LNG Training Courses

LNG FSRU DEVELOPMENT

With technical / engineering inputs from:

12-14 June 2017 - Houston
Sound understanding of the business fundamentals of floating LNG import terminals

About the Course

The first floating LNG import terminal, Excelerate’s Gulf Gateway in the US Gulf of Mexico, was commissioned more than ten years ago in 2005. Up to the end of 2016, 19 floating LNG import terminal projects have been commissioned around the World with six more in advanced stages of construction and approximately 30 more planned. Floating terminals offer some key advantages for an LNG importer: they can bypass the lengthy and costly construction of onshore storage tanks and can also offer flexibility in ownership and implementation. The largest capital cost item, LNG storage can easily be leased (chartered) rather than requiring substantial capital investment. If market conditions change, as they did for Gulf Gateway, the ship and often some of the equipment can be redeployed somewhere else; Gulf Gateway was decommissioned in 2012 when it was clear that LNG imports were not going to be needed in US Gulf. Floating terminals can also face less opposition in the permitting process, particularly if in deep water. The operational experience built up since 2005 has also created more confidence in the reliability of floating import facilities. While many aspects of floating LNG terminals are similar to the conventional onshore LNG terminals, floating LNG terminals also present new challenges, business models and opportunities. This course has been designed to provide both an introduction to LNG import projects in general and the specific features of floating terminals in detail.

The course will cover in depth these specific features, such as: technology choices to suit different marine and environmental conditions; storage volume choices and demurrage / partial cargo issues; new business models, such as chartering vs owning; weather / marine conditions issues, including safety issues such as the need to be able to seek refuge elsewhere; gas marketing and operational factors, including supply and send out reliability; and regulatory and environmental issues.

Poten’s Michael Tusiani, as well as being one of the pioneers of the industry, is also the principle author of the industry’s standard textbook: Fuel for a Changing World: LNG a Non-Technical Guide; 2nd Edition. Alongside Poten’s Gordon Shearer, Mr. Tusiani wrote this book to provide a complete guide to the industry, covering the commercial, trading and technical aspects. The course uses the book as its text book and will be provided as pre-reading and reference material. The Second Edition of the book has been extensively updated and covers the commercial realities of the LNG business in the latter half of the 2010’s.

Poten’s Floating LNG Import Terminal Course will provide a sound foundation of knowledge on the LNG industry but has been specifically developed to give the course participants the tool kit needed to deal with today’s LNG market and the opportunities presented by floating import solutions.

Who Should Attend

Staff who are moving into a management role developing an LNG import terminal project as an LNG seller, gas buyer, developer, energy regulator, government official, investor/lender or ship owner.
Our mission

Our objectives in the course will be to equip the participants with a toolkit to evaluate opportunities for using floating LNG import terminal solutions for specific situations and to fully understand the advantages and disadvantages compared with conventional onshore terminals. Floating solutions are very marine location specific and some technologies are better suited than others to specific conditions. These technical differences will be explained and the participant equipped to ask the right questions. Commercial and logistics factors are very important for floating terminals. We will explain what you need to know about these to be effective in the industry.

Building on these foundations, we can deal with how to implement projects and what may change how we do this. Real projects are implemented through an interlinked framework of contracts that define each party's roles, rewards, risks and responsibilities. We will provide an introduction to these. We will deal with the challenges of implementing floating projects in real gas markets.

Course tutors are all practicing experts in their field - currently advising clients on billions of dollars of investments.

The course will take place over three days and will combine presentations from practicing experts with case studies and workshops.

UNDERSTAND LNG FSRUs THROUGH CONCEPTUAL AND PRACTICAL TOOLS
Gain real-world experience through tested instruction techniques

Keynote real life experience shared by a senior pioneer in the FSRU business

Gary Smith, who previously headed up a major FSRU provider, will talk about how the floating import terminal business developed and the issues and solutions he found as he implemented projects around the world.

Case studies on real world LNG Import issues

In parallel with the sessions, course participants will be able to test their understanding of LNG import project formulation through a series of case studies. Participants will, with the help of our experts, be able to deal with technical and commercial problems that are encountered in developing an import terminal and particularly a floating terminal.

Exclusive Training

Poten’s LNG training has been developed and tested for the last ten years as our internal ‘LNG Boot Camp’.

Poten’s “LNG Boot Camp” has allowed Poten to expand our cadre of quality staff. This course was not in the past offered to outsiders but in response to numerous requests, we are now offering a range of courses designed for the industry.

What participants are saying about Poten’s Training Courses:

- Speakers were extremely interactive and informative!
- Topics were covered in-depth and explained well!
- Technical and market information were particularly great!
- Appreciated that any questions asked would get a good answer!
- Speakers were articulate and knowledgeable!
- The pacing of the coursework was perfect!
In-depth coursework delivered by unrivaled experts within the industry

Course syllabus

**Introduction to LNG**
Why is there a market for LNG and what is LNG needed for?
- issues around import substitution for other fuels
Key components of the LNG Value Chain and the overall mass and energy balance.
Traditional LNG business models

**Global Gas and LNG Markets**
Origins of the LNG trade and today’s pattern of trade.
Regional gas markets – how and why do they differ?
Specific issues around new import markets for gas and LNG
- anchor customers
Swaps, diversions and reloads

**LNG Value Chain in Summary**
Upstream – Stranded gas and key features of the different sources of gas
North American gas system – pricing at market nodes, transport capacity costs and the business of buying and selling gas.
Liquefaction – Key features of the process
LNG Shipping – ship sizes, containment system technology and propulsion.
LNG regasification – Terminal size, regasification technologies, onshore vs offshore, base load and storage issues.

**LNG Import Terminals in Detail**
Key issues around Onshore terminals and comparison with Floating solutions – berths, breakwaters and storage tanks
Matching to market demand – anchor gas buyers, seasonal and diurnal demand changes
Regasification technologies – sources of energy for vapourisation:
- sea water, air, combustion and integration with power stations and other uses of “cold”
Floating import terminal technologies in use and their key considerations: buoy-based, jetty based, offshore gravity based structures,
Choosing the optimum terminal configuration
Alternatives for mooring of “permanently moored” vessels
Environmental and Safety considerations – Onshore and Floating solutions contrasted
Permitting considerations

**Economics of LNG**
What drives capital cost differences?
Economies of scale vs market tranches and plant availability
Gas procurement economics – the importance of logistics and gas supply reliability
Shipping economics including ship and parcel sizes

**Specifics on Floating LNG Import Terminals**
Location – site selection considerations
Weather and marine conditions, geography, topography, geotechnical and hydrographic surveys
FSU vs FSRU
FSRU class requirements
Conversion vs New Build
Regasification technologies – Open loop, closed loop and hybrid systems. Regulatory and environmental issues.
Specifics of different vendors - Wartsila (Hamworthy) vs CPP
LNG transfer STS, across the jetty, flexible hoses vs hard arms
HP gas transfer, flexible vs hard arms
Dry docking considerations – where do Class stand on this
FSRU maintenance, permissible down time, penalty regimes for excessive downtime, Reliability Availability and Maintainability (RAM) Studies, Sparing philosophy
Boil off management and minimum send out
Resupply issues, minimum buffer and ship sizing, demurrage etc
Support services – towage and pilotage etc.
Emergency procedures – shutdown, venting, flaring and departure
Capital cost and Schedule – Long lead time equipment

**Contractual Structures**
Business structures – classical integrated, proprietary and open access structures will be discussed.
An introduction to the suite of contracts: Project Agreements, GSAs (Gas Sales Agreement), Tolling Agreements, SPAs (LNG Sale and Purchase Agreement), EPC (Engineering Procurement and Construction) contracts, Charters, TUAs (Terminal Use Agreement) and Conditions of Use / Terminal Liability Agreements
Financing and its requirements

**Business Environment**
Development timelines
Host government issues – Local content, training, BOT / BOO / gas monopoly issues – how to procure an LNG import terminal
Infrastructure project delivery alternatives
Tender structuring, evaluations and responses to tenders – issues around technical equivalence
Safety
Environmental issues – Environmental Impact Assessments, Base Line Studies and Environmental Management Plans
Safety Studies - Hazard analysis, HAZOPs and Rule based and Probabilistic Safety Assessments (QRAs)
Community relations
Legislation, standards, codes, guidelines

**Thoughts on the Future**
Impact of renewables on the market
Growth of small scale LNG
LNG as a transport fuel
New technologies
Receive hands-on training from the largest group of LNG specialists in the industry

The course will be given by practicing experts in the LNG industry using a mixture of presentations and case studies. A course certificate will be presented on completion.

About the Course Leader
The course will be led by Captain Doug Brown. Captain Brown has accumulated over forty years experience in the shipping and handling of hydrocarbons, twenty years of which has been involved with LNG and other gases. He spent the bulk of his career with BP and has played various roles within SIGTTO, establishing much of the industry best practice. He has been managing Poten’s Marine Team for the past four years.

About the Course Staff
Ron Heffron, Vice President with Moffatt & Nichol will assist Captain Brown with this training course. Ron leads M&N’s global energy practice and has over 35 years of experience in the planning and design of marine and energy facilities. He has extensive experience on marine projects involving LNG, liquid bulk, petrochemical, and floating LNG terminals globally and has particular expertise in the configuration and mooring of floating LNG import and export terminals.

In addition, many of the sessions will be led by Poten’s technical specialists, who, where client confidentiality permits, will provide real life examples from their day to day work. Poten has renowned experts on Floating LNG terminals such as Mr Gary Smith, ex-CEO of Golar available to assist with the course.

Course fee: $2,995
A 10% discount will be applied for reservations made one month in advance of the training course start date as well as for 2 participants from the same company at any time.

A 15% discount will be applied for more than 3 participants from the same company at any time prior to the training course start date.

The course will run from 9am each day with breakfast, lunch and refreshments provided. The course should finish just after lunch on the final day.

Reserve your place by contacting
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Sign up at link below:
http://www.poten.com/lng-training-program
THE COMPLETE SUITE OF POTEN’S TRAINING OFFERINGS

**North America LNG**  
Houston, March 22-24, 2017

The course will provide a grounding in the commercial / economic components of the LNG liquefaction business, as well as the technical, market and marine aspects of this sector. The course will build on an introduction to LNG and give a deep look at the LNG value chain, the origins of LNG trade, the dynamics of LNG contracts and the current business environment.

**Spot and Short-term LNG Trading**  
Singapore, May 25-26, 2017

The course will give attendees the conceptual and practical tools needed to understand, participate in and build an LNG trading business. It will also discuss the strategic implementation of sound LNG trading strategies. The use of realistic case studies will bridge the course material and specific job and business requirements. This will ensure the course has significant benefit to the participants and that the learning can be immediately applied.

**LNG FSRU Development**  
Houston, June 12-14, 2017

The course will provide a foundational overview of the commercial and economic underpinnings of the LNG regasification business. It will also cover the associated technical, market and marine aspects of this sector. The course will have a strong focus on the development of floating regasification projects linked to power generation.

**LNG Charter Party**  
Houston, June 28-29, 2017

This course will not only introduce the individual clauses that comprise the agreement, but more importantly will explore how those clauses are used and maximized in an everyday setting by the key stakeholders involved. This course will ultimately challenge its participants to think about the charter party not just in an academic sense but alongside the very issues affecting the market.

**Tools for Effective Participation in LNG Joint Ventures**  
Perth, Aug 24-25, 2017

This targeted training course will enable those working in and with LNG joint ventures to move quickly down the learning curve. The course will help them to effectively engage with the venture operator and other venture partners. Individual skills and organizational capabilities needed to achieve world-class participation will be developed through this course. Participants will quickly gain the understanding and frameworks required for successful participation in upstream and liquefaction joint ventures.

*Poten also offers these as in-house courses for clients, where they can be tailored to specific requirements. Contact details can be found on back cover.*

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Second session date to be announced for late 2017. Course now fully subscribed - register your interest for second session.
For additional information or to sign up for this course, please contact:

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