

**TRAINING TITLE**

**HYDROCRACKER AND BASE OIL PROCESS – BASIC**

**Training Duration**

5 day

**Training Venue and Dates**

Ref. No. PE315	Hydrocracker and Base Oil Process - Basic	5	06-10 Oct 2025	\$5,500	DUBAI, UAE
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In any of the 4 or 5-star hotels. The exact venue will be informed later.

**Training Fees**

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

**Training Certificate**

**Define** Management Consultants Certificate of course completion will be issued to all attendees.

**TRAINING DESCRIPTION**

This 5-day course on Hydrocracker and Base Oil Process – Basic is designed to provide participants with foundational knowledge on the hydrocracking process, the technology behind base oil production, and the operational considerations required to run these systems effectively. This course will cover the principles, equipment, and operational parameters involved in hydrocracking and base oil production, helping participants understand how these processes contribute to refining operations and product development.

**TRAINING OBJECTIVES**

**By attending this course, participants will:** [www.definetraining.com](http://www.definetraining.com)

1. **Understand the Hydrocracking Process:** Gain a solid understanding of the hydrocracking process, its objectives, and how it transforms heavy hydrocarbons into lighter, higher-quality products.
2. **Learn about Base Oil Production:** Understand the production of base oils, their significance, and their applications in various industries, including lubricants and automotive fluids.

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3. **Explore Process Equipment:** Familiarize participants with the key equipment involved in hydrocracking and base oil production, including reactors, compressors, separators, and hydrogen systems.
4. **Optimize Operations:** Learn how to optimize the performance of hydrocracking units and base oil processes for higher yields, better product quality, and improved energy efficiency.
5. **Troubleshooting Skills:** Equip participants with practical troubleshooting skills to handle common operational issues related to hydrocracking and base oil production.
6. **Safety and Environmental Awareness:** Understand the safety considerations and environmental implications of operating hydrocracking and base oil production systems.

### WHO SHOULD ATTEND?

This course is ideal for:

- **Refining engineers and operators** who are involved in the design, operation, or maintenance of hydrocracking and base oil production units.
- **New professionals** in the oil and gas industry who wish to gain a solid foundation in hydrocracking and base oil processes.
- **Project managers and maintenance staff** seeking to improve operational efficiency and troubleshoot issues in hydrocracking and base oil units.
- **Safety officers** who need to understand the operational risks and safety measures associated with hydrocracking processes.

### TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

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**COURSE PROGRAM:**

**Day 1: Introduction to Hydrocracking and Base Oil Processes**

- Overview of the hydrocracking process and its role in refining
- Introduction to the production of base oils
- Basic principles of hydrocracking: Catalytic cracking, hydrogenation, and hydroprocessing
- Overview of the feedstock for hydrocracking (vacuum gas oil, distillates, etc.)
- Types of hydrocracking processes: Mild hydrocracking vs. deep hydrocracking
- Differences between hydrocracking and other refining processes (e.g., fluidized catalytic cracking)
- Introduction to base oil production and its applications
- Overview of hydrocracker and base oil unit configurations

**Day 2: Hydrocracking Unit Design and Operation**

- Detailed explanation of hydrocracking unit configuration: reactors, separators, and compressors
- Key equipment in a hydrocracking unit: Reactors, hydrogen supply systems, separation units, and heat exchangers
- Operating principles of hydrocracking reactors: Temperature, pressure, and hydrogen-to-feed ratio
- The role of hydrogen and catalysts in the hydrocracking process
- Process flow in a hydrocracking unit: From feedstock preparation to product separation
- Key operational parameters: Temperature, pressure, and residence time
- Troubleshooting common issues: Catalyst deactivation, product yield variations
- Safety considerations and operational challenges in hydrocracking units

**Day 3: Base Oil Production and Catalysts**

- Introduction to base oils: Types of base oils (Group I, II, III, IV, and V)
- Feedstock for base oil production: Distillates, lube oil stocks, and recycled oils
- Role of hydrocracking in base oil production: Saturation, cracking, and de-waxing
- Process flows for base oil production from hydrocracked feedstocks
- Catalyst technologies used in hydrocracking and base oil production
- Understanding catalyst activity, deactivation, and regeneration

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- Key factors influencing catalyst selection for hydrocracking and base oil production
- The role of catalysts in controlling product quality and yield

**Day 4: Process Optimization and Troubleshooting**

- Optimizing hydrocracking unit performance: Maximizing yield and product quality
- Operational strategies for improving base oil production and reducing costs
- Managing hydrogen consumption and maximizing the hydrogenation process
- Key performance indicators (KPIs) for monitoring hydrocracking and base oil units
- Troubleshooting common operational issues in hydrocracking units and base oil production
- Issues related to catalyst deactivation, reactor fouling, and hydrogen supply
- Addressing quality control problems: Viscosity, pour point, and sulfur content
- Case study analysis: Identifying and resolving operational challenges in hydrocracking units

**Day 5: Safety, Environmental Considerations, and Future Trends**

- Safety considerations in hydrocracking and base oil processes: Handling high-pressure hydrogen, flammable hydrocarbons
- Environmental impact of hydrocracking: Emission control and waste management
- Regulatory compliance and environmental standards in base oil production and hydrocracking units
- Equipment safety systems and alarms
- The future of hydrocracking and base oil production: Trends in catalyst development, energy efficiency, and sustainability
- Advances in hydrogen management and alternative feedstocks
- Case study: Reviewing a modern hydrocracking and base oil production plant
- Course wrap-up: Key takeaways and Q&A

**NOTE:**

**Pre-& Post Tests will be conducted.**

**Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.**

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