Natural Gas Production & Processing

From Wellhead to LNG Markets

Focus on: The Manager ☐ The Specialist ☑ Spotlight Programme ☐ Hands-on Skills ☑

Course Overview

This Natural Gas Production & Processing training course provides a comprehensive understanding of gas field production, from the wellhead to market. It covers key concepts, equipment, and processes involved in gas separation, treatment, and liquefaction, offering an up-to-date overview of gas conditioning technology, including dehydration, sweetening, and processing operations.

Participants will gain insights into gathering, separation, and final treatment systems, ensuring compliance with export-quality specifications for natural gas and its byproducts, such as condensate and LPG. A key focus is Liquefied Natural Gas (LNG) production, covering pre-treatment, liquefaction, storage, and transportation.

By the end of the program, attendees will have a strong grasp the basics of production facility design and operation, understanding the advantages, limitations, and challenges of various systems.

Course Objectives		This Course is Ideal For:	
1	**Learn Natural Gas Fundamentals**: Key properties, impurities, treatment objectives and the significance of heating value/BTU.	✓	Process engineers and production engineers
2	**Gain Insights into Gas Transportation & Separation Systems** – Explore gas transportation methods, gas-liquid separation techniques, separator types.	✓	Petroleum and Chemical engineers
3	**Understand Hydrate & Mercury Removal Challenges** – Mercury contamination, hydrate formation, and prevention (MEG, TEG systems).	✓	Field operators and technical staff
4	**Master Natural Gas Dehydration & NGL Recovery** – Heavy hydrocarbon removal, acid gas treatment (H_2S, CO_2), and sweetening processes.	✓	Company personnel involved in gas treatment and processing
5	**Enhance Your Knowledge of Gas Processing; Equipment** – Gain hands-on insights into process control & instrumentation.	✓	Entry-level process engineers new to the field
6	**Explore LNG & Gas Market Dynamics** –LNG specifications, pricing, transportation, fiscal metering and gas value chain economics.	✓	Managers, government officials, and supervisors overseeing gas processing operations
7	**Boost Troubleshooting & Optimization**: Resolve machinery issues, foaming, corrosion, and improve efficiency and reliability.	✓	Managers responsible for planning, developing, or upgrading gas processing facilities

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Course Content		
Day	**Theme**	**Coverage**
1	Introduction to Natural Gas Processing	• Introduction to natural gas processing • Physical properties of natural gas • Impurities in natural gas • Definition and objectives of treating • Fundamentals and of natural gas engineering • Gas Transportation • Natural gas production • Heating value/ BTU (British Thermal Unit) importance
2	Gas-Liquid Separation Systems	• Natural Gas Liquid (NGL), Gas-to-Liquid (GTL), Liquefied Petroleum Gas (LPG) • Gas-liquid separation system • Separator types • Instrumentation, control, and measurement of natural gas and gas liquids • Field application of instruments • Structured approach to the process operation • Process plant machinery specific plant issues • Contaminants removal
3	Mercury Removal Systems / Hydrate Problems / Dehydration of Natural Gas	• Mercury problem in natural gas • Process description of the mercury removal units • Hydrate formation conditions/ Hydrate prevention and mitigation methods • Water content estimation • Water dew point control • MEG system • Process description of the TEG (Triethylene Glycol) dehydration unit • The factors affect the TEG dehydration unit performance, & Troubleshooting
4	Dehydration of Natural Gas / NGL Recovery	• Removal of heavy hydrocarbons (LTS & turbo expanders systems) • Condensate stabilization - cryogenics applications – turbo-expanders • Alkanolamine Processes General Design Criteria • Process Flow Schemes and Process Control • Removal of acid gases (H2S, CO2)

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		• Sweetening systems: membrane system • Physical processes / Alkaline Carbonate Salt Processes • Hybrid Processes • Batch and non-Regenerable Processes • Troubleshooting Operating Problems: • Heat Stable Salts, Corrosion and Foaming
5	Gas markets and Gas economics	• Process Flow Schemes and Process Control • Transportation/ Flow assurance • Fiscal metering • Compressors • Gas sales specs • Gas markets and prices • LNG specs and markets • Gas value chain

Course Assessment	Certification
Participants will be assessed on:	Upon successful completion of the course, participants will receive a certificate of achievement, recognised by industry professionals and employers
Participation in sessions	
Completion of exercises & case studies	
Performance in assessments	

Course Instructor

With BSc and PhD degrees from the UK, and with over 30 years of refinery technology, operations, and management expertise for several famous-name oil companies, this speaker is now an internationally-famous chemical engineering consultant.
As a Chartered Chemist, a Member of the Royal Society of Chemistry and a Member of the American Institute of Chemical Engineers, he holds honorary appointments at a number of European universities and conducts cutting-edge research into vacuum distillation, gas recovery, absorption and pyrolysis.

