2017-2018 LNG as a Bunker Fuel - LNGF (3 Days)

This LNG as a Bunker Fuel training course explains everything you need to know to ensure you are up to date with this exciting new development in the marine sector.

This three day course will enable you to make early and confident assessments of why, how and what LNG as Fuel (LNGF) will mean to you and your terminal or port.

Whether you are involved in new terminal to market LNG as Bunker Fuel or existing terminal planning a LNG Bunkering Setup we will guide you through the technical and commercial aspects of the decision making process.

Who should attend?

This course is aimed at Jetty Operators, Jetty Supervisors, Loading Masters, Ship & Barge Operators, Terminal Operators and Technical Management. If you are considering the advantages and disadvantages of using LNGF this course is for you. Moving from LNG Import and re-gasification to selling LNG in Liquid form to ship's using it as a fuel is a major investment in both time and money and this course will give you the tools to make the transition as smooth as possible.

What will you learn?

By the end of this course you will be able to:

- explain the legislative and commercial drivers for using LNG as Fuel
- evaluate the hazards related to LNG usage and handling
- Recognize the relevant regulatory acceptance by countries, port authorities, IMO and classification societies
- review design issues for marine gas fuel installations, including high pressure and low pressure gas supply systems
- determine the critical technical issues regarding design, fuel storage, bunkering and operation
- demonstrate an awareness of risk assessment methods to evaluate alternative design

Tank Terminal Training

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Course Outline

LNG Markets and Value Chain

Commercial aspects

- Supply / demand scenarios
- LNG pricing

LNG value chain

- Shipping
- Liquefaction
- Regasification
- Business models

Outlook and economics of LNG Bunkering

Reasons for using LNG for bunkers

- Driving factors for LNG bunker growth
- Cost comparison with HFO, MGO
- LNG vessel design and cost

Global Market Assessment

- LNG supplies and availability for the maritime sector
- Current order book for LNG fuelled vessels
- Is retrofitting an option?
- Gauging demand for LNG bunkering fuel

Which trade routes are commercially viable?

Advantages and uncertainties of using LNG as bunkers

- Longer term economics of using LNG as Bunkers
- LNG Bunkering Overview – Current Practices Worldwide

Vessel types and numbers using LNG for bunkers

- Geographical distribution of use
- Short voyage liner trades
- Deep Sea LNG carriers
- What, if any, limitations to vessel type are there?

LNG Bunkering value chains in place
The different designs for LNG bunker systems
Facilities and Infrastructure Available for LNG Bunkering
Global facilities available

- Existing infrastructure and locations
- Facilities in Asia existing and planned for Singapore, Japan, Australia
- What would be the optimum infrastructure system for Asia?
- Locations for bunkering
- Choosing the best option for each location Infrastructure costs
- What to allow for ~ Location and access~ Demolition and construction requirements ~ Shipping of plant ~ Permits and studies

Hazards and Risks to consider for the Optimum Asian infrastructure

- Climatic
- Political
- Security
- Logistical

What Are The Applicable Codes and Guidelines - ISM, IGC, ITF, OCIMF, IMO, ISO and SIGTTO?
Which regulations are compulsory? Which are a guide?

- International Safety Management
- International Gas Carrier Code ~ Description of the class of containment systems
- Guidance from IMO and SIGTTO
- Development of ISO Technical Specifications and Standards, Local requirements and global standards
- Is everyone working together?
- Identifying the Global Standards / Guidelines
- Local authority work ~ Asia ~ Europe ~ America

Classification Society role

- At what point are Classification Societies involved? ~ Projects and research carried out to date
- The current rules from Class for gas fuelled vessels ~ Which societies have guidance in place now
- LNG Bunkering Procedures
- LNG supply chain and inventory management
- Bunkering methods and logistics
- Ship to Ship (STS) transfer
- Bunker Barges
- Road Tanker (RTS) and trucks
- LNG bunker berth

Maintaining LNG custody transfer integrity

- During bunkering operations
- Integrating operations and cooperating with existing port facilities
- LNG Bunkering Facility Planning, Design And Development
- Facility size and location
- Target market

LNG Bunker cost to client

- ~ Assess Capital outlay ~ Asset purchase and maintenance ~ Finance cost and repayment terms
- Logistics / site layout and management equipment selection
- Type and size of all major equipment required for LNG bunkering
- Selection of storage tanks, LNG pumps and Boil Off Gas compressor
- Re-liquefaction requirements
- LNG jetty facilities
- Bunker barge size and containment type

Emergency Response Facilities : Case Study / Practical Exercise:
Selecting the Location, Bunkering Options and Identifying the Hazards for a New LNG Bunkering Facility

- **Choice for your LNG Terminal location**

~ Location of bunkering facility
~ Source of LNG supply for bunker use
~ Expected requirement for bunkering

- **Infrastructure development**

~ Design and development of facilities
~ Methods to be used to bunker vessels
~ Pipelines and remote storage

- **HAZID, Identify the project risks for terminal development**

~ Containment facilities
~ Machinery/Plant requirement
~ Personnel
~ Bunkering assets, vessels, road tankers
~ Construction
~ Political and geographical

· **Estimating costs of the project**
~ Construction time
~ Material cost
~ Personnel cost

Key Considerations for LNG Fuel

- Vessel Owner
- Market Assessment
- LNG suppliers and contract options
- Availability and Pricing
- Demand for LNG bunkering fuel ~ Confirm and assess locations ~ Types of vessels and quantities

Port infrastructure

- Integrating and cooperating with existing port facilities
- Infrastructure in trade routes
- Vessel operations
- Crewing, Training and Safety
- Risk and Safety Management in LNG
- Bunkering

General and specific risks with LNG

- Flammability
- Cold shock
- Fire and explosion

Risk Assessments to consider

- Commercial risks ~ Price, availability and quality
- Investment risks ~ Reliability of demand scenarios ~ Infrastructure

· **Operational risks** ~ Handling, safety and transfer integrity ~ Standards ~ LNG transfer and storage
· **Personnel risks** ~ Experience and training required ~ Numbers of personnel
· **Maintenance and asset integrity /Risk control measures**

- Safety exclusion zones
- Transfer procedures at the terminal
- Personnel Protective Equipment
- Emergency Shut Down system
- Training and drills ~ In House ~ Local emergency services

TTT Instructor : Capt. Shyam Paliwal

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- Experienced, proven, entrepreneurial maritime leader with record of high achievement and proactive approach to excellence who welcomes challenges as an opportunity to excel and recognizes that the satisfactions of accomplishment far outweigh the burden of leadership:

- 12 continuous years of successful hands-on problem solving and decision making experience in challenging, dynamic and multifaceted marine work environments at sea and ashore, in position of responsibility or other crucial decision-making leadership capacity.

- 7 years as senior officer aboard deep-draft LNG Tanker vessels transporting volatile cargoes in the world-wide liquid gas trade, with an unblemished safety record and outstanding personnel evaluations.

- 5 Years work experience at LNG and Oil Tanker Terminals in Korea in capacity of LNG advisor to Shell Shipping and Trading Company. Commissioned the 4 largest LNG carriers in the world the Q-Max vessels at LNG Import terminals in Korea. Each vessel is an LNG terminal on it's own with a Re-Liquefaction plant and an enclosed Flare.

- Supervised Building of 25 Oil and LNG Tankers at Samsung, Daewoo and Hyundai Shipyards in Korea as a Nautical Inspector while working for Shell in South Korea.

- 2 Years work experience as LNG consultant with Tank Terminal and Training Netherlands.

- Provided LNG marine operations, safety, and regulatory compliance consulting services to major energy and marine transportation companies.

- Significant shore side operations management experience with broad knowledge of commercial aspects of global maritime enterprise and energy shipping.

- **Master Mariner License IFOO-8700 from Government of India. Member of Nautical Institute UK.**

- LNG simulator training from Various Institutes worldwide Including Warsash Maritime Academy UK, and NYK Maritime Training Centre Yokohama.

We make people better!