking



Training

25 – 27
October 2010

London
gtforum.com/hydrocracking

Key topics:

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

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Training
Meetings of minds

Introduction and who should attend

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.

Learning objectives

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 presenter

Jake Gotham Lead Process Engineer, Chevron

Jake provides a technical service for Chevron Lummus Global's customers in Europe, Africa 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.

Jake holds a masters degree in chemical engineering, is a Chartered Engineer and a Member of the Institution of Chemical Engineers.



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

Monday 25 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

Tuesday 26 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

Wednesday 27 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 20 September 2010 Course Fee = **£1999 +17.5% VAT**
A late booking supplement of £300 +17.5% VAT will be applied to all bookings received after 20 September 2010

Reservation form

Please make a reservation for the following delegate:

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2010 Course listings

Blending

10 – 12 March 2010, London
www.gtforum.com/blending

Watertreating

17 – 19 March 2010, London
www.gtforum.com/watertreating

FCC

24 – 26 March 2010, London
www.gtforum.com/fcc

Introduction to refining

12 – 14 April 2010, London
www.gtforum.com/introrefining

Distillation

5 – 7 May 2010, London
www.gtforum.com/distillation

Improving refinery profit margins

5 – 7 May 2010, London
www.gtforum.com/refineryprofit

Hydrogen production by steam reforming

23 – 25 June 2010, London
www.gtforum.com/hydrogenprod

Wastewater treatment

27 – 29 September 2010, London
www.gtforum.com/wastewater

Crude oil desalting

27 – 29 September 2010, London
training@gtforum.com

Hydrocracking

25 – 27 October 2010, London
www.gtforum.com/hydrocracking

Catalytic reforming

December 2010, London
www.gtforum.com/reforming

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



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