

The “A to Z” of LNG

Introduction:

The course has been specially developed for operators, engineers, planners and GETs involved with the Natural gas and LNG industry. The course has been conducted for major companies as part of their Technical Program curricula.

It covers a wide range of topics from the source of LNG to gas processing, liquefaction, transportation and utilization.



What you will learn:

No.	TOPIC	DESCRIPTION
1	The LNG Cycle	<ul style="list-style-type: none"> ● Introduction ● Origin of Hydrocarbon Reserves ● What is Natural Gas ● Gas fields and reserves ● Natural Gas Composition ● Physical properties of Natural Gas ● Hazardous properties of Natural Gas ● Why LNG ● LNG Cycle – Source to the consumer ● Major LNG producers
2	LNG Upstream – Process and Economics	<p>Part- A Process:</p> <ul style="list-style-type: none"> ● Production System for Gas – offshore and onshore ● Gas Purification – <ul style="list-style-type: none"> - Dehydration - Sweetening - Mercury removal ● Basics of Refrigeration ● Liquefaction of Natural Gas ● Storage of LNG ● LNG Tankers – capacity and loading system

		<p>Part – B Economics</p> <ul style="list-style-type: none"> • Price of Gas • Cost of Liquefaction • Utility consumption
3	LNG Downstream – Receiving Terminal	<ul style="list-style-type: none"> • Tanker Unloading System • LNG Storage • Revaporization of LNG • Heat Recovery • Utilization and distribution of gas • Cross country pipeline and consumer development • Economics of LNG Receiving Terminal- utilities and investment • Cost of gas at battery limit
4	Safety and Environment	<ul style="list-style-type: none"> • Hazards in Natural Gas and LNG handling • Safety features in processing of LNG • Safety features in storage and transportation of LNG • Accident case histories and causes
5	Macro-economics and technology trends	<ul style="list-style-type: none"> • Factors affecting LNG price • Investment consideration – upstream and downstream • Cost at the tanker • Transportation costs • Site selection criteria • Marine jetty design consideration and navigation safety • Economic LNG plant capacity • Small scale LNG plants • Current trends in technology • Major LNG projects worldwide

Methodology of presentation:

- Microsoft Power Point with colorful slides packed with information.
- Video strips and flash animations for better clarity.
- Highly interactive with total involvement of the participants.
- Interesting and Interactive Quiz Sessions, group tasks for better assimilation.

Course Materials:

- Copy of presentation slides (b/w) with sketches, block diagrams, flow diagrams and photographs for clarity and concepts.

Course Conductor: (Any two of the following)

Dr. U.K. Dutta

Doctorate in Chemical Engineering from Loughborough University of Technology (U.K), he has over 30 years of experience in Hydrocarbon Industry (upstream and downstream) in the areas of **process and technology, engineering, project management, marketing and organizational development**. He had work experience in process design and engineering 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. Presently he is running his own consultancy firm, 'Technomanage Consultants' with base at Singapore and India. Has acted as process consultant for technology selection and process design for major Gas processing and LNG projects. **He has conducted training for executives for major companies like Petronas (Malaysia) and Petrosin (Singapore), Kvaerner (Philippines), Yokogawa (India) and open programs for executives in Singapore jointly with National University of Singapore.**

Mr. S.K.Basu

Graduate in Mechanical Engineering and Master's degree holder from Carnegie Institute of Technology, USA. Over 35 years experience in engineering, construction, commissioning of major projects in oil, natural gas, refinery, petrochemical and power industries. Extensive international experience in project assignments with companies like Fluor Daniel (USA), Brown & Root (USA), MW Kellogg (U.K), Davy Engineering (UK), Toyo Engineering (Japan) and others. He had extensive experience in design, engineering, construction and commissioning of major natural gas processing plants and pipelines. During his tenure as General Manager (Engineering) at Engineers India Ltd. and as a Director (Pipelines) in a major EPC Company, he was responsible for engineering and consultancy for LNG Terminal and natural gas pipeline projects. **He has conducted training for executives for major companies like Petronas (Malaysia), Kvaerner (Philippines), Yokogawa (India), Solar Turbines (USA/Europe) and other international majors.**

Mr. S.C.Gupta

Graduate and Master's degree in Chemical Engineering from IIT, India, and trained in Institut Francais Du Petrole (IFP), he has over 35 years of experience in both upstream and downstream of oil and gas industry. He has worked with major companies like Indian Institute of Petroleum (Process Design), Indian Oil Corporation Ltd. (Technical Services and Project Management), Engineers India Ltd. (Process Design and Process Engineering). He has been responsible to develop FEED package for major oil and gas processing plant and refineries. His last assignment was with Stone & Webster, a major technology company in refinery and petrochemical area. He has conducted training programs with major companies in India and Singapore. Currently he is working as Training Specialist with Technomanage Consultants, New Delhi.