

Who Should Attend?

Commercial and managerial staff looking for a concise overview; Engineers new to the LNG industry; Operations supervision staff and senior plant personnel; Specialists looking to broaden their general knowledge of LNG; Staff involved in LNG commerce interested in LNG technical fundamentals; People wishing to understand “LNG jargon”

The Participant Will Learn:

- LNG industry review, Technology
- LNG facilities world-wide
- A survey of commercial and contractual issues
- About project costs, feasibility and development
- Some fundamentals of gas technology
- To apply knowledge of LNG gas pretreatment, drying and refrigeration
- To describe liquefaction technologies and appreciate the differences
- The types of compressor drivers, gas turbines and electric motors
- About LNG storage, shipping and terminals

This LNG Short Course is designed for participants requiring moderate technical coverage coupled with information on LNG commerce and all parts of the LNG Chain. Designed to be presented over 5-days, the course covers technical LNG basics, facility operation topics, technical and design issues. Key commercial issues are also discussed. Selected exercises and syndicates are used throughout the course that reinforce the main topics of LNG trade and technology.

In-House versions are available with either increased technical and operational emphasis or increased project and development emphasis. More in-depth coverage for technical, production and processing personnel is available in our intensive 10-day G-4 Gas Conditioning and Processing – LNG course.

Course Outline

OVERVIEW

- LNG industry review, technology
- Historical development of LNG
- LNG facilities worldwide

COMMERCIAL

- The LNG chain and contracts
- Commercial issues, projects, trading
- Project costs
- Project feasibility and development
- LNG trading

TECHNICAL FUNDAMENTALS

- LNG and gas engineering basics
- Hydrocarbon fundamentals, vapor-liquid equilibrium, hydrates

GAS PROCESSING BASICS

- Upstream processing
- Feed-gas pretreatment
- Dehydration-molecular sieve
- H₂S, CO₂ removal
- Amine, Sulfinol, hot carbonate, etc.
- Trace contaminants, mercury, etc.

REFRIGERATION & LIQUEFACTION

- Refrigeration principles: simple & complex
- Liquefaction technologies
- Concepts and process fundamentals
- LNG process configurations
- Cascade and mixed refrigerant variants
- End flashes, nitrogen content, etc.
- Example simulation (optional)
- LNG heating-value/quality
- How LNG is different – cryogenics



MAJOR EQUIPMENT

- Heat exchangers
- Compression and compressor types
- Cryogenic pumps, LNG expanders
- Compressor drivers: gas turbines, steam turbines, electric motors, helpers

SHIPPING

- LNG ship technical and operation
- Fleet size example
- Ship loading/unloading

STORAGE & TERMINALS

- Terminal planning and siting
- Safety, environment, and hazard issues
- LNG storage – technical and operation
- Boil-off gas management, vaporization, cold utilization
- Terminal equipment and operations
- Import terminals
- Markets for gas

FUTURE TRENDS & SUMMARY

- Future trends – technical / commercial
- Floating LNG (FLNG)
- Course summary and closing