

A to Z of Natural Gas & LNG

Course Designer: Dr. U. K. Dutta

The Course is designed for:

1	Engineers and Consultants from Natural Gas industry, who want to get a total perspective of the natural gas industry from gas field to the production, transportation, natural gas processing, and LNG Terminals.
2	Made easy for Corporate Planners, Finance and HRD personnel from the natural gas industry, who want to know about the industry they are working in.
3	Graduate Trainees of a company doing business in the natural gas and related industries.



About the Course:

The course walks you through the entire chain starting with oil/gas field production, transportation, processing and utilization of natural gas.

It is an adapted version of a popular program “A to Z of Oil & Gas to Petrochemicals” appreciated by major international companies worldwide. The focus in this version of the course is on **natural gas and LNG** - upstream and down-stream.

It is a macro-level presentation starting with simple definitions, concepts and terminologies used in the industry. The value chain from natural gas production down to gas processing, conversion of gas to LNG, LNG cycle and LNG terminals both upstream and downstream is presented in an animated block diagram. We go further step by step expanding each of the blocks into flow diagrams, covering the technologies and description of facilities. **M a c r o - l e v e l** economics with order of magnitude values are presented.

Health, Safety and Environ aspects of natural gas industry and LNG cycle is explained.

Presented in a simple and lucid way, the course is popular with both technical and non-technical executives.

Objective type quizzes in each module helps in assimilation of the contents of the course.

Course Content:

No	TOPIC	DESCRIPTION
1	Basic Definitions, Concepts & Terminologies	<ul style="list-style-type: none"> ● Origin of hydrocarbon reserves. ● What are oil, gas and condensate. ● Industry specific terminology. ● Composition and types of natural gas. ● The six 'G's – NGL, LNG, LPG, CNG, PNG and FLNG. ● Field life, production profile transition and opportunities it offers. ● Natural gas characteristics ● Crude oil and natural gas value chain: source to end products and consumers.
2	Gas Field Production and Processing	<ul style="list-style-type: none"> ● Overview on exploration ● Primary, secondary and tertiary recovery. ● Processing schemes, offshore and onshore. <ul style="list-style-type: none"> ○ Separation systems ○ Dehydration of oil and gas ○ Gas compression ● Gas lift and gas injection schemes. ● Fixed platform and floating production facilities (FPSO) ● Offshore field configuration ● Deep sea production system
3	Transportation	<ul style="list-style-type: none"> ● Pipeline system and Marine transportation system ● Natural gas pipeline configuration. ● Basic parameters for optimization. ● Booster stations. ● Construction of a cross country pipeline. ● Pigging facility
4	Natural Gas Processing	<ul style="list-style-type: none"> ● Why gas processing? ● Configuration of a gas processing terminal. ● Gas treatment processes <ul style="list-style-type: none"> ○ Gas dehydration ○ Gas sweetening ○ Gas conditioning ● Cryogenic Gas Processing scheme to produce LPG, and Petrochemical feedstock. <ul style="list-style-type: none"> ○ External refrigeration process ○ Turbo-expander process ● LNG Upstream – Liquefaction and tanker loading. ● LNG Downstream <ul style="list-style-type: none"> ○ Unloading, system ○ Storage and Pumping ○ Regasification.

5	Health, Safety and Environment	<ul style="list-style-type: none"> ● How safe is LNG ● Hazardous properties ● Comparison with other fuels. ● Major accident records ● Safety n transportation <ul style="list-style-type: none"> ○ Tanker types & safety features ○ Navigation safety ○ Berthing safety ● Unloading jetty safety practices ● LNG storage types and safety features ● LNG terminal safety guidelines
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Methodology of presentation:

- Flash version of power point presentation.
- Narration on each slide along with animation and script.
- Quiz questions and answers.

The program has been popular with both engineers and non-technical executives at all levels. Ideal for orientation of graduate trainees and fresh recruits to the industry.

Typical Course Benefits:

- Provides you with a refresher on basics and terminologies of oil and natural gas industry.
- Gives you a view of the total natural gas chain.
- Develops better understanding of the processes and technology.
- Develops understanding of macro-level economics, business opportunities and planning aspects.
- Enhances client interaction and marketing capability.

Course Developer:

Dr. U.K. Dutta is a consultant in the Hydrocarbon Process Industry, focusing on specialist consultancy services and training. Graduate in Chemical Engineering from IIT and Doctorate from Loughborough University of Technology (U.K), he has over 50 years of experience in Hydrocarbon Industry (upstream, midstream and downstream) in the areas of **process and technology, engineering consultancy, project development, marketing and organizational development**. He had work experience and association with major Indian and International companies like EIL, Union Carbide, CE Natco, Lummus Crest, Triune and Rotary Engineering. He has presented papers on Technology Development and Technology Transfer in major International Conferences such as ASCOPE and CHEMTECH.

He has conducted customized training programs for executives of major companies like Petronas (Malaysia), Petrosin (Singapore), Vopak (Singapore), PTT (Thailand), Aker Kvaerner (Singapore), The Yokogawa Group, Technip (India), Ernst & Young, Triune Projects (India), Indian Chamber of Commerce, Solar Turbines (Singapore), Solar Turbines Inc. (San Diego, Brusels) and others. He has conducted several programs for executives in Singapore as a faculty with National University of Singapore's industry training programs.