

Gastech Conference Programme

Conference Day One

11:00am - 11:30am

Official Gastech Opening Ceremony

Category: Gastech Plenary Stage

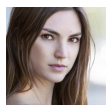
Stream: Plenary

Official Royal Opening of Gastech 2018



His Majesty King Felipe VI of Spain

Gastech Video followed by Opening Address



Denise Moreno
Master of Ceremonies

Welcome Address



Christopher Hudson
President - Energy
dmg::events global energy

Host Opening Panel



Juan Vera
Chief Operating Officer
CEPSA



Antonio Llardén
Executive Chairman
Enagás



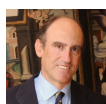
Francisco Reynés
Executive Chairman
Naturgy



Jose María Paz Goday
Chairman
Reganosa



Antonio Brufau
Chairman
Repsol, S.A



Juan Lladó Arburúa
CEO and Vice Chairman
Técnicas Reunidas

Moderator



Steve Sedgwick
Anchor
CNBC

11:30am - 12:30pm**Official Exhibition Tour - Coffee Break hosted by ExxonMobil****Category: Networking****Stream: Networking****12:30pm - 2:00pm****Lunch Hosted by AG&P****Category: Networking****Stream: Networking****2:00pm - 3:15pm****1.Global Leaders' Panel: "Examining the Transitional Impacts of the New Energy Landscape on the Gas Industry"****Category: Gastech Plenary Stage****Stream: Global Leaders' Panel**

Industry leaders will share their perspectives on the shifting energy landscape and the future of gas in delivering global energy post-2030.

Panellists:



Saad Sherida Al-Kaabi
CEO
Qatar Petroleum



Zou Caineng
Academician of Chinese Academy of Sciences Vice President of Research Institute of Petroleum Exploration & Development, CNPC



Elena Burmistrova
 Director General
Gazprom Export



Maarten Wetselaar
 Integrated Gas & New Energies Director and Member of the Executive Committee
Royal Dutch Shell



Peter Clarke
 President
ExxonMobil Gas & Power Marketing Company



Josu Jon Imaz
 Chief Executive Officer
Repsol, S.A



Russell Hardy
 Group CEO
Vitol

Moderator:



Steve Sedgwick
 Anchor
CNBC

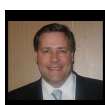
2:45pm - 4:15pm

T1.1 Shipping

Category: Gastech Technical Conference

Stream: Shipping and Storage of Natural Gas, LNG, LPG and Chemicals

Moderator



Andrew Clifton
 General Manager and Chief Executive Officer
Society of International Gas Tanker and Terminal Operators (SIGTTO)

Presentations

2:45pm - 3:15pm

T1.1 X-DF - Technology Review & Experience with First Low-Speed Dual-Fuel Engines Running in LNG Carriers and LNG-Fueled Vessels

From concept to reality: X-DF low pressure 2 stroke dual fuel engine: Since introduction to the market in 2013 WinGD has received more than 100 X-DF engine orders and several industry prizes like the "Emission Reduction Award" in April 18. This paper will summarize the reasons for the great market success and report about the gained experience on the 20+ engines at sea in commercial operations. Further it will outline the future potential of the X-DF Technology.



Rolf Stiefel
 Vice President Sales & Marketing
Winterthur Gas & Diesel Ltd.

3:15pm - 3:45pm

T1.1 Implementation of New Technologies for LNG Carriers

The presentation will address challenges during the design, construction and certification of novel technologies increasing the overall LNG carrier's efficiency with two WINGD 5X72DF main engines and full re-liquefaction system (MRS-F®) with NBOG refrigerant. The low fuel gas consumption of these two WINGD 5X72DF main engines and Active Boil-off Rate achieved by modified CCS (GTT NO 96 GW) and MRS-F® to be of 0.030 %V/day without burning of NBOG in GCU during all operational modes including anchoring mode have been implemented into new DSME's LNG carrier design of 180,000 cubic meters with four cargo tanks. Bureau Veritas has been selected to class this LNG carrier with novel technologies in order to grant the required maritime safety and pollution prevention.



Odin Kwon
 Vice President, Head of Ship Marketing Engineering & Basic Design Division
Daewoo Shipbuilding & Marine Engineering Co, Ltd (DSME)

3:45pm - 4:15pm

T1.1 Development of the State-of-the Art LNGC

SHI compiled all the know-how of LNGC shipbuilding and fully implemented the latest total gas handling solutions from CCS to propulsion and re-liquefaction with its own technologies and systems, such as S-FUGAS and S-Reli. The integrated technologies were verified by the measurement results during gas trials and actual voyages of two KC-1 CCS LNG carriers owned by SK Shipping. SHI's technologies and systems will contribute to safe and efficient operations, and maximize ship owners' profits in LNG shipping industries.



Gunil Park
 Principal Engineer
Samsung Heavy Industries Co., Ltd.

2:45pm - 4:15pm

T2.1 Gas Processing Technology

Category: Gastech Technical Conference

Stream: Processing and Cryogenics for Natural Gas & LNG

Moderator



Pankaj Shah
Senior Consultant, LNG Process Engineering
Chevron

Presentations

2:45pm - 3:15pm

T2.1 The LNG Futures Facility: Physical & Virtual LNG Plants for Technology Demonstration & Industrial Training

The Australian Centre for LNG Futures (ACLNGF) is working to establish an open-access facility for pilot testing and qualification of novel gas processing technologies, known as the LNG Futures Facility (LNG FF). The aim is to enable the transition of laboratory-proven innovations to fully deployed industrial solutions. A consortium of five companies led by ACLNGF with matching funding from the National Energy Resources Australia is conducting a detailed feasibility and pre-FEED study of the LNG FF. After describing the general features of the LNG FF, an overview of novel gas processing technologies under development will be presented.



Professor Eric May
Chevron Chair of Gas Process Engineering
The University of Western Australia

3:15pm - 3:45pm

T2.1 Optimisation of Fuel Gas Supply System with Enhanced BOG Re-Liquefaction System

The purpose of this paper is to explain and verify the enhanced BOG re-liquefaction system. This paper serves to explain the optimized dual refrigerant expansion re-liquefaction system which is integrated with fuel gas supply system of the LNG carrier. The dual refrigerant utilizes BOG as refrigerant for pre-cooling and liquefying section and nitrogen as refrigerant for sub-cooling section in order to improve the efficiency of the system. This paper verifies the system efficiency by comparison with competitive technologies applied to LNG carriers.



Chulwoo Kim
Offshore process engineering
Samsung Heavy Industries Co., Ltd.

3:45pm - 4:15pm

T2.1 Innovative Retrofit Technology for LPG Plants

Our paper is focused on Conventional Cryogenic Natural Gas based LP Gas plants & innovation to improve LP Gas recovery from 60% to 95%. LP Gas component (C3 + C4) in Natural Gas generally varies from 2% - 15%. Typically LP Gas component more than 4% in Natural Gas makes it commercial viable to set up LP Gas Extraction plants.



Mukesh Agrawal
Technical Director
PT. Surya Esa Perkasa Tbk

2:45pm - 4:15pm
T3.1 LNG to Power
Category: Gastech Technical Conference
Stream: Utilities and Power Generation

Moderator


Mark Tipping

 Principal Engineer for FLNG Development
Lloyd's Register

Presentations

2:45pm - 3:15pm
T3.1.How LNG Virtual Pipeline Solutions Are Bringing Natural Gas Power to Off Grid Locations

LNG virtual pipeline is the term used to describe the transport of LNG from its source, which can be an import terminal, distribution hub or liquefaction plant, to point of use. It is a flexible solution catering for medium sized companies looking to switch to natural gas from diesel, LPG or other fuel, right through to much larger facilities, such as gas fired power stations. It's also a proven solution for enterprises connected to the grid but looking to supplement insufficient or unreliable pipeline capacity for peak-shaving, to meet additional load and seasonal variations and to prevent curtailment by providing emergency fuel back-up during outages.


Erik Langeteig

 Director Project Solutions
Chart Industries
3:45pm - 4:15pm
T3.1.Integration of FSU with a Fast Track Power Plant Project: The Malta Case

The Government of Malta decided in 2014 to eliminate the dependence of HFO and Diesel fossil fuels moving to LNG as fuel. A PPA was awarded to Electro Gas Malta for 2200 MW to build and operate one CCGT (3x1) and a storage and regasification plant completely integrated. Additionally, the regas plant provides NG to a battery of 8 power generation engines. After the first year of operations the role of a competent regas operator has proven critical to maintain 99,9% availability of NG supply and cold energy exchanger loop to the power plants.


Agustín Silva Castaño

 Country Manager
Reganosa
3:15pm - 3:45pm

T3.1.Guideline for Gas Power Vessel Development

This paper is to present the development of guidelines for design, construction, and surveys of power vessels and an on-board power plant. Power vessel design requirements include: hull construction and equipment with stability and mooring systems; machinery, piping and electrical systems; safety systems; and surveys. Power plant design requirements include power generation & distribution systems and surveys. For a gas power supply vessel, the gas storage tank is to be designed either on-board or off-board. For conversion of existing gas vessels such as an LNG carrier, requirements related to the primary function of existing vessel are to be complied with.



Dr. Bo Wang
 Manager
American Bureau of Shipping (ABS)

3:15pm - 3:30pm

Keynote Address

Category: Gastech Plenary Stage

Stream: Plenary



Charif Souki
 Chairman of the Board
Tellurian Inc

3:30pm - 4:30pm

3.Global Leaders' Panel: "The Role of NOCs & IOCs in Delivering Global Energy Security"

Category: Gastech Plenary Stage

Stream: Global Leaders' Panel

Speakers:



Dr. Maikanti Kacalla Baru
 Group Managing Director
Nigerian National Petroleum Corporation (NNPC)



Mahdjouba Belaifa
 Head of the Gas Market Analysis Department (GMAD)
Gas Exporting Countries Forum


Philippe Sauquet

President Gas, Renewables & Power and Executive Vice President, Strategy & Innovation
Total


Juan Vera

Chief Operating Officer
CEPSA

Moderator


Eithne Treanor

CEO
E Treanor Media

4:30pm - 5:00pm

Coffee Break hosted by ExxonMobil

Category: Networking

Stream: Networking

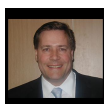
4:45pm - 6:15pm

T1.2 Shipping

Category: Gastech Technical Conference

Stream: Shipping and Storage of Natural Gas, LNG, LPG and Chemicals

Moderator


Andrew Clifton

General Manager and Chief Executive Officer
Society of International Gas Tanker and Terminal Operators (SIGTTO)

Presentations

4:45pm - 5:15pm

The ECO GREEN VLGC Carrier of Tomorrow

In this paper we present LPGreen, a concept design for a very large gas carrier developed by a joint project between gas carriers operator Consolidated Marine Management, DNV-GL, Hyundai Heavy Industries, and Wärtsilä Oil&Gas. The project succeeded in developing a more energy-efficient, environmentally-friendly, and safer VLGC design. Most importantly it demonstrates the technical feasibility and economic viability for the case of LPG-fuelled LPGCs. LPG is an eminently environmentally-friendly fuel, in much the same class as LNG, and an LPG-fuelled engine will

significantly reduce emissions, enabling vessels to meet the challenging IMO SOx emission regulations coming into force globally from 2020.



Kostas Vlachos
 Chief Operating Officer
Consolidated Marine Management Inc.

5:15pm - 5:45pm

LPG As Fuel for a New Series of Very Large Gas Carriers

As from January 2020, the global sulphur cap implemented by IMO will reshape the landscape of fuel usage in the shipping industry. EXMAR is adding one more fuel option to comply with the future regulations. Two 80,000 m³ VLGCs which will be built, owned and operated by EXMAR and chartered by EQUINOR will use LPG as fuel for the main engine. For a VLGC, LPG as fuel makes sense since the vessel's own cargo can be used as fuel. EXMAR truly believes there is a future for LPG as fuel for shipping, next to the other alternative fuels.



Frederik Van Nuffel
 Technical Director
EXMAR

5:45pm - 6:15pm

Qualification of the GTT-NO96 System for LPG Storage Tanks

During a recent LNG FPSO project, GTT and SBM assessed the capability of the NO96 membrane system to store and transport Liquefied Petroleum Gas (LPG). To this end, a detailed and documented analysis was performed.

The main characteristics and functionalities of the NO96 system have been revisited in depth, including the thermal and mechanical aspects, reliability and safety. Then the compliance of the system with the LNG FPSO design's requirements has been checked. Furthermore, a specific pre-feasibility analysis has been carried out in order to assess the risks related to sloshing.

The NO96 Containment System is considered as fully compatible with LPG applications.



David Colson
 Commercial VP
GTT (Gaztransport & Technigaz SA)

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RESERVE PAPER: Options & Evaluation of Propulsion Systems on LNG carriers

This paper reviews the different propulsion systems used on board vessels for the transport of Liquefied Natural Gas, including steam turbine propulsion, gas turbine electric propulsion, slow speed diesel engine propulsion, dual fuel diesel electric propulsion and slow speed dual fuel engine propulsion. The main characteristics of the propulsion systems, and the advantages and drawbacks that come along with these, are described and evaluated.



Huan Tu
 Senior engineer
China Classification Society

4:45pm - 6:15pm**T2.2 Gas Processing Technology****Category: Gastech Technical Conference****Stream: Processing and Cryogenics for Natural Gas & LNG**

Moderator

**Pankaj Shah**Senior Consultant, LNG Process Engineering
Chevron

Presentations

4:45pm - 5:15pm**Making Stranded Gas Valorisation Possible with Membranes Technology**

Natural gas treatment requirements vary greatly based on source and usage. The evaluation of a few cases of stranded gas valorization (e.g. sweetening for pipeline export, gas conditioning for power generation, NGL extraction) will show that membrane technology can be a cost-effective solution to make a project materialize. The valorization of stranded gas is enabled by innovative membrane technologies where it might not have been possible before.

**Sylvain Gerard**Natural Gas Product Manager
*Air Liquide Engineering & Construction***5:15pm - 5:45pm****Successful Amine Unit Debottlenecking with Membranes at PTT's GSP-6 Plant**

PTT's GSP-6 plant in Thailand processes 800 MMSCFD gas containing 19-23% CO₂ down to 900 ppm, upstream of their cryogenic fractionation units. The plant was installed with amine technology for CO₂ removal but PTT later investigated debottlenecking options as production requirements increased. The most efficient solution was found to be adding an upstream membrane unit for bulk CO₂ removal. The decision was facilitated by the imminent availability of a PTT membrane unit at the Bangpakong power plant. This presentation will describe the debottlenecking project and performance benefits obtained. We will also discuss the advantages/disadvantages of amines, membranes and hybrid systems.

**Bart Beuckels**

5:45pm - 6:15pm

DDR Zeolite Membrane: The Recent Development for Practical Use in CO2 Separation for Natural Gas Field and CO2-EOR

DDR-type zeolite has desirable nano-size pores for CO₂/CH₄ separation. JGC Corporation (JGC) and NGK Insulators, Ltd. (NGK) have successfully developed thin defect-free DDR zeolite composite membrane for CO₂ recovery from associated gas and natural gas. JGC and NGK have already completed the laboratory testing of the DDR zeolite membrane to reveal the resistance at high pressure condition, performance at high pressure and high CO₂ content condition and effect of impurity components. Since the membrane is now on the field test stage using actual gas in the real CO₂-EOR field.



Hiroaki Hasegawa
 Senior Technologist
JGC Corporation

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RESERVE PAPER: Liquids Recovery - A New Concept for an Old Scrubber

The old scrubbers are not efficient to recover and remove NGL due to the limitation of separation internals. One such site in South East Asia was losing a significant amount of NGL in the downstream pipeline due to separation internals bottleneck. A new Axial cyclonic Inlet device allows recovery of 99% of the liquids in the separator. We present details of the test program, discuss the importance of using real fluids for verification of scrubber performance, and present test results verifying the liquid carryover before and after implementation of the new inlet section.



Ankur Jariwala
 Senior Product Manager
Schlumberger

4:45pm - 6:15pm

T3.2 LNG to Power

 Category: **Gastech Technical Conference**

 Stream: **Utilities and Power Generation**

Moderator



Mark Tipping
 Principal Engineer for FLNG Development
Lloyd's Register

Presentations

4:45pm - 5:15pm

Floating Gas Power Plants

The development of LNG as fuel for power plants is supported by the same dynamics as the LNG as fuel for ships. SHI and GTT have focused on South East Asia and the Caribbean Sea market, where the concept of floating power plants using oil is already well implemented to develop the solution. The barge integrates the complete power plant and the storage. Three power outputs have been selected: 50, 150 and 250 MW.



Jérôme Pelle
Key Account Manager
GTT (Gaztransport & Technigaz SA)



Hyun Soo Kim
Principal engineer
Samsung Heavy Industries Co., Ltd.

5:15pm - 5:45pm

Scalable LNG Import Terminals 1 MTPA - 3 MTPA

AG&P is developing an LNG import terminal in Karaikal Port, Puducherry, India. This presentation at Gastech will explain AG&P's novel standardized 125 MMSCFD LNG import and regasification terminal solution which utilizes innovative technologies that enable it to be used onshore, or offshore. This standardized and flexible approach not only reduces project cost and schedule, but because the solution is easily scalable, it meets the needs of a wide range of customers, from small-scale to large-scale projects and at different delivery pressure ranges. The presentation will also highlight how the terminal design incorporates makes best use of the deep-water location within the port by integrating marine and onshore infrastructure.



Nancy Ballout
Vice President Processing Engineering and Operations
AG&P

5:45pm - 6:15pm

A New, Powerful Technology: Integrated LNG to Power

A new, powerful technology: Integrated LNG to Power The development of a diversified competitive global LNG market has given rise to small to mid-scale applications of LNG. LNG to Power projects have become particularly attractive for developing markets, where traditional infrastructure is underdeveloped. In this context an integrated power solution that is simple, efficient, and cost effective has a distinct advantage over more complex traditional designs.



Scott Schroeder
Senior Technical Consultant
Advisian WorleyParsons Group

4:45pm - 6:15pm
T4.2 Hydrogen
Category: Gastech Technical Conference
Stream: Shipping and Storage of Natural Gas, LNG, LPG and Chemicals

Patrick Janssens

Vice President, Global Gas Solutions

American Bureau of Shipping (ABS)

Presentations

4:45pm - 5:15pm
T4.2 A Technical & Economic Study for Commercial Ships with LNG, LSMGO & Hydrogen as Fuel

IMO will apply the regulation for SOx emission of ships since 2020. Recently, some owners with small passenger ships in EU have begun to use hydrogen as a ship fuel for SOx removal and CO2-free emission. DSME also thinks that hydrogen can be one of options as ship fuel. Therefore, DSME has researched various activities of hydrogen related ship fuel. In this presentation, we would like to introduce the main results of a feasibility study for "A Technical & Economic Study for Commercial Ships with LNG, LSMGO and Hydrogen as Fuel".


Hyuk Kwon

Research Engineer

Daewoo Shipbuilding & Marine Engineering (DSME)
5:15pm - 5:45pm
T4.2 Development of Hybrid Electricity Supply System Using LNG Reforming and Fuel Cell

We investigated the technical subject of the scale-up of PEFC system combined with natural gas reforming including a CO removal system. We manufactured a fuel reforming system to supply reformed gas to a 10kW class fuel cell. This system produces 10Nm³/h reformed gas (dry basis) stably at S/C=3.0. Furthermore the reformed gas containing CO was supplied to the CO selective oxidation unit. Then, the CO concentration was decreased to less than 10ppm, indicating that this reforming system is able to be applicable for PEFC system sufficiently. We report the results of the development mentioned above.


Osamu Okada

President

Renaissance Energy Research Corporation
5:45pm - 6:15pm
T4.2 Large-Scale Global Hydrogen Transport with Liquid Organic Hydrogen Carriers

The world has committed to a global deep decarbonization over the coming decades. To achieve these goals, green hydrogen will need to play a central role. However, hydrogen is difficult to transport, store and distribute. Liquid Organic Hydrogen Carriers (LOHC) enable a safe, efficient and easy way of storing, transporting and distributing very large amounts of hydrogen in the existing fossil fuel infrastructure. The LOHC technology thus offers the possibility to successfully make hydrogen a global fuel, similar to today's energy markets. The presentation will give latest insights into the technology, current market activities and an outlook on the potential future.



Dr. Cornelius von der Heydt
 Chief Commercial Officer
Hydrogenious Technologies GmbH

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T4.2 RESERVE PAPER: AG2S: A New Route to Hydrogen and Syngas Production from Waste Streams

AG2S™ is an innovative process technology aimed to produce syngas from two waste streams (H₂S and CO₂) commonly available as by-products of purification processes in refineries and gas treating plants. The novel AG2S™ technology, based on a modified CLAUS process scheme, provides a new H₂ source. The AG2S™ Unit converts the H₂S feed stream into elemental Sulphur, but the tail gas is composed of Hydrogen and Carbon Monoxide. According to the integration scheme of the AG2S™ Unit, the net result is a cut of CO₂ stack emissions (when integrated with a steam reformer for H₂ production), or the segregation of a CO₂ stream when integrated with petrochemical plants).



Sergio Aquenza
 Head of Process Engineering
Techint E&C

5:00pm - 6:00pm

4.Global Leaders' Panel: "Growth Drivers for the Global Gas Industry – Exploring the Future Gas & LNG Value Chain"

Category: Gastech Plenary Stage

Stream: Global Leaders' Panel

As appetite for energy grows and exciting new global market opportunities for gas emerge, what innovations in both strategic and technological thinking will be required to deliver the flexible energy needs of customers? How can producers, consumers and project developers work more efficiently to develop cost-effective, reliable and 'smart' energy infrastructure?

Speakers:



Kunio Nohata
 Member of the Board, Senior Executive Officer and Chief Executive of Power Business
Tokyo Gas

**Hiroki Sato**

Chief Fuel Transactions Officer Senior Executive Vice President
JERA

**Meg Gentle**

President & CEO
Tellurian Inc

**Peter Coleman**

Managing Director and Chief Executive Officer
Woodside Energy Ltd.

Moderator:

**Michael Stoppard**

Chief Strategist, Global Gas, Energy Research and Analysis
IHS Markit

6:30pm - 9:00pm

Host Welcome Party hosted by CEPSA, Enagas, Naturgy, Reganosa, Repsol, Tecnicas Reunidas

Category: Networking

Stream: Networking

Conference Day Two

9:00am - 9:15am

Keynote Address

Category: Gastech Plenary Stage

Stream: Plenary

**Lorenzo Simonelli**

President & CEO
Baker Hughes, a GE Company

9:00am - 9:30am

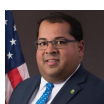
Registration & Coffee**Category: Specialist Event****Stream: Asia LNG Market Development Forum****9:15am - 10:15am****5.Ministerial Panel: “The Transformational Potential of Gas”****Category: Gastech Plenary Stage****Stream: Ministerial Panel**

Welcoming senior government officials from major energy markets to discuss the economic and humanitarian potential offered by natural gas.

Speakers:



H.E. Cesar Abi Khalil
Minister of Energy and Water
Government of Lebanon



Neil Chatterjee
Commissioner
US Federal Energy Regulatory Commission (FERC)



Dave Nikolejsin
Deputy Minister, Energy, Mines and Petroleum Resources, British Columbia
Government of British Columbia

Moderator:



Steve Sedgwick
Anchor
CNBC

9:15am - 11:15am**S4. The Electricity Generation Revolution****Category: Gastech Strategic Conference****Stream: Utilities and Power Generation**

Moderator



David Ledesma
Energy & Strategy Consultant
South-Court Ltd

Presentations

9:15am - 9:40am

S4.An LNG Fuelled Transition to Electric Transport

As the world decisively enters the energy transition, oil and gas companies are asking can liquefied natural gas (LNG) bridge the gap to the future? The electrification of transport, paired with autonomous vehicle technology, has the potential to disrupt oil demand. However, the implications for LNG are not as clear. While an increase in demand for electricity may be a positive for LNG in the short to medium term, there are many risks on the horizon. The transition to an electrified future will not happen overnight, but the LNG industry must get in the driver's seat in order to remain relevant and ensure that renewable energy solutions do not overtake the golden age of gas before it even gets going.



Bernadette Cullinane
Partner and Global LNG Leader
Deloitte Australia

9:40am - 10:05am

S4.Solar Power - Could the Gas Industry be about to have its iPhone Moment?

Natural gas has been touted as a perfect match for the rise of renewable powers, especially solar, providing it with quick, efficient and relatively clean back-up. Yet industry data shows solar is becoming become a competitor, not partner of the gas industry as improved efficiency, plunging costs and better batteries put into doubt the need for investment into large gas turbines.

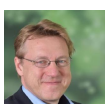


Henning Gloystein
Asia Energy Editor
Reuters

10:05am - 10:30am

S4.Sector Coupling to Support the Transition of the Energy System by Usage of Gas Infrastructure

A drastic change is taking place regarding the generation of electricity in Germany. The government decided to replace fossil fuels as soon as possible ('energy transition'). Already 32% of the electricity consumed in 2016 had been generated using renewable resources. (until 2050 up to 80%). The paper shows to what extent surplus electricity generated from renewables can replace conventional energy carriers for production of heat. The quantified findings are presented for a forecast period of over 20 years for different types of areas (rural with extensive renewable sources, industrialised and load-dominated). Models and methods used for forecasting energy demand and decentral production in hourly resolution are explained.



Juergen Groenner
Managing director
Westnetz GmbH

10:30am - 11:05am

S4.Is Natural Gas the Bridge, the Destination or the Has Been?

The role of natural gas has never been more dynamic as growing global energy needs combine with market transitions and technological advancement. Long touted as the bridge to a low carbon environment represented by a sound mix of renewables, and gas fired generation, today, natural gas is poised at the heart of a debate on a supportable energy future. Public policy in various regions may even consider it a ?has been?given the projected declining costs for renewable generation and energy storage. This paper will examine which factors matter most in determining natural gas's future role in a given market and determine its ultimate fate.


Deepa Poduval

Senior Managing Director

Black & Veatch Management Consulting LLC

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S4.RESERVE PAPER:Learning from Australia's Rapid Uptake of Renewables – It's Made Possible Only By Gas

Learning from Australia's rapid uptake of renewables – it's only made possible by gas.

Renewables produced 17 percent of Australia's electricity in the year to June 2017 versus 7 percent a decade ago. This rapid uptake of renewables has not come without disruption. Across the system, there is less synchronous generation online and more periods with low inertia and low available fault levels. This is where gas comes into its own. Gas is the natural complement to the intermittency and control complexity of renewables.


Fiona Hall

General Manager, LNG and Liquids, Marketing and Trading

Santos

9:30am - 9:35am

Welcome from the Organiser and Young Gastech Alumni Body Representative
Category: Specialist Event
Stream: Young Gastech Programme

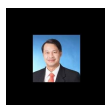
9:30am - 10:30am

Clearing the Pathway to the 'Golden Age of Gas in Asia'

Category: Specialist Event

Stream: Asia LNG Market Development Forum

- How can producers and consumers work together to achieve a reasonable and transparent pricing system to fulfil the promise of Asia's vast growth prospects?
- Has demand for coal and nuclear in Asia been superseded forever by LNG and cleaner energy sources?
- What impact will advances in renewable and hydrogen technologies have on the Asian energy landscape by 2040?
- What will the reform of Japan's domestic energy market mean for LNG demand?
- EU cooperation on the development of an LNG liquid commodities market in Asia
- Where are the pockets of growing and future demand in Asia? What is the capital needed to realise these projects?
- How can global gas & LNG producers better meet the needs of customers in Asia?
- What role is Japan playing in shaping and developing gas & LNG infrastructure across Asia's growing economies?



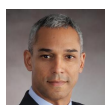
Dr. Twarath Sutabutr
 Director General
Energy Policy and Planning Office (EPPO)



Paramate Hoisungwan
 Upstream and Gas Team Leader
ASEAN Council on Petroleum (ASCOPE)



Pankaj Wadhwa
 Senior Vice President (Marketing)
Petronet LNG Limited



Christophe Malet
 Senior Vice President Upstream LNG
Hanas



Hongtao Zheng
 Executive Vice President
CNOOC Gas and Power Group

Moderator



Ben Chu
 Director of Equity, LNG and Proprietary
Genscape

9:30am - 11:00am

T1.3 Operations, Maintenance & Integrity Management

Category: Gastech Technical Conference
Stream: Operations & Maintenance

Moderator



James Solomon
 Director LNG
Air Products

Presentations

10:00am - 10:30am

T1.3 Top Quartile Operating Plant Performance

As the whole society is faced with an important digital transformation, also the operating gas & LNG plants are facing unprecedented challenges to operate in an efficient, safe and responsible way. Within this context we have found that among plant operations there are important differences between the bottom and top quartile performers.

In this session, we will look at the operational opportunities in the current gas & LNG plants to improve the reliability of the equipment and the process. By improving the current process measurement and control, analyzing and benchmarking the current operational performance, plant operators will gain a better understanding of their performance compared to their peers.



Patrick Deruytter
 Vice President Northern Europe
Emerson

10:30am - 11:00am

T1.3 Digital Transformation: The Journey Ahead for Gas and LNG Companies


Thomas Fiske
 Principal Technology Strategist
Yokogawa Electric Corporation

9:30am - 11:00am

T2.3 Gas Processing Technology
Category: Gastech Technical Conference
Stream: Processing and Cryogenics for Natural Gas & LNG



Ankur Jariwala
 Senior Product Manager
Schlumberger

Presentations

9:30am - 10:00am

T2.3 Advances in Removing Heavy Hydrocarbons from LNG Liquefaction Feed Gas

Natural gas feeding an LNG liquefaction facility typically contains C2+ components. In the past, these components were removed to improve operability or economics, using partial condensation or distillation. Leaner natural gas sources are now being liquefied. Compared to typical baseload plants, these feeds contain less C2+. Processing these leaner feeds creates new challenges. This paper discusses these challenges and advances the state-of-the-art for lean feeds with varying compositions. It presents a new processing scheme that combines best features of adsorption and distillation. Case studies illustrate the differences between technologies



William Schmidt
 Technology Manager-LNG Process Engineering
Air Products

10:00am - 10:30am

T2.3 Economic & Design Considerations for Efficient LNG Liquefaction Turndown

Most LNG projects begin with production efficiency and turndown targets. While production efficiency has received much attention, turndown has received little. The historical minimum production efficiency for LNG liquefaction is ~93%. Following proven higher production efficiencies, some recent LNG projects raised minimum production efficiency requirements to 94% or higher. Yet, turndown requirements have remained at 35%. Though the advantages of higher production efficiencies have been recognized, the advantages of turndown have been largely overlooked. Further, while turndown has received little attention, thermal efficiency during turndown has received even less. This paper will explore some of the advantages associated with turndown.



Wes Qualls
 Engineering Fellow
ConocoPhillips

10:30am - 11:00am

T2.3 Technical & Regulatory Challenges of Expanding Freeport LNG's Gas Liquefaction Facility

FREEPORT LNG is expanding its three world class liquefaction train Project already under construction, with a 5 MTPA capacity fourth pretreatment and liquefaction trains which will provide a total liquefaction capacity of approximately 20 MTPA, to meet the projected long-term growth of Liquefied Natural Gas in the international markets. The future fourth train is currently under FERC (Federal Energy Regulatory Commission) permitting process and final approval is expected during second half of 2018. This paper introduces the new major systems added for the fourth train expansion project and discusses major technical and regulatory challenges of adding an all-electric

liquefaction train.



Roberto Vara
 Director LNG Technology, Operations and Projects
Freeport LNG

9:30am - 11:00am

T3.3 Carbon Capture & Storage

Category: Gastech Technical Conference

Stream: Utilities and Power Generation

This topic consists of the following sessions:

- Carbon Capture & Storage – Case Studies & New Developments

Moderator



Antonio Melcon Alvarez
 General Manager
Cepsa Gas Comercializadora S.A.

Presentations

9:30am - 10:00am

T3.3 Pipeline Commissioning Without Purging and Avoiding Methane Emissions by Using Vacuum Techniques

The aim is cutting methane emissions during the commissioning of gas pipelines, namely, new gas pipelines to put into operation and new extensions of network for each material and pressure range. GNF tested this commissioning methodology and applied it to all of its operations in Mexico and plan to do so in other countries.



Carlos Serrano
 Infrastructure Development Processes Director
Naturgy

10:00am - 10:30am

T3.3 Real-time seismic monitoring for safe injection in offshore gas storage and CO2 sequestration projects

Caprock integrity and induced seismicity are matters of is a concern in offshore projects involving injection of fluids in geological formations. The challenge arises from the difficulty in predicting integrity issues and fault reactivation based on existing data, and many examples of failure exist from around the world.

The application of focused seabed seismic monitoring systems can reduce the risk significantly.

Such systems provide information on the expansion of the injection plume as well as real-time information on fracturing and fault reactivation. These techniques can be performed by small, dedicated and cost-effective systems focused over the injection target.



John Even Lindgård

Vice President Integrated Services
OCTIO

10:30am - 11:00am

T3.3 CO2 Storage: A Case Study in Gasmo Field

With current gas production reaching nearly 300 MMSCFD and more than 25% consist of CO2, the application of this method will be very interesting in Sumatra block, Indonesia. In this paper, a feasibility study of CO2 injection and storage capacity was performed in multiple compartment reservoirs with 11 hydrocarbon layers at Gasmo field, by conducting compositional reservoir simulation. The study was performed to evaluate the volume of CO2 gas that can be injected and stored below the formation fracture pressure at 3400 psi, and the result of simulation for volume of CO2 gas injected into water zone is 36.34 BCF.



Syarif Kurniawan

Manager Production Geology for Western Indonesia
SKK Migas

9:30am - 11:00am

T4.3 Upstream Field Development, Exploration, Production & Planning

Category: Gastech Technical Conference

Stream: Exploration, Production & Field Development

Moderator



Chris Freeman

Senior Partner, Director - Field Development, io oil and gas consulting
io oil & gas consulting

Presentations

10:00am - 10:30am

T4.3 Project Charlie: Continuous Learning and Delivery in Times of Change

In December 2014, the Shell operated QGC JV produced the first LNG from its world-first Coal Bed Methane to LNG development. Across the initial construction phase, continuous improvement delivered material improvements across the 2,000 wells and 19 compression facilities being built. Twelve months earlier during the height of the initial construction, work commenced on Project Charlie, the venture's first major greenfield backfill project. Despite comprising nearly 1,000 square

kilometres of high-quality shallow coal acreage and benefiting from the improvements being delivered in the initial development, the rapid decline in oil prices meant that Project Charlie was not economic. This presentation will share how continuous improvement, innovative thinking and a relentless focus on delivery through every stage of the project enabled Project Charlie to be delivered ahead of schedule and for less than half of its original estimate.



Anthony Nunan
 VP QGC
Shell Australia

10:30am - 11:00am

T4.3 Tackling Reservoir Uncertainty with an Holistic Reservoir to Market Approach

This paper will highlight, through project examples, recent developments in software integration and consistency in compositional analysis to deliver a fully integrated Reservoir to Market (R2M™).

By accounting for varying conditions over the field life of a gas development, these models integrate reservoir performance and key process variables with flow assurance analyses yielding multiple benefits. From analysing field development solutions, making key project design and/or operational decisions The R2M™ Approach will allow more accurate and thorough analyses of complex gas developments from reservoir modelling, flow assurance analyses, process simulations and economic modelling to reduce the risk of reservoir uncertainty.



Terry Wood
 Discipline Authority - Flow Assurance
INTECSEA, WorleyParsons Group

11:00am - 11:30am

T4.3 Field Development Value Optimisation Tools

In the oil & gas industry, field development decision makers rely on accurate techno-economic analysis to make multi-billion dollar investment decisions. Producing this analysis is not a trivial task. Decision makers must consolidate extensive and complex work by cross-functional teams and remain confident that their investment decisions result in the optimal allocation of their company's capital.

Project success is, however, often elusive. With the highest value decisions being rooted in the early phases of project developments it is crucial to gain a deep understanding of a project's value drivers in the front end. The tools and techniques available to help unlock this value are not always appropriate, practical or well understood. 'Reverse Economics' and 'Systems Thinking' are techniques that field development decision makers can adopt to optimise value retention through the field development decision gates.



Max Peile
 Senior Commercial Analyst
io oil & gas consulting

9:30am - 11:00am

T5.3 Health, Safety, Security & Environment

Category: Gastech Technical Conference

Stream: Health, Safety, Security & Environment



David Cavanagh
 Managing Director
Integrated Energy Pty Ltd

Presentations

9:30am - 10:00am

T5.3 Monitoring Methane Emissions at the Source from Space - A Novel Approach

In June 2016, GHGSat launched the world's first and only satellite capable of measuring methane emissions directly from industrial facilities around the world. Methane leaks across the natural gas value chain are often seen as one of the largest threats to the credibility of gas as a cleaner alternative to coal. In this paper, we present the early results from our patented technology to accurately and quickly detect methane leaks around gas facilities which are costly, dangerous and have a serious environmental impact. We will also explain how the lessons learned from this satellite are being built into our next satellites being readied for launch in early 2019.



Jean-Francois Gauthier
 Director, Business Development
GHGSat

10:00am - 10:30am

T5.3 Carbon Footprint of All Fuels from an LNG-Complex in Qatar

This is the first study of carbon footprints for all five fuels produced at an LNG complex. Production in Qatar was analysed, because 1) mass balance data are available for Qatar and 2) Qatar is the world's largest LNG producer and a major LPG exporter. For consumers in Western Europe, Qatari LNG and LPG have almost identical well-to-stack footprints. LPG's higher combustion footprint is offset by LNG's higher footprint in gasification, transport and regasification. The paper shows that geographically-specific footprints of both LNG and LPG can be calculated, just as they are for varieties of crude oil.



Eric Johnson
 Managing Director
Atlantic Consulting

10:30am - 11:00am

T5.3 Hurry Up and Wait! When is the Right Time to Think About Social Licence?

Trying to rush meaningful engagement at the last moment is not successful and does not set the foundation for a long and trusting relationship with communities. Relationships take time – and as

we know: Time is Money. Creating successful relationships requires early commitment from proponents and a systematic, frequent approach to consultation and engagement. Proponents understand that to create successful project outcomes, early concept and front-end engineering is necessary to reduce the technical risks and focus on feasible alternatives. Maybe it is time that a similar systematic approach is applied when it comes to community engagement and relationship building?

**Mary Lou Lauria**

Vice President Environment, Society & Geoscience
Advisian WorleyParsons Group

9:35am - 9:45am**Chairman's Welcome****Category: Specialist Event****Stream: Young Gastech Programme**

With energy consumption directly linked to GDP the energy industry plays a most critical role in our world. As the world works towards meeting the two-degree target agreed at COP21, get a concise, crystal-clear overview of the energy industry today and learn what the outlook for the gas & LNG industries looks like to 2040. "What will working for the natural gas industry of the future involve and where are we headed...?"

**Jack Middleton**

Manager, Government Affairs
Steelhead LNG

9:45am - 10:15am**An Industry in Transition: Outlook for the Gas & Energy Industry to 2050****Category: Specialist Event****Stream: Young Gastech Programme**

With energy consumption directly linked to GDP the energy industry plays a most critical role in our world. As the world works towards meeting the two-degree target agreed at COP21, get an overview of the energy industry today and hear about the outlook for the gas industry in the medium to long term.

**Massimo Di Odoardo**

VP Research, Global Gas and LNG
Wood Mackenzie

10:00am - 11:00am**Roundtable Discussion: Supporting Demand Creation in Emerging Asian Markets****Category: Specialist Event****Stream: Asia LNG Market Development Forum**

- Where are the new demand regions in Asia?
- What are the options for new projects for securing financing?
- How are innovative and diversified LNG uses (such as in fuelling transport), driving new market opportunities?
- What is the aggregate demand growth represented by new types of LNG customers?
- What impact will the adoption of LNG-to-Power projects have on driving market development?

**Kentaro Horisaka**

General Manager, Business Planning Section, Global Business Planning Department
Tokyo Gas

**Rajeev Mathur**

Executive Director
GAIL (India) Limited

**Katsuo Nagasaka**

Chairman
Chiyoda Corporation

**Ajay Singh**

Special Advisor to the Chairman and the President
JAPEX

Moderator

**Clyde Russell**

Asia Commodities and Energy Columnist
Thomson Reuters

10:15am - 11:00am**“Why Did I Choose a Career in Energy?”: Different Stories from Across the Industry****Category: Specialist Event****Stream: Young Gastech Programme**

What makes young people look to decide on a career in the energy industry? Are their motivators different today compared to 30 years ago? And what has motivated and driven some of those who have made it to the top? This session welcomes some stalwarts from very different backgrounds as they share their own career reflections and examine what might motivate people today.

**Chris Clucas**

Corporate Expert - Liquefied Gas, Bernhard Schulte Ship Management Ltd & Principal Consultant, Liquefied Gas (GB member)

Bernhard Schulte Shipmanagement UK Ltd & Liquefied Gas

**Juan Carbayo**

Business Development Manager

CEPSA

**Javid Talib**

Vice President & Director Floating Technology Applications - Oil & Gas

Black & Veatch

**John Jack**

Chair of Alberni - Clayoquot, Regional District

Huu-ay-aht First Nations

10:15am - 11:15am

6.Global Leaders' Panel: "Evolving Business Models for an Evolving Global Gas & LNG Market"

Category: Gastech Plenary Stage

Stream: Global Leaders' Panel

In an increasingly fragmented market, how are players aligning business strategies to capture maximum opportunity? How can traditional and non-traditional participants gain market share in the changing business environment?

**Massimo Mantovani**

Chief Gas & LNG Marketing and Power Officer

ENI

**Steve Hill**

Executive Vice President for Gas & Energy Marketing & Trading

Shell

**Mark Gyetvay**

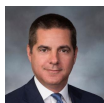
Deputy Chairman & CFO

Novatek

**Andree Stracke**

Chief Commercial Officer

RWE Supply & Trading

**Michael Sabel**

Co-CEO, Co-Chairman & Founder

Venture Global LNG

**Matt Schatzman**

President & CEO

NextDecade Corporation

Moderator:



Dumitru Dediu
Associate Partner
Mckinsey

11:00am - 11:30am

Asia LNG Market Dev Forum Coffee & Networking sponsored by Yokogawa

Category: Specialist Event

Stream: Asia LNG Market Development Forum

11:00am - 11:30am

Technical Coffee & Networking Break Sponsored by ABS

Category: Networking

Stream: Networking

11:00am - 11:30am

Young Gastech Coffee Break

Category: Specialist Event

Stream: Young Gastech Programme

11:15am - 11:45am

Main Conference Strategic Coffee & Networking Break Sponsored by ExxonMobil

Category: Networking

Stream: Plenary

11:30am - 12:30pm

Attracting (and Retaining) the Next Talent to the Industry”: How Can Energy Promote its Brand to Millennials?

Category: Specialist Event
Stream: Young Gastech Programme

Does the energy industry have an image problem? What can we do about it? Travel, relevance, good remuneration, critical role in global and local economics. What's not to love? How can the industry communicate its value proposition and lure the best graduates away from other industries?



Hieu Le
 Naval Architect
London Offshore Consultants



Juan Hita Garcia
 CEO & Co-founder
Venturi Unmanned Technologies, SL



Fernando Sierra Perler
 Leadership and Talent Senior Manager
Repsol



Aurélien Armamet
 Solar Energy Systems Engineer
Groupe Cap Sud

11:30am - 1:00pm

Contracts, Trading & Pricing - Increasing Flexibility and Fluidity of LNG Trades

Category: Specialist Event
Stream: Asia LNG Market Development Forum

- Progress towards the establishment of an Asian benchmark for spot prices
- How can LNG imports into JKT remain price-competitive beyond 2025, and what is needed to make this possible?
- How can destination flexibility benefit the market?
- What infrastructure is needed to support the growth of a fluid trading market?
- How are other major Asian import markets collaborating to drive market development and transparency?



Ma Shenyuan
 Senior Vice President, ENN Group & President
ENN Energy Trading Group



Didik Sasongko Widi
 President Director & CEO
Badak LNG



Scott Atha
 Director, LNG Marketing & Strategy
Jordan Cove LNG



Seah Cyn Yi
 Vice President LNG Trading & Chartering
Pavilion Energy Pte Ltd



James MacTaggart
 Senior Vice President, LNG Marketing - Asia
NextDecade Corporation



Tom Mason
 the President of Lake Charles LNG
Energy Transfer

Moderator



Noel Tomnay
 VP, Head EMEARC Gas & LNG Consulting

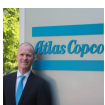
11:30am - 1:00pm

T2.4 Gas Processing Technology

Category: Gastech Technical Conference

Stream: Processing and Cryogenics for Natural Gas & LNG

Moderator



Ulrich Schmitz
 Product Marketing Manager
Atlas Copco

Presentations

11:30am - 12:00pm

T2.4 Shell Turbo Trays - A Novel Mass Transfer Technology to Debottleneck & Existing Assets & Reducing Greenfield CAPEX

Shell Turbo Trays – A novel mass transfer technology to debottleneck existing assets and reduce Greenfield CAPEX. A new contacting technology is presented which brings a competitive advantage to Shell's Gas Processing over conventional trays and packing. Thanks to an innovative contacting principle, flooding and entrainment which are limiting conventional tray capacity are now being utilized to promote mass transfer within a mixing box. On top of those mixing boxes, swirl tubes are used to separate gas and liquid thereby allowing the solvent to flow back to the tray. Macroscopically, on the column scale, liquid and gas flow counter-currently. However, on each tray within each element, gas and liquid are flowing co-currently. The working principle of the trays

brings two significant advantages:

- Higher gas and liquid handling capacity as turbulence and high velocities are needed in the mixing boxes.
- Improved mass transfer as near equilibrium is reached within the mixing boxes due to large Liquid /Gas ratio and the intense mixing.

As shown in the case studies presented, application of this new technology yields significant CAPEX reductions (up to -50% FOB cost) for Greenfield projects and unmatched debottlenecking opportunities (up to +80% throughput) for Brownfield assets.



Pavan Chilukuri

Director of Technology Licensing
Shell

12:00pm - 12:30pm

T2.4 Compact & Intrinsically Safe LNG Liquefaction with Integrated NGL Extraction

Saipem recently developed a LNG liquefaction concept designed to respond to the current LNG market challenges. This is based on a “design one, build many” approach where LNG liquefaction is performed by means of several identical, pre-engineered liquefaction trains with a capacity ranging from 0.2 to 0.6 MTPA. The Liqueflex™ technology used is a proprietary turbo-expander cycle process that uses natural gas as refrigerant. It involves very low hydrocarbon and cryogenic liquid inventories, which makes it particularly suitable in areas with reduced plot and severe permitting constraints. Only gas refrigerant is used, which makes it very robust and highly operable. In particular it is not affected by motions when installed on a floater and does not require refrigerant make-up. In a single unit, selective NGL extraction, lean gas pressure boosting and liquefaction are performed. Wide range of feed gases -also containing BTEX and/or LPGs- can be processed. The efficiency is significantly higher compared to conventional gas expander processes and competitive with Single Mixed Refrigerant processes. Three cases will be presented : A new build FLNG, a concept based on the conversion of an existing Moss LNG carrier and an onshore small-scale LNG liquefaction plant developed with a phased investment approach.



Eric Zielinski

Upstream & LNG Product Manager
XSIGHT by Saipem

12:30pm - 1:00pm

T2.4 Operation Experience of COREFLUX-LNG: A New Bridge Between LNG Regasification & Petrochemical Plants

COREFLUX®-LNG utilizes novel fractionation technology to separate NGL from methane in LNG and provides significant economic benefit in LNG regasification unit, while it has been implemented as the commercial scale unit in Dahej, India for Oil and Natural Gas Corporation Limited (ONGC) to extract C2/C3/C4 from 5 million tons of LNG per annum. The plant has successfully been commissioned after several technical challenges from its design stages and commercial operation is continued since August in 2015. Operation feedback of the plant is shared to demonstrate the practicality and economic of COREFLUX® technology.



Yasuyuki Yamamori
 Team Manager
Toyo Engineering Corporation

11:30am - 1:00pm

T3.4 Small Scale LNG / LNG Powered Vehicles

Category: Gastech Technical Conference

Stream: Natural Gas & LNG as Transportation Fuels including Bunkering

Moderator



Bernhard Pürzer
 Director Global LNG
ILF Consulting Engineers

Presentations

11:30am - 12:00pm

T3.4 The Portuguese LNG Virtual Pipeline - A Success Story with Over 5,000 Operations

Grupo Sousa is one of the main portuguese maritime and port operators and the largest portuguese shipowner in freight carried.

Since 2014 Grupo Sousa implemented a pioneering operation to supply LNG to Madeira island for electricity production through a LNG virtual pipeline, with a track record of over 5,500 containers successfully processed.

Grupo Sousa uses a fleet of cryogenic intermodal ISO containers transported by sea and road, and operates their own LNG Satellite Plant.

From november 2017 until april 2018

the Portuguese LNG virtual pipeline was configured to allow Grupo Sousa to perform LNG fuelling operations to Aidaprima cruise ship in the Port of Funchal, Madeira island, the first operations of such kind ever conducted in Portugal and in a small Island.



Pedro Frazão
 Director
Grupo Sousa

12:00pm - 12:30pm

T3.4 Small Scale LNG: New Plant Concepts and Operations - Experience from China

Small and midscale LNG will show the biggest growth in the industry segment in the coming years. Especially SSLNG schemes targeting transportation and substitution fuel drive this growth using the disruptive technology strategy. The former niche market product LNG becomes a commodity fuel. New value chains are based on fluctuating spot cargo type small parcel transactions.

SSLNG requires more flexible plant concepts (liquefaction plants, storage, and loading) and operating models, which differ from existing large-scale LNG schemes. The new value chains are discussed and experience from the world's largest LNG market China and applicability to other markets is presented.



Dr. Dietrich Roeben
 LNG Plant Manager
Hanas

12:30pm - 1:00pm

T3.4 Assessment of Innovative Small Scale LNG Carrier Concepts

The small-scale LNG carrier segment is increasingly taking a strong position to offer an environmental friendly solution regarding air emissions and new small-scale carriers able to perform LNG bunker are designed to meet demand for LNG as a fuel. Bureau Veritas has been closely involved in providing support to help the industry and largely involved with small-scale LNG carriers becoming leader in the certification of LNG bunkering ships supported by specific rules. In addition, new concepts for small scale LNG transportation are being developed. The containerized transportation of LNG and the multi bunker fuel projects are just few examples



Carlos Guerrero
 Global Market Leader - Tankers & Gas Carriers
Bureau Veritas Marine & Offshore

-

T3.4 RESERVE PAPER: Re-thinking LNG Transfer

Re-thinking LNG Transfer - Rapid development in the LNG market demands that infrastructure growth keeps pace – not only by scaling up, but by evolving to suit the needs of a diverse market. Demand continues to grow beyond traditional hubs, requiring infrastructure that is more flexible, cost-effective at smaller scale, and adapted to the needs of a range of locations. At the same time, this infrastructure must develop quickly to meet demand, in a manner that is efficient in terms of capital expenditure, and sustainable in the long term. This cost-effective technology has enabled a recalibration of traditional thinking around ship-to-shore LNG transfer. Designed for fatigue resistance in even the most hazardous conditions, cryogenic floating hose technology typically provides a viable alternative to traditional jetty-based transference for ship-to-shore operations in circumstances that would make such infrastructure unfeasible. This technology was recently put to the test in October 2017, when it was used in the first sea launch of the Universal Transfer System (UTS), developed with Connect LNG and Gas Natural Fenosa. The success of this launch demonstrated a system that would bring bunkering infrastructure to a vessel using a floating platform, connected to the shore by cryogenic floating hoses. It demonstrated how flexible floating hose technology can underpin new solutions that could easily be used to upgrade existing ports, or establish new bunkering facilities with lower start-up costs than heavier infrastructure would require.



James Hermary
 Project Leader Development LNG
Trelleborg Fluid Handling Solutions

11:30am - 1:00pm

T4.4 Upstream Field Development, Production & Planning

Category: Gastech Technical Conference

Stream: Exploration, Production & Field Development

Moderator



Scott Munro
 SVP & Corporate Development Officer
McDermott

Presentations

11:30am - 12:00pm

T4.4 Automation of Gathering Network Design

LogiCamms has developed a suite of automation tools for wellsite and pipeline design and optimization. The tool is called Aide (Automated Infrastructure Design Engine) and was originally developed for coal seam gas application where operators are drilling hundreds of wells yearly and needed a rapid way to test different infrastructure layouts. The tool's unique power is in its ability to iterate through thousands of options for placement of wellsites and flowlines to achieve the optimal layout for the development. LogiCamms has developed a technology roadmap for the Aide product which includes deep learning capability and a full digital twin of the asset.



Ryan McDonald
 General Manager Innovation and Technology
LogiCamms

12:00pm - 12:30pm

T4.4 4D Gravity and Seafloor Subsidence Surveys for Cost-Effective Monitoring of Offshore Gas Reservoirs

The information obtained from 4D gravity and subsidence monitoring provides improved decision-making in the development of offshore gas reservoirs. The estimate of the volume of gas in place can be improved, and the risk of water breakthrough in wells better evaluated. Drive mechanisms can be understood to more detail, and recovery in later phases of the development can be increased by identifying infill well targets or optimizing compression facilities. Such value is obtained with a survey cost which is typically 10% of that of 4D seismic.



John Even Lindgård
 Vice President Integrated Services
OCTIO

12:30pm - 1:00pm

T4.4 Design Considerations for Gas Pretreatment at an LNG Liquefaction Facility

Design Considerations for Gas Pretreatment at an LNG Liquefaction Facility This paper will cover specific challenges facing U.S. pipeline gas and provide examples of the solutions used to mitigate those challenges at an LNG liquefaction terminal. Challenges include a high concentration of O₂ in the feed gas, which oxidizes methane in the dehydration regeneration cycle, forming water, resulting in poor dehydration bed regeneration and icing up the liquefaction equipment. This paper will also cover the challenges of high NGL quantities in U.S. pipeline gas and their impacts on plant design, processing equipment and CAPEX.



Jason Yong
 Senior Process Engineer
Kiewit

11:30am - 1:00pm

T5.4 Health, Safety, Security & Environment

Category: Gastech Technical Conference

Stream: Health, Safety, Security & Environment



David Cavanagh
 Managing Director
Integrated Energy Pty Ltd

Presentations

11:30am - 12:00pm

T5.4 Operating Beyond Compliance - How Does a Vessel's Age Affect Their Risk & Environmental Profile?

With safety and environmental regulations now imposed upon the maritime industry's work force, one may wonder at the need for voluntary enhancement of safety and sustainability standards. Efficiency is not the only opportunity cost, with more than one billion tonnes of CO₂ emitted by shipping each year. In addition, the increased transparency demanded of maritime supply chains means that the decision to ignore available reporting and insights will give others a competitive advantage. David will discuss what these insights tell us about the risk and sustainability of the world's tanker fleet, and more specifically the LNG and LPG fleet.



David Peel
 Manager - EMEA
RightShip

12:00pm - 12:30pm

T5.4 Better Management of Methane Emissions from LNG Ships

This paper addresses the issues around methane emissions from operation of LNG ships. The paper reviews the status in three areas, namely methane emissions from operations associated with dry dock (warming up, gas freeing etc.), methane emissions from the propulsion system – ‘methane slip’, and ‘fugitive’ losses from the cargo system.



William Wayne
 Director
Sewallis Consulting Ltd

12:30pm - 1:00pm

T5.4 The Importance of Accurate Methane Emission Measurement in the Supply Chain of Gas

Nowadays it is well known that Methane is a critically important greenhouse gas. This paper discusses and compares different methods for leak detection and emission reduction. EPA Method 21, which is a worldwide recognized method for fugitive emission measurement, provides advantages, but it also has its limitations. Suggestions to overcome these limitations are discussed. This paper also compares measurement techniques. What are the latest technologies and developments and how do they relate to each other? Finally the paper discusses different emission sources. By means of case studies and benchmarks it is demonstrated how these losses are identified and what the impact is on a yearly basis.



Cindy Verhoeven
 International Sales Manager
The Sniffers

11:30am - 1:30pm

T1.4 Operations, Maintenance & Integrity Management

Category: Gastech Technical Conference

Stream: Operations & Maintenance

Moderator



James Solomon
 Director LNG
Air Products

Presentations

11:30am - 12:00pm

T1.4 Realize Higher Maturity in Operational Excellence Leveraging Data and Digital Technologies

The fourth industrial revolution in Gas and LNG business is characterized by usage of digital technologies such as IIoT, Artificial Intelligence, Big Data, Blockchain, Predictive Analytics, Augmented Reality, Robotics etc, bring. Imagine the ability to pinpoint the root of equipment failure, observe the related operational data in context (e.g., geospatial, three-dimensional equipment diagrams), launch remediation, and also manage a change process to eliminate reoccurrence? Analytical applications today can recommend optimal upstream field activities and an integrated production plan. Innovation connects technology with processes bringing significant productivity improvements. Looking at such industry use-cases would inspire many.



Manas Sahoo
Senior Director
SAP

12:00pm - 12:30pm

T1.4 3D-enabled Simulation Training for the Plant Workforce

Process plants are hazardous places to work with plants handling toxic materials, high temperatures and/or pressures and requiring equipment that handle large amounts of energy. Training of plant staff is therefore not surprisingly highly prioritized by owner-operators in order to ensure safe, sustainable production. The 3D enabled training platform provides an open, realistic and flexible environment to integrate the engineering design basis into comprehensive, interactive and enjoyable training programs for technical staff training. In contrast to traditional classroom-based training it provides a highly immersive and hands-on approach that lowers costs without compromising plant safety. Auditable records are retained of which employee has completed which training scenario and the results of that training.



Harsh Sethi
CEO
Neon Infotech SEA

12:30pm - 1:00pm

T1.4 Badak LNG Long Term Idle & Decommissioning Programme

Due to the declining trend of feed gas supply, Badak LNG would not require to operate three of eight Process Trains. Hence, Long Term Idle (LTI) and Decommissioning program shall be executed for these three Trains. Generally, LTI program consist of preservation program for static, rotating, electrical equipment and instrument devices, so the Train could be re-activated in the future. Decommissioning program is aimed to preserve the un-used equipment and ensure it environmentally safe for surrounding facilities. This paper will deliver the preservation program, scope of work, and implementation of LTI and Decommissioning program in Badak LNG



Fauzan Fitra
 Lead Inspection Engineer
Badak LNG

11:45am - 1:00pm

S1. The Emergence of the New Global Utility Player

Category: Gastech Strategic Conference

Stream: Utilities and Power Generation

Moderator



Laurent Moriceau
 Operations Manager
Reganosa

Presentations

11:45am - 12:10pm

S1.How is Blockchain Radically Enabling the Emergence of the Global Energy / Utility Player?

Blockchain has the capability to enable energy companies to reduce costs, improve process efficiency, eliminate IT security risks and enable new business models. Much more than a technology to automate business transactions, blockchain enables a new model for trust by establishing new types of transactional relationships between businesses via smart contracts, certifications and digital compliance. During this session we will explore several real-life examples of how companies are benefiting from blockchain technology to enable Energy industry executives to understand how best to extract value from these technologies and develop an adoption strategy to take advantage of the many possibilities.



Sunilkumar Ramakrishnan
 Blockchain Leader - Oil & Gas Industry, IBM Europe
IBM

12:10pm - 12:35pm

S1.The US Shale Gas Revolution and its Impact on Global LNG Markets

The economics of US production continue to support higher supply and even a slight improvement in prices translates into significant production gains. New and improved technologies have brought down the break-even for operators across the United States and projected to continue to do so. The present paper focuses on development across the different US oil and gas basins and projects their impact on global LNG markets. This is done by starting from a review of the upstream technologies like geological analysis, drilling and completion strategy optimization and establishing

a connection with use of new processes like data analytics to the demand and transportation processes and their respective evolution provides a holistic viewpoint on an integrated global gas market allowing us to make better decisions in projecting the future of the market.

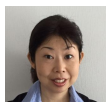

Akash Sharma

Sr. Analyst & Consultant, Petroleum Engineering
Drillinginfo

12:35pm - 1:00pm

S1.LNG on Rail - How It Can Serve Growing Demand?

Japan Petroleum Exploration Co., Ltd. (JAPEX) is founded in 1955 with METI's 34% shareholding. JAPEX is known as E&P company, we operate oil & gas fields in Japan and overseas. However, JAPEX is evolving. JAPEX commenced operation of LNG import terminal in March 2018, and is constructing 1.2GW CCGT. JAPEX is involved in Japan's only CCS project and Methane Hydrate project. But above all, perhaps our most unique business is "LNG on Rail", a LNG supply system using railway. We'd like to present how "LNG on Rail" works and its great benefit of reducing CO2 while achieving economical merit.


Momoyo Yuki

Senior Manager
JAPEX

11:45am - 1:00pm

S5. Gas & LNG in the EU

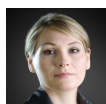
Category: Gastech Strategic Conference

Stream: Global Gas & LNG Markets including National Spotlights

This topic consists of the following sessions:

- European Trade Dynamics in an Evolving, Global LNG Market
- Future Gas Landscapes in European Markets, Including the Iberian Peninsula

Moderator


Ana Stanic

Founder and Director
E&A Law Limited

Presentations

11:45am - 12:10pm

S5.Ten Major Trends in the European Gas Market

Ten major trends in the European gas market The presentation will provide a broad view of the

ongoing evolution of the European gas sector in ten key points: - Decarbonisation - Rising gas demand - Declining domestic production - Growing imports - Hub pricing becoming the norm - Natural Gas, a pillar of Energy Transition - Renewable Gas - Uncertainty on long-term gas demand - Security of supply challenges - Energy utilities reinventing themselves



Geoffroy Hureau
 Secretary General
 CEDIGAZ

12:10pm - 12:35pm

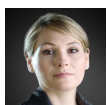
S5.Spain: The Value of Traditional Gas and LNG Markets and Their Evolution



Hue Lim Kim
 Head of Gas & LNG Trading
 Repsol, S.A

12:35pm - 1:00pm

S5.Future of Gas in an Increasingly Politicised EU



Ana Stanic
 Founder and Director
 E&A Law Limited

12:30pm - 1:30pm

“One Day in My Life”: Snapshots of Careers in the Industry

Category: Specialist Event

Stream: Young Gastech Programme

Take advantage of this unique opportunity to really understand the demands of varying roles within the industry. Discover how individuals laid their pathways for entry into the industry and what they actually do all day.

- **Commodities Trader – Vitol**
- **?Chemical Engineer – Gowri Krishnamurthy**
- **Shipping Executive – Debbie Turner**
- **EPC contractor**



Leyre de Adrian
 Global LNG Origination and Operations Director
 Naturgy



Roger Bounds
Vice President of Global Gas
Shell



Debbie Turner
Director
SSY Gas Limited



Andre Pampellonne
Director Business Development
McDermott

1:00pm - 2:30pm

Combined Lunch & Exhibition Visit hosted by AG&P

Category: Networking

Stream: Networking

1:30pm - 2:20pm

Lunch

Category: Specialist Event

Stream: Young Gastech Programme

1:45pm - 2:00pm

Welcome Coffee & Refreshments for participants

Category: Specialist Event

Stream: LNG Procurement & Trading Forum

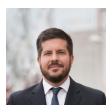
2:00pm - 2:20pm

Onstage with an LNG Leader: Qatar's View on the Shifting Global Supply / Demand Dynamic

Category: Specialist Event
Stream: LNG Procurement & Trading Forum
2:00pm - 3:00pm
7.Global Leaders' Panel: "Financing Future Energy Projects: Are Gas & LNG Projects in Competition with Renewables for Investment?"
Category: Gastech Plenary Stage
Stream: Global Leaders' Panel

Welcoming leaders from major banks and financial institutions investing in future energy infrastructure to discuss which projects are proving most attractive, and why. What future does natural gas and LNG have in comparison to 'green' energy projects and what are the forecasts for project CAPEX over the next two decades?

Speakers:



Rodrigo Díaz
Chief Development Officer
Reganosa



Rajeev Kannan
Executive Officer and Head of Investment Banking Asia & Pacific
SMBC



Philip Roberts
Managing Director Head of Investment Banking Division EMEA
MUFG



Ryosuke Tsugaru
Chief Executive
Diamond Gas International Pte. Ltd (DGI) a subsidiary of Mitsubishi Corporation

Moderator:



Jason Bennett
Partner, Deputy Department Chair
Baker Botts

2:20pm - 3:00pm
Panel Discussion: "Flexibility for the Buyer; Certainty for the Supplier – How to Achieve the Win/Win?"
Category: Specialist Event

Stream: LNG Procurement & Trading Forum



Javier Moret
Global Head of LNG
RWE Supply & Trading



Alberto Galicia
Director Global Gas & LNG Commercial
Repsol, S.A



Tarek Souki
SVP LNG Marketing and Trading
Tellurian Inc



Ahmad Adly Alias
Vice President LNG Marketing & Trading
PETRONAS



Gajendra Singh
Marketing Director
GAIL India Ltd

Moderator



Tom Mason
the President of Lake Charles LNG
Energy Transfer

2:20pm - 4:30pm

“The Problem-Solving Group Exercise”: Interactive Roundtables

Category: Specialist Event

Stream: Young Gastech Programme

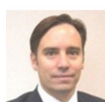
Participants will form mixed groups and work through a problem-solving task. Solutions will be shared at the end of the session.



Hieu Le
Naval Architect
London Offshore Consultants



Paul Sullivan
Project Advisor to the CEO & Strategic Governing Body CO-Chair



Nick Milne
Senior Vice President - Offshore, Oil/Gas & LNG Finance & Strategic Governing Body CO-Chair
Macquarie Group



David Ledesma
Energy & Strategy Consultant
South-Court Ltd

2:30pm - 4:00pm**T1.5 Operations, Maintenance & Integrity Management****Category: Gastech Technical Conference****Stream: Operations & Maintenance**

Moderator

**John Linwood**LNGM Business Development Systems Division,
Burckhardt Compression AG

Presentations

2:30pm - 3:00pm**T1.5 Knowledge Loss: Evaluating and Controlling the Risk Associated with Knowledge Held by People About Assets or From Projects**

Across the global gas industry organisations are facing the risk of knowledge loss, being the unintended consequences of mergers and acquisitions, industry contractions and a reliance on smaller numbers of 'lone experts'. Drawing on our experience internally and some client case studies including onshore gas distribution pipeline knowledge, this paper will explore DNV GL's approach to the challenge and propose lessons for the industry. These range from using a robust approach to identify where knowledge risks might lie, creating a plan to control those risks to embedding knowledge risk management into the management system

**Michael Kelleher**Principal Consultant
*DNV GL***3:00pm - 3:30pm****T1.5 An innovative Maintenance Management Model**

Over the last few years, Enagas has been working hard on the improvement and development of its Maintenance Management Model. The target of the model is to guarantee the maximum level of availability, optimising costs and extending the lifecycle of the assets. The MMM allows ENAGAS to develop this cycle step-by-step in a logical and simple process, optimising aspects directly or indirectly related to the most important standards of ISO 55001 certification.

**Javier Serra**Head of Maintenance Management & Analysis
*Enagás***3:30pm - 4:00pm**

T1.5 Importance of Integrity and Management in Upstream Subsea Gas Production Systems

The purpose of the presentation is to outline the importance of upstream gas production system integrity and integrity management in all areas of the upstream subsea gas production developments and its role throughout the life of the development. Addressing safety, reliability and availability of the upstream subsea gas production system, its personnel and operations outlining the main challenges associated with keeping integrity throughout an upstream subsea gas development project such as balancing the demands of demonstrating operational integrity against safety, quality, cost and schedule requirements.



Alastair Frith
 Senior Systems Engineer
Aker Solutions Ltd.

2:30pm - 4:00pm

T2.5 Gas Processing Technology

Category: Gastech Technical Conference

Stream: Processing and Cryogenics for Natural Gas & LNG

Moderator



Jeffrey Tatarzyn
 Senior LNG Consultant
ExxonMobil Production Company

Presentations

2:30pm - 3:00pm

T2.5 Debottlenecking: Getting the Most Out of Your LNG Plant

To increase the capacity of an existing natural gas liquefaction plant, at least one of two things is needed: increased liquefaction plant process efficiency or additional refrigeration power. This paper will discuss several practical modifications to the liquefaction unit of an existing LNG plant to increase LNG production capacity. Options will focus on improvements that do not require replacing large equipment and may be accomplished with minimal downtime. These low capital investment options may significantly improve the economics and revenue of an existing LNG plant by increasing annual LNG production.



Christopher Ott
 Lead Process Engineer
Air Products and Chemical Inc

3:00pm - 3:30pm

T2.5 New Technologies for Mercaptan Removal in Natural Gas Liquids

The removal of mercaptans from hydrocarbon streams presents several technical challenges because of the low reactivity and polarity of mercaptans. In addition, the lack of effective solutions limits the options available for reducing mercaptans in hydrocarbon streams. The removal of mercaptans is required to meet several different specifications for total sulfur and/or mercaptans concentrations in the hydrocarbon stream. This paper presents a novel and effective process for mercaptans removal from condensates, LPG, butane, propane or natural gas liquids (NGL) using a low cost and small foot print technology.

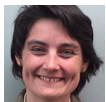


David Engel
Global Technology Leader
Exion Systems

3:30pm - 4:00pm

T2.5 Mercaptans Removal: How to Simply Overall Gas Plant Design & Operation with HySWEET

Mercaptans removal: how to simplify overall gas plant design and operation with HySWEET®? TOTAL has developed, fully demonstrated and implemented the HySWEET® technology for acid gases as well as mercaptans removal while limiting hydrocarbons co-absorption and improving energy efficiency. The benefits of HySWEET® DEA process will be demonstrated by two case studies: •A brownfield application where the advantages of the HySWEET®DEA compared to the conventional amine solvent have been quantified after a solvent swap. These results are supported by operational feedback which will be presented. •A greenfield application where benefits of removing mercaptans in gas phase with the HySWEET®DEA process instead of caustic wash of the C3/C4 cuts, will be demonstrated.



Claire Weiss
Acid Gas expert and manager
TOTAL



Geraldine Laborie
Gaz Sweetening Technology Manager

2:30pm - 4:00pm

T3.5 Small Scale LNG / LNG Powered Vehicles

Category: Gastech Technical Conference

Stream: Natural Gas & LNG as Transportation Fuels including Bunkering

This topic consists of the following sessions:

- Small-scale LNG – Project Updates
- Small-scale LNG – Bunkering / Marine Infrastructure

- Small-scale LNG – Land transportation



Tony Teo
 LNG Consultant
Sembcorp Marine - Offshore Platform

Presentations

2:30pm - 3:00pm

T3.5 Adapting for a Small-Scale Market



Simon Culkin
 Terminal Director
National Grid Grain LNG

3:00pm - 3:30pm

T3.5 KOGAS - Development of Small Scale LNG Receiving Terminal

KOGAS is now operating 4 world's largest scale LNG receiving terminals with the number of 72 LNG storage tanks. We designed 39 tanks by ourselves including world largest 3 tanks with the capacity of 270,000m³. KOGAS dealt with all the area of work for LNG receiving terminal such as basic design for LNG receiving terminal, design and construction of LNG storage tank, operation, maintenance, repair and pre-commissioning. A large number of equipment such as pump, compressor, vaporizer are operated for a long time. Based on these achievements, KOGAS has performed a design of small scale LNG receiving terminal in Jeju island and now under construction. To increase the efficiency of LNG regasification and design a reliable storage tank system, applying our vast experience of large scale LNG terminal as follows. First, we performed a basic design for Jeju receiving terminal. We come to a conclusion how to operate equipment system by optimizing the many scenarios such as environmentally friendly system, cost saving and convenience of maintenance and operation. Second membrane type full containment system LNG storage tank with the capacity of 45,000m³ is designed and now under construction. And the last, LNG transport carrier by applying KC-1 LNG containment system with the capacity of 7,500m³ were also designed to provide LNG from existing receiving terminal to a new small one. The aim of KOGAS small receiving terminal is to improve environment-friendly and high efficiency small scale LNG receiving terminal. It could be realized on the basis of our experience and knowhow for the operation of large scale receiving terminal, records of basic design and storage tank design.



Youngkyun Kim
 Principal Research Engineer
Korea Gas Corporation (KOGAS)

3:30pm - 4:00pm

T3.5 Small Scale LNG Distribution for Gas to Power Projects in Indonesia

This paper presents small scale LNG distribution for Gas to Power Projects in the Indonesian Archipelago and the neighboring Bay of Bengal countries through an innovative financing structure in public private partnerships. Small-scale LNG distribution expedite Gas to Power projects, contributing to accessibility, lowering greenhouse gas emissions and promoting conversion of coal

and diesel generation to gas. Presenting Arun LNG terminal as a case study, evidence is shown on how a depreciated LNG terminal is utilized to deliver LNG to the domestic and regional markets through break bulk services and LNG bunkering. The Provincial Government of Aceh and local communities will benefit from such sustainable social impact projects.



Alan Yogi Lau
 President Director
PT. Anglo Euro Energi Indonesia

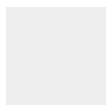
2:30pm - 4:00pm

T4.5 Natural Gas Transmission, Pipelines & Storage

Category: Gastech Technical Conference

Stream: Shipping and Storage of Natural Gas, LNG, LPG and Chemicals

Moderator



Nieto Prieto

Presentations

2:30pm - 3:00pm

T4.5 Quantifying Fugitive Emissions: Yes, it is possible!

Aerial Data Management (ADM) techniques involving the use of Unmanned Aerial Vehicles (UAVs), equipped with specialised Fugitive Emission (FE) sensors, represent an innovative pipeline inspection method that can realize significant cost and time savings and minimize risk.

WorleyParsons has developed an FE sensing and processing platform which is capable of mapping leaks after flying over facilities and providing coordinates of the leak with precision accuracy. This paper provides the reader with details on this innovative technique in gas transmission pipeline leak detection and quantification, with real-time depictions of leak plumes and measurement outputs.



Vasant Saith
 Chief Process Engineer
WorleyParsons

3:00pm - 3:30pm

T4.5 Cost-Effective Solution for Gas Quality Assessment in Grids

The Netherlands is facing major changes during the coming decades in the production and use of natural gas for household heating and industrial processes. In order to facilitate the transition to LNG and biogas, TNO started the development of a new type of gas sensor to measure the

composition of the target gas. Subsequently the Calorific Value and Wobbe Index of the gases can be calculated. Together with industrial and academic partners a small gas sensor was realized that can be inserted in an existing gas grid, and measures the concentrations of methane, ethane, propane, butane, nitrogen and carbon dioxide.



Dr. Arjen Boersma
 Senior Scientist Chemical Sensors
 TNO

3:30pm - 4:00pm

T4.5 LNG Storage Under Severe Earthquake: Seismic Isolation Systems for LNG Tanks

The location of large above-ground LNG storage tanks in zones with high seismic risk implies formidable engineering challenges. Most of these huge and cryogenic structures have natural frequencies in the range of resonance with ground motions. In order to enhance the performance reliability and safety, base isolation devices like High Damping Rubber Bearings (HDRB) or Friction Pendulum Bearings (FPB) are increasingly required.

As a case of study, a 175,000 m³ capacity LNG Tank in Mejillones (Chile), successfully carried out by Técnicas Reunidas as sole EPC contractor, is here presented.



Santiago Guzmán Gutiérrez
 Head of LNG Tanks Department
 Técnicas Reunidas

2:30pm - 4:00pm

T5.5 Health, Safety, Security & Environment

Category: Gastech Technical Conference

Stream: Health, Safety, Security & Environment



David Cavanagh
 Managing Director
 Integrated Energy Pty Ltd

Presentations

2:30pm - 3:00pm

T5.5 Advance Implementation of Online Bow-tie to Prevent Major Accident Events (MAEs)

With the PTTEP goal of Safety “Everybody returns home safely and nobody gets hurt” PTTEP has developed the first Asset Integrity monitoring (AIM) to provide “Line-of-sight to Safety Case barriers status” contributing to Process Safety Management and Asset Reliability and Integrity Management (ARIM) process of “Ensuring asset can perform its required function efficiently and effectively whilst safeguarding life and the environment” for managing workplace safety. The first Asset Integrity

monitoring (AIM) will bring bowtie diagrams and management of SCE concept from documents into life by providing holistically recent views of the health of the plant barriers (Safety Critical Element – SCE). SCEs are functional groupings of safeguarding system and controls selected to prevent the realization of or limit the effect of Major Accident Elements (MAEs) e.g. catastrophic accidents, structural collapse, loss of hydrocarbon containment, explosions, and fires. Each safety critical element includes a mix of plant (equipment); process (documented and “custom and practice”) and people (personal skills). AIM can illustrate the status of safety barriers by color-coded graphics e.g. Red, Amber or Green for each MAE and barrier groups at any given time. AIM is a traceable and transparent system to measure compliance with the management system for Asset Integrity. In addition, AIM is a bottom-up monitoring tool from site personnel, Technical Authority (TA), to decision makers or management team in order to prioritize operational tasks and resources for barrier repairs, modifications and temporary measures based on barrier conditions and recording. AIM can provide a safety alert for the management support on the operation when necessary.

The first Asset Integrity Management (AIM) can provide an integrated system to monitor key SCEs, a mix of plant (equipment function, or deviation), process (documents) and people (personal certificate/training records), in the following areas: •Plant - Failure of safeguards and controls (part of SAP), •Plant - Noncompliance of planned maintenance, testing or inspection for safeguards and controls (part of SAP), •Plant - Invalid deviation control on Safety related equipment (part of Management of Change - MoC), •Process - Invalid safety-related documents status (part of Electronic Document Management System - EDMS) and •People - Incompetent personnel skills e.g. invalid certificate or training (past of Competence management system). The key success of the AIM implementation can be a significant milestone that can prove the continuous improvement of the management of SCE in PTTEP to ensure the safe operation for the asset. Furthermore, the AIM monitoring can be further implemented to support the management of SCE for other PTTEP assets. The key benefits for AIM monitoring are: •The first time in PTTEP of an automatic line-of-sight to Safety Case barriers status with providing of easy and holistic visualization of the health of the plant barriers. •The first monitoring system that can show bowtie and barrier status in a traceable and transparent manner throughout PTTEP. •The first monitoring system that can minimize workload for asset integrity monitoring in compliance with the company management systems e.g. HSE Process Safety Management KPI and ARIM.



Akaradech Apornsuvan
 Reliability and Integrity Engineer
PTT Exploration and Production



Chatpong Chitwiset
 Engineer, Reliability and Integrity
PTTEP

3:00pm - 3:30pm

T5.5 Improving Safety & Uptime in an IoT World

There have been several well publicized offshore, refinery and petrochemical incidents over the past few years, causing at best millions of dollars of damages and lost production and at worst injuring innocent people. Reports show that many of these incidents could be attributed to ‘human error’. Predictive analytics and standards based decision support techniques were not available at the time but today, they could help to avoid a major shutdown and loss of revenue. This paper explores the way standards, aligned with advanced decision support technologies are being used to improve safety and availability.



Maurice Wilkins
 Executive Advisor
Yokogawa Electric Corporation

2:35pm - 4:15pm**S6. FSRUs****Category: Gastech Strategic Conference****Stream: Floating Structures including FSRUs and FLNG Projects**

This topic consists of the following sessions:

- Market Design Models & Impacts on Industry
- Policy, Consumer Attitudes & Legal Impacts

Moderator



Daniel Rogers
Partner
King & Spalding LLP

Presentations

2:35pm - 3:00pm**S6.Developing an FSRU Project: 10 Key Considerations**

Daniel Rogers
Partner
King & Spalding LLP

3:00pm - 3:25pm**S6.FSRUs Have Become the Preferred Regasification Solution**

Although floating storage and regasification units (FSRUs) is a relatively new segment, it has proven to be a key to develop and open new LNG markets. As the volume of LNG produced and consumed continues to expand at, FSRUs offer new importing LNG markets around the world access to the global LNG market at a fraction of the cost and time for the construction of a land based LNG import terminal.

The fast-track and low-cost qualities of FSRUs is widely recognised and both LNG producers and downstream developers embrace the FSRU technology for LNG imports. With the opportunity to buy LNG for shorter periods of time, in smaller quantities and at attractive prices, means that more consumers can access the world LNG markets and thereby support demand for LNG and ultimately for FSRUs.



Sveinung Støhle
President & CEO
Höegh LNG

3:25pm - 4:15pm

S6. Panel Discussion


Oliver Simpson
 Vice President – Commercial
Excelerate Energy



Tadas Matulionis
 LNG Business Director
Klaipėdos nafta



Youngjun Nam
 Senior Vice President
Hyundai Heavy Industry Co., Ltd (HHI)



Takeshi Hashimoto
 Director/ Senior Managing Executive Officer
Mitsui O.S.K. Lines, Ltd

3:00pm - 3:20pm

Standardisation in LNG Contracts
Category: Specialist Event
Stream: LNG Procurement & Trading Forum


John White
 Partner
Baker Botts



Alejandro Carballo Leyda
 General Counsel



Paramate Hoisungwan
 Upstream and Gas Team Leader
ASEAN Council on Petroleum (ASCOPE)

3:00pm - 4:15pm

S2. Future Financing of Gas & LNG Projects
Category: Gastech Strategic Conference
Stream: Financing & Funding

This topic consists of the following sessions:

- Financial Risk Management Across Projects
- Managing Geopolitical Risks Across Emerging Markets

Moderator



Jason Bennett

Partner, Deputy Department Chair
Baker Botts

Presentations

3:00pm - 3:25pm

S2.LNG Market Evolution and its Effect on Liquefaction Project Finance

The ongoing shift to shorter-term LNG contracts and a more commoditized market will leave its stamp on liquefaction project finance. To gauge the impact we conduct soundings with project sponsors, customers and potential financiers, including banks, export credit agencies, and private equity investors. We come to an initial assessment of what the changes mean for:

- the amount of debt projects can raise
- financing costs
- project finance structures

The dearth of final investment decisions means that there is little definitive data to work with. But the far-reaching implications of the contracting changes make early examination a worthwhile exercise.



Melanie Lovatt

Finance Advisor, Research Reports
Poten & Partners

3:25pm - 3:50pm

S2.Reimagining Financing for LNG Projects

LNG financing has traditionally been underpinned by a combination of (1) long term contracts, (2) full volume offtake and (3) investment-grade LNG buyers. However, the commercial structures for the new LNG projects are now moving away from these elements while the financing structures have remained rooted in past leading to lack of adequate financing.

This paper provides a banker's view on how the LNG financing structures could adapt to the new commercial realities and in what ways could each stakeholder (developers, off-takers and lenders) contribute towards risk reallocation in order to achieve bankable LNG financings.



Siddhartha Shrivastava

Head of Energy & Natural Resources, Asia
SMBC

3:50pm - 4:15pm

S2.LNG to Power: Overcoming the Challenges of Financing the Fuel of the Future

Despite the emergence of LNG as a fuel source of tomorrow, making the transition from heavier fuel oils to natural gas is expensive and requires a range of infrastructure, technology and financing expertise. One significant challenge that LNG to power projects face is co-development, and potential co-financing of both the LNG plant and underlying power infrastructure. Projects can potentially suffer from “project-on-project” risk due to the interdependency of the construction and commissioning of the gas and power infrastructure. In addition, LNG-to-power projects are highly complex and require consideration and mitigation of several unique risks.



Jeremy Dawson
Director of Market Development

3:20pm - 3:50pm

Coffee & Networking Break

Category: Specialist Event

Stream: LNG Procurement & Trading Forum

4:00pm - 4:30pm

Technical Coffee & Networking Break Sponsored by ABS

Category: Networking

Stream: Networking

4:00pm - 4:45pm

Panel discussion: “Disruptor Technologies & Trading of Gas and LNG: What Cutting-Edge Platforms Will We See Developed, What Impacts on Global Trade Dynamics?”

Category: Specialist Event

Stream: LNG Procurement & Trading Forum

**Melissa Lindsay**

Founder
Emstream

**Juan Carbayo**

Business Development Manager
CEPSA

**Damien Criddle**

Founder and Chief Executive Officer GLX
GLX

Moderator

**Gordon Bennett**

Managing Director
Intercontinental Exchange (ICE)

4:15pm - 4:45pm

Strategic Coffee & Networking Break Sponsored by ExxonMobil

Category: Networking

Stream: Networking

4:30pm - 5:00pm

Final Words: "From Young Gastech to Government Minister – An Amazing Journey"

Category: Specialist Event

Stream: Young Gastech Programme

Hear the inspiring story of Young Gastech Alumni Anton Safronov as he recounts his personal experiences of working in the energy industry before taking office in 2017.

**Anton Safronov**

Minister of Trade, Investment & Enterprise
Sakha Republic (Yakutia), Russia

4:30pm - 6:00pm

T1.6 Operations, Maintenance & Integrity Management

Category: Gastech Technical Conference

Stream: Operations & Maintenance

Moderator



John Linwood

LNGM Business Development Systems Division,
Burckhardt Compression AG

Presentations

4:30pm - 5:00am

T1.6 Condition Assessment for Optimising Gasunie's Network Improvement Program (GNIP)

This paper provides a general overview of the GNIP renovation program of the Dutch regional gas transmission network and the verification project thereof (GVP). The GNIP program was initiated upon questions regarding the remaining technical lifetime of the network, and the wish to comply with future safety and transport standards. This paper focuses on the part of the verification project assessing the condition of difficult-to-inspect components of gas delivery stations in the network. Lessons learned and results from the GVP have led to adjustments in the replacement program in terms of both scope and pace.



Karen van Bloemendaal

Principal Consultant Asset Integrity Management
DNV GL

5:00pm - 5:30pm

T1.6 Insertion Smaller Conduit & Mini Horizontal Directional Drilling: An Alternative to LNG Tank Bottom Heater Repairment Method

Arun LNG bottom tank heater was being revitalized for LNG Hub Terminal. A common method of repair tank heater is an open cut method, which required 1 year duration and yet high cost. Pertamina demonstrates that inserting smaller 316 SS tubing into existing conduit and replacing existing conduit using mini Horizontal Directional Drilling (HDD) technique were successful method to revitalize a 42 years old LNG bottom tank heater. Work productivity for inserting new conduit is 87.11 m/day, while for mini HDD is 3,86 m/day. This method required shorter project duration, lead to less cost compared to open cut methodology.



Ratio Maliki

Instrument & Automation Engineer
PT Pertamina (persero)

5:30pm - 6:00pm

T1.6 The Changing Role of Supply Chain Management in the Future Energy Landscape: How New Digital Technologies are Transforming SCM

Technological progress is becoming more and more important as it affects every part of the value

chain. Especially in Supply Chain Management, new digital technologies and trends are driving dramatic changes in processes and mission of Supply Chain Management. That is why it is essential that companies understand the trends and assess the potential benefits of evolving technologies for their own business and for the energy industry as a whole. During this session, we will explore how global supply chains will work in 2025 and beyond.?



Thorbjörn Fors
 CEO, Distributed Generation and O&G Services
Siemens

4:30pm - 6:00pm

T2.6 Gas Processing Technology

Category: Gastech Technical Conference

Stream: Processing and Cryogenics for Natural Gas & LNG

Moderator



Jeffrey Tatarzyn
 Senior LNG Consultant
ExxonMobil Production Company

Presentations

4:30pm - 5:00pm

T2.6 Unique Excursions from Typical Hydrocarbon Vapour - Liquid Separation Characteristics

Knowledge related to liquid-vapour separation in the gas processing application has well been established. Despite vast experience in the design and operation of liquid-gas separators, several transitions of operating conditions in Qatargas have demonstrated a rather unique deviation from typical gas-liquid separation characteristics, and have consequently revealed a new understanding and opportunity to devise modifications to ensure continuous stable operation. This paper elaborates the technicalities behind this interesting phenomenon, its implications as well as actions taken to mitigate the effects. Learning from this experience is shared not only to enhance intramural knowledge but also for the benefit of other comparable operating units.



Salihin Mohamed Ismail
 Senior Process Surveillance Engineer
Qatargas Operating Company Limited

5:00pm - 5:30pm

T2.6 Liquid Chemicals Produced from Bioconversion of Natural Gas


Yuko Amizaki

Director, Business Development, Industrial Products Division
Intrexon Corporation

5:30pm - 6:00pm

T2.6 GTL: A Catalyst for In-Country Value & Growth

How can the world meet growing energy demands of a soaring population combined with greater urbanisation? Gas-to-liquids (GTL) fuel provides governments with a viable solution to improve air quality. At the same time, a GTL plant, which turns natural gas into high quality liquid products, can deliver power, water and long-lasting economic benefits to its surrounding community. This presentation will reveal how investing in a GTL plant can accelerate in-country growth, with transformative potential.


Shelley Wheeler

GTL Business Development Manager
Shell

4:30pm - 6:00pm

T3.6 Small Scale LNG / LNG Powered Vehicles

Category: Gastech Technical Conference

Stream: Natural Gas & LNG as Transportation Fuels including Bunkering

Moderator


Steinar Draegebo

Chairman and Chief Executive
ICE Marine Design Group

Presentations

4:30pm - 5:00pm

T3.6 LNG Bunkering Today and Tomorrow - A Case Study

The paper will provide an overview of the most recent work in respect of ship-shore links and communications. The LNG bunkering projects of Harvey Gulf will act as a case-in-point; The paper will review the alternative ship-shore link technologies available, and "lessons learned" from around the industry. It will also discuss how process safety is improved and training is facilitated by using fibre optic link technology with associated redundancy to ensure compatibility with ESD systems, telephony and cargo process data from any LNG fuelled vessels.


Andrew Stafford

Technical Director
Trelleborg Marine Systems

5:00pm - 5:30pm

T3.6 Boil-Off Gas Re-Liquefaction on Cardissa Bunker Vessel Using Innovative Sub-Cooler

Stricter IMO requirements on atmospheric emission will open to an increasing number of LNG-fuelled vessels. Ship-to-ship LNG bunkering mode can provide greater flexibility in terms of bunkering location and capacity. Shell owns and operates one of the first LNG bunker vessel, the Cardissa, based in Rotterdam. Cardissa has storage capacity of 6,500 cbm and can maintain LNG at low pressure and low temperature to serve wide variety of customers. In addition, Cardissa is capable of handling the return vapor. LNG sub-cooling system on board enabled these two distinctive features to Cardissa. Air Liquide advanced Technologies has supplied Turbo-Brayton sub-cooler. Based on an innovative technology, the Turbo-Brayton sub-cools LNG, thus transferring cold power to the tanks through the LNG itself and by this operation, both re-liquefying the BOG and maintaining LNG cold



Cecile Gondrand
 Product Manager
Air Liquide Advanced Technologies

5:30pm - 6:00pm

T3.6 B-FREE LNG - Next Generation Environmental-Friendly LNG Carrier

As a result of the BWM Convention, effective since Sept 2017, new ships will have to be equipped with an approved ballast water treatment system. In response to this, a number of technologies enabling compliance with the new regulations have been developed and commercialized by different vendors, or to comply with alternative method such as ballast-free. GTT, Lloyd's Register, DSIC and Exmar decided to join forces in order to study a generation of efficient and environmentally-friendly Ballast-Free LNG carrier design aimed at eliminating the need to carry and treat ballast water. The paper will highlight the challenges that the working team faced on various naval architecture aspects in designing a Ballast-Free LNG carrier, as well as sharing the findings of the phase I of the study, including the extra benefits that were even not forecasted.



Adnan Ezzarhouni
 General Manager, GTT China
GTT

4:30pm - 6:00pm

T4.6 Natural Gas Transmission, Pipelines & Storage
Category: Gastech Technical Conference
Stream: Shipping and Storage of Natural Gas, LNG, LPG and Chemicals

Moderator


Joseph Gebara

Senior Vice President, Project Delivery, Oil & Gas,
SNC-Lavalin

Presentations

4:30pm - 5:00pm

T4.6 Gas Network Simulation and Optimisation Software Using Stochastic Methods for Uncertain Demand with the Integration of the Tarif

Managing and developing a green field gas transport network or optimizing and extending an existing gas transport network is a complex problem because of the number of gas routing possibilities, demand scenarios, operational strategies, qualities of the gases transported and the heterogeneity of the off takers, in terms of physical and commercial conditions. The Spanish energy company and Transmission System Operator (TSO) Regasificadora del Noroeste S.A. (Reganosa) owns a unique decision tool, named as GAs NEtwork Simulation and Optimization (GANESO®) to support decision makers to make the correct decision in the technical, economic, financial and profitable sustainability point of view.


Jesus Losada Maseda

Business Development Manager
Reganosa

5:00pm - 5:30pm

T4.6 Kuwait's Outlook on Alternate Gas Strategies Infrastructure Challenges & Innovative Solutions

Kuwait's Outlook on Alternate Gas Strategies Infrastructure Challenges and Innovative Solutions Abstract Short version: Entering Gas era, KOC adopted the concept of being a leader in penetrating the industry to achieve high quality production of gas, transport and market gas to cover entire needs for energy in State of Kuwait.

The state recognized the environmental advantages of power generation with natural gas, and subsequently initiated new projects with LNG technologies in addition to improving its gas reserves. The paper focusses on rapidly growing gas demand in the state, its key drivers and solutions. Emphasis is provided on Kuwait's outlook and ventures into LNG, controls and measures developed for handling constraints in logistical infrastructure.


Eisa Al-Haddad

Senior Engineer
Kuwait Oil Company (KOC)

5:30pm - 6:00pm

T4.6 Pipeline Coatings - An Operator's Perspective

Pipeline integrity has been maintained over the last 40 years by the simultaneous application of protective coatings and cathodic protection. There has been significant developments in pipeline coating technology over the last 30 years as the traditional coating systems such as coal tar enamel, asphalt and single and two layer polyethylene coatings have been replaced in favour of coatings such as single and dual layer fusion bonded epoxy and 3-layer polyolefins. New coating

technologies inevitably bring with them new problems for pipeline operators that must understood and addressed. This paper reviews the transition from the more traditional coating systems to the second and third generation of pipeline coatings and discusses the new challenges that face pipeline operators. The difficulties of selecting field joint coatings with similar performance to the newer mainline coating systems will also be discussed, as well as issues related to electrical interference (AC and DC) and CP shielding that have become more of a concern because of the high integrity and dielectric strength of some modern coatings. Lessons learned over the years will be reiterated and how far the pipeline coatings industry has progressed reflected upon. Methods A comprehensive review and cataloguing of operations experience, capturing and evidencing coating failure modes and related corrosion issues.



Chris O'Connor
Principal Consultant
DNV GL

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T4.6 RESERVE PAPER: Pipeline Diagnostics with Ultrasonic Meter



Noman Rasool
Technical Project Manager
Enbridge Energy Inc

4:30pm - 6:00pm

T5.6 Health, Safety, Security & Environment

Category: Gastech Technical Conference

Stream: Health, Safety, Security & Environment



David Cavanagh
Managing Director
Integrated Energy Pty Ltd

Presentations

4:30pm - 5:00pm

T5.6 Cryogenic Insulation - Best Payload Protection with Health and Environmental Safety in Mind

LNG is a cryogenic liquid and natural gas is flammable, therefore it is necessary to efficiently and safely store and transport it. There have been instances worldwide of unsafe handling and transport that have led to explosions and even death.

Type of heat transfer, a variety of insulation materials for LNG vessels and it's efficiency will be discussed, as well as innovative solutions to keep the high efficiency of insulation while eliminating

health and environmental hazards during vessel manufacturing, repair and handling at vessel's end-of-life.

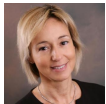


Anatoli Kogan
 Business Manager
Lydall Performance Materials Inc

5:00pm - 5:30pm

T5.6 New Technologies Drive Operational Performance by Connecting Smart Stations to Distribution Networks

A "Smart Energy System" requires "NG Smart Grids" able to interoperate and equipped with "Smart Equipment" with additional and improved functions. For instance, it is now possible to remotely modify the set point, limit the capacity and receive diagnostic information. It is possible to work on pressure profiling, optimizing the Natural Gas grid depending on the current demand. Smart systems can provide many benefits such as reduced manpower, faster troubleshooting, improved accuracy and reduced measurement uncertainties. At the end, this will translate into better overall performance of the system and reduced operating costs.



Rossella Mimmi
 Business Development Manager
Emerson

5:30pm - 6:00pm

T5.6 Improved Knowledge of BLEVE in LNG Pressurised Tanks

LNG BLEVE has raised as a subject of interest due to the development of small scale LNG. To address the risk of LNG BLEVE and the related regulation, several experimental projects were carried out in order to investigate the resistance and thermal properties of double-walled perlite and vacuum insulated LNG tank and their resistance when caught in fire. This presentation aims at sharing this approach and the results obtained to the industry.



Maelle Planchenault
 LNG Industrial Safety - Project Manager
GRT GAZ

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T5.6 RESERVE PAPER: Achieving More with Less: Case Studies on the Use of Quantative Risk Assessment in Risk Related Decision Making

4:40pm - 5:30pm

Panel Discussion followed by an open Roundtable Response: "Understanding How Emerging,

Fragmenting & Diversifying Markets are Creating a New LNG Customer Landscape”

Category: Specialist Event

Stream: LNG Procurement & Trading Forum



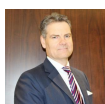
Andrew Walker
 Vice President LNG Strategy
CHENIERE ENERGY INC



Patrick Hughes
 Vice President, Corporate Strategy, External Affairs and Investor Relations
NextDecade Corporation



Stuart Taylor
 Senior Vice President Marketing and New Ventures & Corporate Development Officer
Jordan Cove LNG



Jakob Stampe
 Chief Commercial & Business Development Officer
Nakilat

4:45pm - 6:00pm

S3. Gas Policy

Category: Gastech Strategic Conference

Stream: Market Outlook, Policy & Regulation

This topic consists of the following sessions:

- Evolving Utility Company and End-User Business Models
- Future Forecasts of Impacts in these Dynamic & Structural Shifts

Moderator



Vincent Demoury
 General Delegate
International Group of Liquefied Natural Gas Importers (GIIGNL)

Presentations

4:45pm - 5:10pm

S3.The Role of National Regulation in Gas Markets

The regulatory framework is by far an important step of every strategic assessment as it plays a key role in setting the competitive landscape of gas markets. Traditionally, Italy is a pioneer in many cases setting up innovative standards and measures in the market such. In the next months, Italy is expected to undergo a profound revision of the regulatory framework enabling the country to seize the opportunity to become one of the leading European

gas hubs. This presentation intends to analyze major regulatory changes in order to outline a possible path for gas authorities to consider for the evolution of the regulatory framework.



Rosario Bisbiglia

Director

Edison

5:10pm - 5:35pm

S3.Impediments to Chinese LNG Market Development: A Critical View and Some Recommendations



Daniel Rogers

Partner

King & Spalding LLP

5:35pm - 6:00pm

S3.Japan's Market Reform Has More Significant Impacts on the Global LNG Market than the Apparent Figures May Suggest

The Japanese city gas and electric power companies are now undergoing the greatest restructuring process in their history. Companies are getting into more competition modes. More alliances are being forged between companies from different business areas. A new regulation has been implemented on third party use of the nation's LNG terminals. In 2017, Japan's Fair Trade Commission investigated LNG import contracts and made recommendations in favour of removing destination restrictions. Those three issues have been, in recent years, and are expected to be, major factors in changes in the global LNG market in the years to come.



Hiroshi Hashimoto

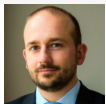
Senior Analyst, Gas Group

Institute of Energy Economics, Japan - IEEJ

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S3.RESERVE PAPER: Preparing the EU Gas Legislative Package 2020: What Regulatory Changes Should be Addressed to Foster the Introduction of Renewables

Preparing the EU Gas Legislative Package 2020: What Regulatory Changes Should be Addressed to Foster the Introduction of Renewable Gases into the Gas Infrastructure System. In view of the expected EU Gas Legislative Package 2020, the paper will aim to identify which regulatory changes, both at EU and/or national level, would be needed to allow the introduction of renewable gases into the gas infrastructure system. Investors, operators and other market participants require certainty and long-term stability to widely deploy renewable gases. Renewable gases are called to play a key role in the energy transition and beyond. The development of an appropriate regulatory framework based on fit-for-purpose standards, network codes, regulations, directives, etc. will make possible to tap the whole potential of the gas infrastructure system for the injection, transportation and storage of renewable gases.



Abel Enriquez
 EU Regulatory Affairs Manager
Enagás

4:45pm - 6:15pm

S7. Global Gas & LNG Project Update

Category: Gastech Strategic Conference

Stream: Market Outlook, Policy & Regulation

Moderator



Paul Sullivan
 Project Advisor to the CEO & Strategic Governing Body CO-Chair

Presentations

4:45pm - 5:10pm

S7.IEA World Energy Investment



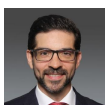
László Varró
 Chief Economist
International Energy Agency

5:10pm - 5:35pm

S7.Mozambique LNG - A New Global Supply Source

Anadarko-led Mozambique LNG is an emerging leader in the LNG industry working to develop the first onshore LNG facility in Mozambique. With ~75 trillion cubic feet of recoverable natural gas in Offshore Area 1, Mozambique LNG represents an extraordinary opportunity to meet global demand for a sustainable, reliable and cleaner source of energy for decades to come.

More than 100 MTPA of pre-FID supply is aggressively being marketed comprising North America, Qatar, Russia and other projects. This paper addresses: how Mozambique LNG will stay competitive in this complex landscape?; the project's achievements to secure FID; composition of its sales portfolio and future plans.



Gonzalo Cabrera
 General Manager LNG Economics and Market Analysis
Anadarko Petroleum Corporation

5:35pm - 6:00pm

S7.LNG-to-Power in El Salvador, Central America

EDP signed a 20-year PPA with the Electric Distribution Companies (DistCos) after being awarded an international tender organized by the Government of El Salvador. In 2017 Invenergy (US) acquired a majority ownership in EDP, keeping the local sponsors a minority participation. EDP includes three sub-projects: 1) an FSRU and its associated 2 Km-long pipeline, 2) a 378 MW Power Plant, and 3) a 45 Km-long Transmission Line. Expected Commercial Operation Date (COD): Q4 2020/Q1 2021. The project site is the Port of Acajutla, on the Pacific Coast of Central America. Power off-takers are the seven private DistCos operating in El Salvador.



Alejandro Alle
 Executive Director
Energía del Pacífico

5:00pm - 5:00pm

Close of Programme

Category: Specialist Event

Stream: Young Gastech Programme

Conference Day Three

9:00am - 9:15am

Keynote Address

Category: Gastech Plenary Stage

Stream: Plenary

Presentations



Jean-Baptiste Dubreuil
 Senior Natural Gas Analyst
International Energy Agency

9:15am - 10:15am
8.Global Leaders' Panel: "The Gas–Renewables Nexus: Delivering Cleaner Transport and Power for the Future"
Category: Gastech Plenary Stage
Stream: Global Leaders' Panel

Assuming both a partner and competitor role with renewable energy, this panel will welcome integrated energy companies and end users to discuss the role that gas will play in companies' long term low carbon strategies and the revolution taking place in the transport sector.



Marcelino Oreja Arburúa
 Chief Executive Officer
Enagás



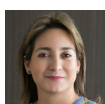
Pierre Chareyre
 Executive Vice President
Engie



Steven L. Edwards
 Chairman & Chief Executive Officer
Black & Veatch



João Manso Neto
 CEO
EDP Renováveis

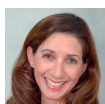


Astrid Alvarez
 CEO
Grupo Energía Bogotá



Richard Reisig
 Managing Director, Power Development & Investment
Siemens

Moderator



Susan Sakmar
 Visiting Law Professor
University of Houston Law Center

9:15am - 11:00am
S12. Contracts, Trading & Pricing
Category: Gastech Strategic Conference
Stream: Trading, Pricing & Contracting

Moderator



Lourdes Rodríguez Gutiérrez
 Executive Director Trading and Gas & Power Division
Repsol, S.A

Presentations

9:15am - 9:40am

S12.Unlocking the Stalemate Between LNG Buyers and Sellers

Whilst it is clear that liquidity in Asian LNG trading is increasing and confidence in reported prices is improving, a truly liquid LNG traded hub in Asia, which is suitable for indexing long-term LNG contracts, remains years away.

The interesting part of this development is not how long it will take for a traded hub to fully develop but the new challenges faced by LNG buyers and sellers now. Buyers can see change coming and are increasingly unwilling to commit to long-term contracts which do not permit flexibility, for example, in the event of downstream gas market liberalisation. For LNG sellers this presents a number of challenges with regards to developing an LNG marketing and business development strategy.

Gas Strategies will address these issues and explore options for industry participants.



Gary Regan
 Consultant Manager
Gas Strategies

9:40am - 10:05am

S12.The Asian Century: Strategic Challenges and Opportunities for Asian Companies

What does the so-called "Asian Century" mean for the future of Asia's gas companies? Can they leverage their strong market positions to evolve across the value chain – or would it be better for them to limit themselves to home markets? Will they continue to lag behind the major Western companies in technological innovation and competitive strength? Why have they missed out on key developments in the industry in past years? The author draws on his experience with Shell and Japan Petroleum, in the contrasting gas markets of India, Japan and other countries to answer these questions.



Ajay Singh
 Special Advisor to the Chairman and the President
JAPEX

10:05am - 10:30am

S12.The Changing Face of LNG Shipping

LNG shipping markets are changing. More vessels, more product and a wider market in which to sell LNG makes an interesting market. Volatility in pricing, demand and production all adds into the mix and with economics dictating how the market will evolve, could this mean a longer term return for the shipowner?



Debbie Turner
 Director
SSY Gas Limited

10:30am - 10:55am

S12.How Short-Term LNG Market Evolution Will Influence Suppliers and Buyers - Opportunities and Risks in a Competitive Market

LNG short-term and spot sales now comprise nearly 30% of the total. The LNG short-term market is more complicated nowadays, with various pricing mechanisms in different regions. We expect short-term and spot trades will continue to be a major part of the LNG market and will become increasingly dynamic, with flexible supplies from the US, Qatar and other regions competing for sales to high-value buyers. The authors will discuss the interaction between buyers and sellers in different regions and test how the key elements might drive the short-term and spot trades in the future.



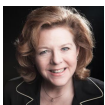
Ming Cai
 Natural Gas and LNG Consultant
Poten & Partners

9:30am - 9:40am

Chair's Welcome & Opening Remarks

Category: Specialist Event

Stream: Diversity in Energy



Eithne Treanor
 CEO
E Treanor Media

9:30am - 11:00am

T1.7 Floating LNG Liquefaction

Category: Gastech Technical Conference

Stream: Floating Structures including FSRUs and FLNG Projects

Moderator


Javid Talib

Vice President & Director Floating Technology Applications - Oil & Gas
Black & Veatch

Presentations

9:30am - 10:00am

T1.7 Liquefaction Cycles for Floating LNG: From Concept to Reality

Liquefaction Cycles for Floating LNG: From Concept to Reality Selecting the optimal liquefaction cycle for floating LNG (FLNG) is key to project success. Factors such as sea motion, space limitations, feed gas compositions, and heightened safety concerns have driven the development of alternate liquefaction cycles for these unique challenges. The paper will describe key features of the different liquefaction cycles available, and how leveraging relevant land based and offshore experience is essential to the successful implementation of new liquefaction technologies.

Finally, this paper will describe a new liquefaction technology that offers distinct advantages for FLNG and how experience gained in the design and operation of the nitrogen refrigeration LNG Process on PFLNG 1 will be leveraged to enable its successful implementation.


Mark Roberts

Engineering Associate
Air Products

10:00am - 10:30am

T1.7 The High Pressure Expander Process (HPXP) - Technology for Floating LNG Application

ExxonMobil has developed the High Pressure Expander Process (HPXP™) technology. The process uses a single phase methane refrigerant stream operating at distinguishingly high pressures followed by a single phase nitrogen refrigerant stream. Process simulations have demonstrated the HPXP™ technology to have a specific power similar to that of commercially available single mixed refrigerant processes. The high efficiency of the HPXP™ technology distinguishes it from other expander-based technologies which are 10 to 25% less efficient. The capacity of a train using the HPXP™ technology can be double that of other expander-based processes (3 to 4 MTA) without needing parallel equipment.


Dr. Fritz Pierre

Engineering Associate
ExxonMobil Upstream Research Company

10:30am - 11:00am

T1.7 Mid to Large Scale Floating LNG - Updates of Technology Development & JGC Contribution

History of FLNG development in JGC with its vast experiences with On-shore LNG Plant and specific technical developments and considerations will be discussed. JGC is undertaking for PFLNG2 Project (Malaysia), Coral FLNG Project (Mozambique) and Newage FLNG (Congo). JGC conducted study for new business model to use high H2S and CO2 content feed by using combination of Gas Processing Plant and Floating LNG. Technical development will be discussed

including: - Selection of Process technology - Effect of motion movement - Equipment design - Refrigerant compressor and its driver - Plot layout - HSSE studies - LNGC Approach study - Loading facilities - Module construction, installation, integration - Towing, mooring, hook-up, commissioning and gas trial



Naoyuki Takezawa
 Project Manager, LNG Projects
JGC Corporation

9:30am - 11:00am

T3.7 Advances in Equipment & Technology

Category: Gastech Technical Conference

Stream: Subsea Technology, Innovation & Projects

Moderator



Joe Verghese
 Senior Vice President & Adviser, Field Developments and Technology
Advisian WorleyParsons Group

Presentations

9:30am - 10:00am

T3.7 Knowns & Unknowns of Building World's Largest LNG Tank: An Unprecedented Feat

Singapore LNG Corporation (SLNG), which is a strategic and key infrastructure of Singapore, plays an important role in addressing nation's energy challenges of energy security, economic competitiveness and environmental sustainability. This paper discusses the motivation behind building the world's largest LNG storage tank, with an emphasis on the challenges encountered at various stages of building the engineering marvel and a brief analysis on the likely impact for future.



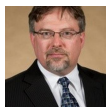
Govindaraj Naralasetti
 Development Manager
Singapore LNG Corporation Pte Ltd

10:00am - 10:30am

T3.7 Coil Wound Heat Exchanger Design for an Evolving Market

There have been numerous developments and continuous evolution in the Natural Gas Liquefaction market over the past several years; including the introduction of new process cycles, a continued increase in train production capacity, interest in smaller capacity trains, the introduction of floating LNG (FLNG) facilities, rapid development in North America, and further arctic development. FLNG, as well as geographic, environmental, and economic factors on many land-based projects, has led to compact plant layouts and a move to modular construction methods.

This paper describes these changes and the innovations in design and fabrication that will meet these new requirements and challenges.



John Dally
Technology Manager
Air Products

10:30am - 11:00am

T3.7 Oil & Gas: Use Batteries to Make Money

The world first installation of a large scale lithium-ion battery energy storage system on its Goodwyn A offshore platform has positioned Woodside as an early adopter of battery storage technology in the oil and gas industry. Woodside aims to accelerate scaled application on larger oil and gas assets. The installation of the 1 MWh battery will reduce the need for spinning reserve on its Goodwyn A's power generation system. As a result the platform's fuel gas use will be reduced by around 7.5 metric tonnes per day, allowing incremental LNG production and delivering an estimated 5% decrease in CO2 emissions.



Nancy Nguyen
Commercialisation Manager
Woodside Energy Ltd.

9:30am - 11:00am

T4.7 EAGE E&P STREAM - AVO

Category: Gastech Technical Conference

Stream: Exploration, Production & Field Development

Moderator:



Kees Van Oort

Presentations

9:30am - 10:00am

T4.7 Assessing Top Seal and Charge Risk for Shallow Gas Prospects: A Case Study from the Dutch North Sea

Top seal is a critical risk for shallow gas prospects. Hydrocarbon charge is also often poorly understood. Improving the quantification of these risks is critical. Hydrocarbon producing basins are often dominated by vertical hydrocarbon migration. This migration is detected in seismic as zones of vertically chaotic, low energy data called chimneys. A method has been developed to detect chimneys using a supervised neural network. The morphology of chimneys above

prospective reservoirs provides clues to top seal risk; morphology below the reservoir indicates charge risk. A case study is presented of a shallow gas discovery in the Dutch North Sea.

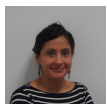


David Connolly
 Senior Advisor
dGB Earth Science

10:00am - 10:30am

T4.7 Seismic Inversion and Rock Physics approach to Reservoir Characterization of a GoM Jurassic field

Wide-azimuth data over the carbonaceous Jurassic Kimmeridgian interval, in the northeast shallow waters petroleum region of the Mexican Gulf of Mexico, was divided into six azimuthal sectors and conditioned for multi-azimuthal seismic inversion to obtain elastic properties related to fractures such as anisotropy and fast shear impedance azimuth. At the same time, pore type concentrations were estimated using rock physics techniques. Finally, physical links between pore type concentrations, lithology and elastic properties were established to obtain volumetric distributions of best storage facies, pore types and lithology. This approach allowed PEMEX to validate their JSK conceptual models and develop a production strategy.



Janet Ravelo
 Reservoir Geophysicist
Schlumberger

10:30am - 11:00am

T4.7 Intergrated LWD Methods Identify Borehole Breakouts in Hostile Environments

9:30am - 11:15am

T2.7 Natural Gas / LNG for Fuel - LNG & Gas as a Transportation Fuel

Category: Gastech Technical Conference

Stream: Natural Gas & LNG as Transportation Fuels including Bunkering

Moderator



Mark Bell
 General Manager
Society for Gas as a Marine Fuel (SGMF)

Presentations

9:30am - 10:00am

T2.7 Feasibility Analysis of Bunkering for LNG-Fuelled Ultra-Large Container Ships at the Port of Shanghai of China

The paper will focus on the following issues:

1. Navigation risk assessment of LNG bunkering vessels in port area
2. Availability of LNG bunkering standards. China MSA is developing regulations on navigation of LNG bunkering vessels and ship-to-ship LNG bunkering operation.
3. Feasibility and economy of LNG bunkering vessel logistics chain, The LNG price, the distance from the home station to the site of bunkering operations and other factors.
4. Safety area assessment for simultaneous operations (SIMOPS) of LNG bunkering and container loading/unloading

The safety area for SIMOPS is proposed based on the three-dimensional CFD quantitative risk assessment tool.



Hong-Jun Fan
 Senior Engineer
China Classification Society

10:00am - 10:30am

T2.7 USCG Perspective on Implementation of the IGF Code

The International Maritime Organization has recently implemented the IGF Code as a major international standard setting the bar for safety of shipboard fuel systems using LNG and other alternative low-flashpoint fuels. The U.S. Coast Guard's recently-updated policy letter on design of U.S.-Flag commercial LNG-fueled vessels provides a useful "case study" for discussing key considerations a Flag State must evaluate in implementing the IGF Code. This presentation explores key provisions of the IGF Code from the perspective of the United States as a Flag Administration, and how they address the unique safety risks posed by using LNG as a shipboard fuel.



Timothy Meyers
 Technical Lead - LNG & Alternative Fuel Systems
United States Coast Guard - Office of Design & Engineering Standards

10:30am - 11:00am

T2.7 New Level of Ecological & Economic Solutions by Use of LNG & VOC as Fuel

New level of ecological and economic solutions by use of LNG and VOC as Fuel New shuttle tanker concept developed by TEEKAY in close cooperation with Wärtsilä with use of high quality equipment and systems in new and innovative ways. VOC recovery plant is installed to avoid harmful CO₂ emission from cargo tanks resulting in yearly reduction of 42% of CO₂eq. or equal to 22 000 petrol cars. With LNG as primary fuel, VOC will be mixed with LNG and used as valuable fuel for the engines. New concept represents an absolute game-changer by enabling shuttle tanker to utilize its own waste gas rather than releasing it to atmosphere.



Stein Thorsager
 Sales Director for Merchant & Gas Carriers
Wärtsilä Marine Solutions

11:00am - 11:15am

T2.7 BASiL paper

How safe is safe enough? The marine bunkering of ships with LNG as an industry is in its infancy. There are no accepted and well defined industry rules and practices for defining safety zones around LNG bunkering operations. What should these rules be for safety distances or exclusions zones? Is a quantitative risk assessment (QRA) always required? Are SIMOPs impacted or prohibited and how will this effect economics? These are the key questions that the small but growing LNG bunkering business are discussing and as yet there are no established norms. The Society for Gas as a Marine Fuel (SGMF) therefore decided that, via a working group from within its membership, it needed to create a rigorous methodology based on LNG industry experimental research and theoretical understanding to explore these issues. This paper looks at the findings of SGMF's study undertaken by DNV GL and how this is demonstrated by the BASiL (Bunkering Area Safety information for LNG) software.



David Haynes
Principal Technical Advisor
Society for Gas as a Marine Fuel (SGMF)

9:40am - 10:00am

Keynote Address

Category: Specialist Event

Stream: Diversity in Energy



Sherina Maye Edwards
Partner
Quarles & Brady LLP Energy, Environment & Natural Resources Group

10:00am - 11:15am

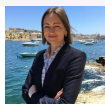
Energy, Diversity & Transition: The Changing Face of the Global Energy Industry

Category: Specialist Event

Stream: Diversity in Energy



Rosa Nieto
Assets Management Director
Enagás



Catherine Halpin
 Chief Executive Officer
The Quad Business Towers



Nancy Ballout
 Vice President Processing Engineering and Operations
AG&P



Paula Glover
 President & CEO
American Association of Blacks in Energy (AABE)

Moderator



Liz Foley
 Regional Communications Manager, Asia Pacific
SNC-Lavalin

10:15am - 11:15am

S8. COP21

Category: Gastech Strategic Conference

Stream: Market Outlook, Policy & Regulation

Moderator



Marta Margarit Borrás
 Secretaria General
Sedigas

Presentations

10:15am - 10:45am

S8.Gas for Climate (ECOFYS)

To achieve the Paris Agreement target, a major redesign of the energy system is required. This study explores the role of gas in a fully decarbonised energy system by 2050. We conclude that it is possible by 2050 to scale up renewable gas (biomethane and renewable hydrogen) production in the EU to a quantity of 122 billion cubic metres and that using this gas with existing gas infrastructure, smartly combined with renewable electricity in sectors where it adds most value, can lead to €138 billion societal cost savings annually compared to decarbonisation without a role for renewable gas.



Maria Sicilia
 Director of Strategy
Enagás

10:45am - 11:15am

S8.Strategies for the Transition from an O&G Company to an Energy Company

This paper will review what companies have done thus far to position themselves in the climate change debate, including examples of core business strategies, and will explore the challenges that O&G companies are facing as a result of energy transition.? The paper will identify and assess specific risks and opportunities that exist for both management teams and their shareholders and discuss the implications of various strategies.? The paper will offer a deep dive to address the following issues: Strategy, Shareholder Concerns, People, and the Impact on the Power Sector.

**Emma Wild**

Partner, Head of Upstream Oil and Gas
KPMG LLP

11:00am - 11:30am**Technical Coffee & Networking Break Sponsored by ABS****Category: Networking****Stream: Networking****11:15am - 11:45am****Coffee & Networking****Category: Specialist Event****Stream: Diversity in Energy****11:15am - 11:45am****Strategic Coffee & Networking Break Sponsored by ExxonMobil****Category: Networking****Stream: Networking**

11:30am - 1:00pm**T1.8 Floating LNG Liquefaction****Category: Gastech Technical Conference****Stream: Floating Structures including FSRUs and FLNG Projects**

Moderator



Cynthia Znati
Chemical Engineer
U.S. Coast Guard

Presentations

11:30am - 12:00pm**T1.8 A Lower Cost Floating Solution for Deepwater LNG**

INTECSEA's Low Motion Floating (LMF) technology represents a technical and commercial step change for development in deepwater and harsh environment locations. The LMF innovation uses conventional components in a new way. All components are field proven with the highest technology readiness level. The LMF has been matured to "Project Ready" level over a number of years, including model testing, and in 2017 received Approval in Principle from DnV. The LMF enables use of steel catenary risers with dry trees without the accompanying limitations on storage and topsides capacity.



Simon Ford
Floating Systems Manager EMEA
INTECSEA, WorleyParsons Group

12:00pm - 12:30pm**T1.8 New, Safe and Cost-Effective Mooring and Gas Transfer System for Shallow Water FSRU and FLNG Units**

The SSY system is a completely Submerged Swivel Yoke system, connected to the bow of the FRSU/FLNG unit. The subsea gas and utility swivel is based on a proven, traditional APL design, as is the turret structure itself.

This technical presentation will, in particular, discuss the following topics:

- The SSY technology features, design and layout
- System design and effects on the SSY mooring system and riser configuration for shallow water
- Submerged, high-pressure gas swivels
- Permanent vs disconnectable mooring for SSY systems
- FSRU/FLNG integration and interfaces



Anders Lie Eide

12:30pm - 1:00pm

T1.8 Selection & Optimisation of Mooring Systems for FLNGs - Lessons Learned from Project Execution

The paper focuses on the selection of mooring systems for FLNGs and is based on the experience gained from executing and delivering two EPC FLNG turret mooring system projects for locations off Malaysia (PFLNG1 and PFLNG2) and the current execution of the Coral South Turret Mooring off Mozambique. These mooring systems are designed accounting for both load-transfer and fluid-transfer requirements. Since they serve as the interface between the subsea infrastructure and the floating facility, the design parameters range from the fluid-transfer requirements between the reservoir to the facility, environmental conditions, water depth, floating facility, and topsides design philosophy. The paper shall provide insight into key design decisions that can lead to optimization of the mooring system and its interfaces with subsea and topsides.



Arun Duggal
 Chief of Technology
 SOFEC

11:30am - 1:00pm

T2.8 Natural Gas / LNG For Fuel - LNG & Gas as a Transportation Fuel

Category: Gastech Technical Conference

Stream: Natural Gas & LNG as Transportation Fuels including Bunkering

Moderator



Mark Bell
 General Manager
 Society for Gas as a Marine Fuel (SGMF)

Presentations

11:30am - 12:00pm

T2.8 Ship to Ship LNG Bunkering Operations under Various Conditions

Three new bunker vessels in Europe have now successfully completed numerous LNG bunkering transfers providing new operation experience. The paper will cover bunkering operations, critical systems on the LNG bunker vessels, the LNG fuel gas system and the transfer system. The bunkering process has been analyzed with numerical simulations. TGE Marine has been involved in the design of the above mentioned bunker vessels and supplied the fuel gas system for several clients of these vessels. The paper will compare the design approach with the operational experience and also address the challenges of larger low pressure tanks entering the market.


Björn Munko

General Manager, Head of Business Development and Sales
TGE Marine Gas Engineering GmbH

12:00pm - 12:30pm

T2.8 10K Bunker & Feeder Membrane Vessel Project: Potential Application for the Atlantic Maritime Corridor

The use of LNG as a marine fuel is experiencing significant growth in a new small-scale LNG market, which in turn demands for a new fleet of LNG carriers' capacity.

The Mugardos LNG terminal, operated by Reganosa, is geostrategically positioned both on the shipping and LNG routes, specifically regarding the Atlantic Maritime Corridor.

In view of these capabilities and the commercial opportunity, Reganosa performed the design of an LNG bunker and feeder vessel, with the Spanish engineering company Ghenova as main contractor, based on GTT membrane technology for volume & weight efficiency.


Victor Alessandrini

Business Development Manager
GTT (Gaztransport & Technigaz SA)


Andrea Míguez

Business Development
Reganosa


Igor Blanco Pardiñas

Project Manager
Ghenova

12:30pm - 1:00pm

T2.8 Fuel Flexibility with Marine Gas Turbines

GE's modified jet engines, known as aeroderivative gas turbines, are compact, lightweight, produce low emissions, and offer many other advantages for commercial ship owners. Teaming with some of the world's leading shipyards, GE brings its Combined Gas turbine Electric and Steam (COGES) system onboard newbuilds and retrofits of Liquefied Natural Gas (LNG) carriers, and containerships and Liquid Petroleum Gas (LPG)-fueled ferries. Two key developments in the marine industry favor the use of gas turbines for ship power and propulsion: increasingly stringent emissions regulations and the advent of LNG as a viable marine fuel. GE's marine engines are fuel-flexible, capable of burning diverse fuels including natural gas, LNG, LPG, Marine Gas Oil (MGO) and other bio-synthetic paraffinic kerosene blends.


Mark Lipton

Engineering Director, Marine Commercial Applications
GE Marine Solutions

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T2.8 Overcoming Hurdles in LNG Bunkering

Repsol has originated 13 LNG bunkering spot transactions in Spain, providing supply for different

types of vessels. Safety has always been the key driver for these operations, each operation builds upon the last providing a platform for the constant evolution of learning and continuous improvement. The paper describes all required phases and tasks to be carried out for each single operation, stressing on the safety aspects that may promote LNG as a fuel for vessels: ?LNG bunkering systems ?Planning procedure for a spot and recurring supplies ?Elements and activities related to operation safety ?Future developments


Eugenia Bertrand

Head of LNG Bunker Business Development
Repsol, S.A

11:30am - 1:00pm

T3.8 Advances in Equipment & Technology

Category: Gastech Technical Conference

Stream: Subsea Technology, Innovation & Projects

Moderator


Joe Verghese

Senior Vice President & Adviser, Field Developments and Technology
Advisian WorleyParsons Group

Presentations

11:30am - 12:00pm

T3.8 A-Frame Ambient Air Vaporiser

The A-frame Ambient Air Vaporizer (AAV) concept is a novel vaporizer in which an intermediate pressurized fluid (CO₂) transfers the heat from ambient air to the LNG, in a closed thermosyphon loop. The system combines a fin fan heat exchanger to evaporate the CO₂ and a tube bundle where heat from condensing CO₂ is used to vaporize and super heat the LNG. The A-frame offers a significant reduction in plot space compared to ambient air vaporizers, lack of necessity of seawater unlike open rack vaporizers and lack of necessity of fuel to provide vaporization duty unlike submerged combustion vaporizers.


Reinier Van De Pol

Integrated Gas Supply Chain Optimization
Shell

12:00pm - 12:30pm

T3.8 Concrete GBS LNG Solution for Shallow Water Regions

This paper is based on several pre-FEED studies executed to prove technical feasibility and economic attractiveness for Concrete GBS based near shore LNG solutions. The main focus has

been to develop flexible design solutions for high production capacities, multiple LNG technologies, compressor driver alternatives with high focus on HSSE, winterization, operability and availability for onshore or offshore gas fields in shallow water regions. The studies have demonstrated that the GBS LNG Solution for Shallow Arctic/sub Arctic Regions is feasible both economically and technically and has been chosen as the selected case for large scale Arctic development.

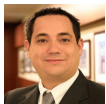


Erik Stormyr
 VP LNG Solutions
Kvaerner

12:30pm - 1:00pm

T3.8 Benefits of Midscale LNG - the Right Solution Size

For the over the past 5 years Bechtel and Chart have been working together to develop a wide range of solutions for using Charts IPSMR® process to develop midscale LNG configurations. During the development and engineering we have uncovered both expected and unexpected benefits for the midscale solution. Overall the Bechtel-Chart IPSMR® LNG solutions have shown to be able to be flexible in design, while keeping capital cost down and kw/TPA low as well.



Scott Mossberg
 LNG Technology Manager
Bechtel Oil, Gas & Chemicals



Douglas Ducote
 Vice President, Process Plant Technology
Chart Industries

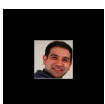
11:30am - 1:00pm

T4.8 EAGE

Category: Gastech Technical Conference

Stream: Exploration, Production & Field Development

Moderator:



Mehdi Paydayesh
 Europ and Africa Technical Team Lead in Seismic Reservoir Characterisation & Monitoring Company
 Schlumberger
mpaydayesh@slb.com

Presentations

11:30am - 12:00pm

T4.8 Constraining facies-based AVO inversion with seismic velocity

12:00pm - 12:30pm

T4.8 Innovative approach to low frequency modeling, for seismic inversion, using advanced trend modeling

Seismic inversion is a quintessential workflow used to estimate elastic properties. Conventional seismic data can lack lower frequencies up to 8-12 Hz and to account for the missing frequencies, a low-frequency model is input to the seismic inversion process. It is generated using simple interpolation of well data, guided by horizons and seismic velocities, and usually doesn't capture the reservoir heterogeneity accurately. We present an innovative and comprehensive workflow using advanced geological modeling, iteratively guided by multiple trends, to build a robust low-frequency model. This workflow generated inversion outputs, less biased by hard data and interpolation artefacts.



Khushboo Havelia
 Geoscientist
 Schlumberger

12:30pm - 1:00pm

T4.8 Pore Structure Evaluation of Bioclastic Limestone using NMR and HPMI measurements

To better evaluate the pore structure of heterogeneous carbonate rocks, this study analyzed the corresponding relationship between the fractal characteristics of capillary pressure curves and pore connectivity. Then, the T_2 relaxation criterion of different pore diameter components were reasonably determined, combining with the features of nuclear magnetic resonance T_2 spectrums. Combined with the fuzzy clustering algorithm, a new classification method was established using proportions of different pore components as sensitive parameters. The results showed that the proposed method was more reasonable and effective for the evaluation of pore structure and can significantly improve the accuracy of subsequent permeability calculation.



Yujiao Han
 Student
 Research Institute of Petroleum Exploration and Development (RIPED)

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T4.8 RESERVE PAPER: The application of facies-controlled geostatistics inversion in prediction of thin reservoir in the Liaodong Bay

11:45am - 12:45pm

The Diversity Champions' Panel: How Are Industry Leaders Supporting the Move Towards Greater Diversity?

Category: Specialist Event

Stream: Diversity in Energy



Rosa María Sanz Garcia
 Chief Operating Officer EMEA Infrastructure
Naturgy



Shiva Meyer
 Senior Vice President HR Business Partner & Center of Expertise
Uniper



Vincent Demoury
 General Delegate
International Group of Liquefied Natural Gas Importers (GIIGNL)

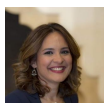


Emma Wild
 Partner, Head of Upstream Oil and Gas
KPMG LLP



Joshua Atkins
 Policy Manager and Chair of Pride in Energy and Energy UK Diversity and Inclusion Forum
Energy UK

Moderator



Alia Moubayed

11:45am - 1:00pm

S13. Contracts, Trading & Pricing

Category: Gastech Strategic Conference

Stream: Trading, Pricing & Contracting

Moderator



Paul Griffin
 Special Advisor, Oil and Gas
White & Case

Presentations

11:45am - 12:10pm

S13.A New Era for the European Gas Market: Surviving Under Stronger Competition

A change in market trends, affecting all European Union markets, is clearly going on towards:

- Larger volatility

- An increasing weight for traders
- Henry Hub increasingly becoming a Price driver in European Gas

Thus, for a gas shipper -intending both retailing and wholesaling- to remain competitive, it needs to have wisely managed its gas balance:

- Flexibility in volume and destination
- Diversified portfolio can be achieved in terms of price indexation: TTF/HH/Brent

The ultimate competitive advantage will thus lay on properly assessing the right moment for term purchases, by anticipating the turning point that will bring back a bullish, seller's market.



Antonio Melcon Alvarez
 General Manager
Cepsa Gas Comercializadora S.A.

12:10pm - 12:35pm

S13.LNG Spot Trading

LNG Spot trading Pure spot trades are different from short term deals (<5 years) in negotiation procedures and prices. We provide an analysis of historical spot trades to put the evolution of spot trading in perspective and step away from market consensus. Discoveries reflect the growth of portfolio players, the creation of a secondary market, and the emergence of trading houses in the LNG market or the influx of regional markets. Lastly, we provide a forecast on spot volumes in the mid-term and some considerations regarding liquidity and whether this growth of spot trades means a greater commoditization of LNG.



Carmen Lopez-Contreras
 Senior Gas & Power Market Analysts
Repsol, S.A

12:35pm - 1:00pm

S13.LNG Contract Valuation and Hedging in a More Dynamic Market and their Application in Both Portfolio Optimisation and Arbitration

The last few years have seen significant changes in how the LNG market operates, with more volume contracted on a shorter-term or spot basis and with increased flexibility. With this changing market comes both new opportunities and risks. The presentation examines the impact of these changes on contract pricing, hedging and optimization strategies and discusses whether additional adjustments should be made for counterparty and funding risks, as seen in other markets. We conclude with how these changes can be used in determining whether your contracts are at fair market value and how this determination could be used in arbitration proceedings.



Patrick Hébréard
 Director
CEG Europe

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S13.RESERVE PAPER: You Cannot Shake Hands With a Clenched Fist


Paul Griffin
 Special Advisor, Oil and Gas
White & Case

11:45am - 1:00pm
S9. North American Shale to Export
Category: Gastech Strategic Conference
Stream: Global Gas & LNG Markets including National Spotlights

Moderator



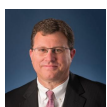
Jo Husebye
 Partner
Rystad Energy

Presentations

11:45am - 12:10pm
S9.The North American Natural Gas Renaissance: From U.S. to You: Sourcing Natural Gas for U.S. LNG Exports - Myths and Realities

Cheniere has led the United States' transition to a net gas exporter through the development of two Gulf Coast LNG export facilities. With more than two years of operating experience at Sabine Pass Liquefaction, Cheniere can provide a unique perspective on the U.S. gas market and best practices for gas supply procurement for LNG exports.

This presentation will review Cheniere's recent experience in the U.S. gas market and describe the economic and operational benefits of Cheniere's full-service business model. It will also address common misconceptions regarding the price impact of US LNG exports and discuss why natural gas reserve ownership is not required to guarantee surety of US LNG supply.

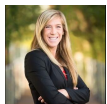


Corey Grindal
 Senior Vice President - Gas Supply & Trading
CHENIERE ENERGY INC

12:10pm - 12:35pm
S9.How to Catch the Second Wave of North American LNG

With market fundamentals looking increasingly tight post 2020, there is renewed momentum behind LNG investments, including in the US. But the second wave of North American LNG is looking

different from the first. Fixed fees and de-risked developer economics characterized the first wave, placing market risks in the hands of tollers and offtakers. Though the supply situation in North America remains compelling, the dynamics and shifting market fundamentals create uncertainty for unfamiliar participants. LNG developers are being pushed to evolve their commercial offerings to redistribute risks. Which offerings will succeed? What is the impact of the evolving fundamental landscape? And who will ultimately catch the next wave?



Kristy Kramer
 Head of Americas Gas Research
Wood Mackenzie

12:35pm - 1:00pm

S9.North American LNG Exports 2.0: What Has Changed for European Buyers?

The projects in the first wave of LNG exports from North America are in operation or under construction. Into this brave new world comes the second wave of proposed North American LNG export projects. Is this more of the same, or has the model changed? The presentation will address new contractual structures available for the second wave of LNG exports from North America and discuss steps for aligning buyers' and sellers' interests to promote a stable, long-term supply of LNG



Steven Miles
 Partner
Baker Botts

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S9.RESERVE PAPER: US LNG Exports In The Age of Abundance

The continuous North American shale growth has flipped the role of the region from an importer to a major exporter of gas. Rystad Energy sees North American shale reaching nearly 1.2 Tcm in 2025 driven by developments in the current core acreages. And with planned LNG projects amounting to more than 550 mtpa, the trend is not set to slow down. However, as old incumbents and new countries are throwing themselves further into the LNG space, there will undoubtedly be questions about the competitiveness of North American projects in the market in the medium term.



Jo Husebye
 Partner
Rystad Energy

12:45pm - 2:15pm

Lunch hosted by AG&P

Category: Specialist Event

Stream: Diversity in Energy**1:00pm - 2:30pm****Combined Lunch & Networking Break****Category: Networking****Stream: Networking****2:00pm - 3:00pm****9.Global Leaders' Panel: "Digital Disruption & Innovation – What Are The Fundamental Impacts on the Energy Industry?"****Category: Gastech Plenary Stage****Stream: Global Leaders' Panel**

As energy companies rely increasingly on digital services, software and management, what does this mean for efficiency and streamlining of business processes? What will the seismic impact of digitalisation and artificial intelligence mean for the energy industry as a whole by 2030?



Babur Ozden
Founder & CEO
Maana



Rod Christie
President & CEO, Turbomachinery & Process Solutions
Baker Hughes, a GE Company



Anton Martínez
Chief Transformation Officer
Enagás



Jonathan Carpenter
Group Head of Strategy



Roel Van Doren
President Europe
Emerson Automation Solutions

Moderator

Tom Harper
CEO
EV8 technologies

2:15pm - 3:15pm

What Role do Employee-led Diversity Networks Play in Creating Greater Equality in the Workplace?

Category: Specialist Event
Stream: Diversity in Energy


Mabel Leung
President, China Gas Marketing
ExxonMobil



Maggie Seeliger
Senior Vice President – Strategy & Marketing – Oil & Gas
SNC-Lavalin



Larissa Leienbach
Power Market Analyst, Diversity Ambassador
Uniper



Rodney Williams
Project Engineer
National Grid Grain LNG

Moderator



Susan Sakmar
Visiting Law Professor
University of Houston Law Center

2:30pm - 4:00pm

T1.9 Floating LNG Liquefaction

Category: Gastech Technical Conference
Stream: Floating Structures including FSRUs and FLNG Projects

Moderator



Javid Talib
Vice President & Director Floating Technology Applications - Oil & Gas
Black & Veatch

Presentations

2:30pm - 3:00pm

T1.9.Advanced Dual Refrigerant Expansion Cycle for Liquefaction

This new liquefaction technology which named advanced dual refrigerant expansion cycle has been developed targeting both applications for offshore and onshore. The advanced dual refrigerant expansion cycle include three levels of expansion, each having different temperature and pressure levels. In the methane loop there are two stages, which are classified warm and cold. The warm loop and cold loop are responsible for pre-cooling and main liquefaction, respectively. The nitrogen loop is a single stage and is used for sub-cooling. As a result of case study, thermodynamic inefficiencies are minimized and the power requirements are reduced when compared to conventional methane and nitrogen refrigerant expansion cycle.



Minseok Kim
 Offshore Process engineer
Samsung Heavy Industries Co., Ltd.

3:00pm - 3:30pm

T1.9.Perspectives on Turbomachinery Selection & Design in Coral South LNG Project

LNG has been produced in onshore liquefaction plants in the past forty years; however floating LNG solutions started to gain momentum in the recent years as a viable alternative, such as for Coral South FLNG project. The techno-commercial feasibility of the Floating LNG solution depends on several aspects; some of which are related to turbomachinery selection & design. This article will provide an insight on the challenges and solutions for turbomachinery in Coral South FLNG project, including elaboration on the technical verifications for selecting the optimum technologies which adapt with the project's context.



Céline Belbol
 Lead Rotating Equipment Engineer
TechnipFMC



Benjamin Johnson
 Rotating Equipment Engineer
ENI Mozambique Engineering

3:30pm - 4:00pm

T1.9.Experience in Classifying two FLNG Units

DNVGL has classified the first two FLNG units to enter operation, one a purpose-built newbuild and the other a unit converted from a gas carrier. This paper will share some general insights gained in carrying out this work and will discuss some challenges which may be of interest to future FLNG projects.

This paper will discuss both regulatory and technical issues arising in such projects.

The paper discusses issues such as :

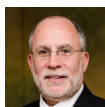
- • Regulatory expectations
- • Near shore applications
- • Accidental loads
- • In-service developments


Conn Fagan

 Vice President Business Development Offshore Gas Projects
 DNVGL

2:30pm - 4:00pm
T2.9 EPC
Category: Gastech Technical Conference
Stream: Engineering, Construction & Project Development for Natural Gas & LNG

Moderator


Steven Borsos

 Vice President LNG
 Fluor

Presentations

2:30pm - 3:00pm
T2.9 Slaying Dragons - Successful Projects Overcoming Successive Challenges

Cheniere and our EPC partner Bechtel have successfully built four 4.5 mtpa LNG Trains at the Sabine Pass Liquefaction project in Louisiana, and are now constructing a fifth LNG Train at Sabine Pass, and three more near Corpus Christi, Texas. These types of megaprojects are usually substantially over budget and months behind schedule, but not so with Cheniere's. What Cheniere has achieved is even more impressive when the many challenges encountered are considered. We call these challenges dragons, and this presentation will highlight just a few we faced, and how we slayed them all, on time and on budget.


Ed Lehotsky

 Senior VP Engineering and Construction
 CHENIERE ENERGY INC

3:00pm - 3:30pm
T2.9 Lesson Learned from Successful FLNG Construction

SHI will present some essential Lessons Learned from FLNG projects to share and implement them to the similar project for better project execution. Firstly, Overall Lessons Learned gathered during the execution period and summarized analysis results will be presented to bring insights into the successful FLNG construction. Secondly, essential construction enhancement, which SHI has internally chosen from the Lessons Learned database and implemented to other FLNG projects, will be shared. Finally, SHI will share its technical improvement named SEVAS (SHI Enterprise Visualization And Simulation) to achieve the best effectiveness in the project execution with 4D based process control.



Myungki Kim
 Offshore Proposal
Samsung Heavy Industries Co., Ltd.

3:30pm - 4:00pm

T2.9 What Can Possibly Go Wrong? A Look at the LNG Performance Risk

Building LNG export facilities involves huge capital outlays that likewise carry huge risks for both the owner and contractor associated with the performance of the plant. New process technologies are being introduced, new compressor drivers are being developed, new solutions are being explored, all in the name of being the most competitive LNG provider in a very tight market.

Ultimately, when the START button is pushed, the plant must work and all performance and operational guarantees must be satisfied. This paper discusses performance risk and provides suggested approaches to mitigation.



Douglas Attaway
 LNG Technology Manager
KBR

2:30pm - 4:00pm

T3.9 Advances in Equipment & Technology

Category: Gastech Technical Conference

Stream: Subsea Technology, Innovation & Projects



Guy de Kort
 Vice President Development Integrated Gas
Shell

Presentations

2:30pm - 3:00pm

T3.9 Unique Dual Core Acid Gas Removal Membrane Technology Reduces Total Cost of Ownership for South East Asia Gas Plant

PN-1 membrane technology is unique in combining two different types of membrane fibers in one single membrane module to reduce the overall membrane requirement by 10% and offers overall CAPEX and OPEX savings. This has been commercially deployed in a large gas processing plant in South East Asia which is showing significant value in addressing high CO₂ gas and produce pipeline quality gas under variable inlet gas conditions.



Ankur Jariwala
 Senior Product Manager
Schlumberger

3:00pm - 3:30pm

T3.9 Using Cloud-Based Site-Wide Digital Twins to Transform Energy & Emissions Performance in LNG Plants

Optimizing LNG Plant energy use reduces operating cost, and for feed-limited plants allows increased production without increasing upstream capacity. The improvement opportunity is substantial, but there are significant challenges to overcome, including tight integration of process and energy systems, and global shortage of experienced LNG plant staff.

Digitalization offers new ways to overcome these challenges. we show how the latest generation of digital twin is now capable of monitoring, managing and optimizing energy use across an entire facility,. By Cloud hosting digital twins a new world of collaboration becomes possible, to leverage worldwide talent and build up site skills



Timothy Shire
New Solution Strategy and Launch
KBC

3:30pm - 4:00pm

T3.9 Improve LNG Plant Performance & Stability with Turbine Inlet Air Chilling

Ambient conditions have a significant impact on the performance of gas turbines used to drive refrigeration compressors for LNG liquefaction. One way for operators to eliminate this issue and stabilize LNG production is with turbine inlet air chilling (TIAC), which maintains a constant inlet air temperature. This presentation examines the benefits of turbine cooling technology highlighted by examples from our recent project at Cheniere Energy's Corpus Christi Liquefaction facility.



Curtis Lovelace
VP Project Development
Stellar Energy

2:30pm - 4:00pm

T4.9 EAGE**Category: Gastech Technical Conference****Stream: Exploration, Production & Field Development**

Moderator:

**Kees Van Oort**

Presentations

3:00pm - 3:30pm

T4.9 Fracture reconstruction from seismic data via topological analysis of diffraction images

The paper presents workflow to provide recovery of fracture characteristics from seismic data. We present discrete fracture modelling technique that properly describes fracture models on seismic scale and we propose combination of diffraction imaging and topological analysis of the diffraction images that provides recovery of discrete fractures modelling parameters. Numerical examples on synthetic models demonstrate detailed reliable reconstruction of the statistical characteristics of the fracture corridors.


Maxim Protasov

Senior researcher

Institute of Petroleum Geology and Geophysics SB RAS

3:30pm - 4:00pm

T4.9 Seismic Attribute and Clustering Method Selection based on the Input Feature of Synthetic Seismic Models

Seismic data can be interpreted by two main methods; manual interpretation by geoscientist guided by algorithms, or by interpretation of seismic bodies using automatic algorithms. We have examined the second approach, because when interpretation is done using algorithms, the interpretations are comparable. This requires a workflow for extraction of seismic data from multiple synthetic seismic models. Different seismic attributes are calculated for these models and the seismic attributes are clustered using alternative clustering algorithms. To achieve good clustering results, the data must be correctly selected and conditioned, and the appropriate seismic attributes and clustering algorithms must be determined. These decisions are discussed in this study.


Johannes Amtmann

Geo5 GmbH

-

T4.9 RESERVE PAPER: Prediction of effective pressure for unconsolidated sandstone reservoirs using an improved Hertz-Mindlin and Hashin-Shtrikman model

2:35pm - 4:15pm

S14. Consumer Spotlight
Category: Gastech Strategic Conference
Stream: Global Gas & LNG Markets including National Spotlights

Moderator

**Nancy Ballout**

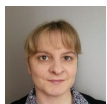
Vice President Processing Engineering and Operations
 AG&P

Presentations

2:35pm - 3:00pm

S14.The Future of Natural Gas in China and India - Critical Drivers and Challenges

The Future of Natural Gas in China and India. Critical Drivers and Challenges Accelerated reforms and focused policies aimed at increasing the role of gas in the energy mix combine to improve the natural gas demand outlook of China and India. In this paper, the International Association CEDIGAZ provides its revised medium and long term outlook for natural gas demand and supply in these two markets and analyses the main drivers and challenges surrounding these prospects.

**Armelle Lecarpentier**

Chief Economist
 CEDIGAZ

3:00pm - 3:25pm

S14.Cape Anne India's 1st LNG FSRU - The Challenge of Getting Gas to Market in India

For twenty years India has been viewed as a significant market for LNG, to date only four LNG import terminals have been completed. Only two are operating at their full potential. In Q4.2018 gas from the Cape Anne LNG FSRU will start to flow by a new pipeline from the port of Jaigard to Dabhol where the pipeline will connect with GAIL's gas pipeline network. This presentation / paper looks at the development H-Energy's LNG import terminal project, the technical challenges in developing the project and perhaps provide some insight as to why so few LNG import terminals have been completed in India.

**David Marriott**

Chief Technical Officer
 H-Energy Group of Companies

3:25pm - 3:50pm

S14.Call On LNG as China Gas Consumption Returns to Double-Digit Growth

Following a severe slowdown in 2015, a difficult recovery in 2016, China became, once again, a supply and infrastructure constrained gas market with double-digit growth.

Industries switched from coal to gas, gas power plants in Jiangsu and Guangdong, fertilizer producers in Sichuan basin, they were all crying for more gas. However, the three NOCs were reluctant to fully match it with supply as they were selling imported gas/LNG at loss under the regulated provincial-gate prices.

This presentation aims to explain the sustainability of China growth, LNG's role in future supply

mix, and its impact on global flow and prices.



Zhu Chen
 Managing Director
SIA Energy

3:50pm - 4:15pm

S14.New Era: Regional LNG Hub Development in Thailand

Thailand is a country that imports energy and mainly rely on natural gas. PTT Public Company Limited ("PTT"), the National Oil Company of Thailand, plans to pursue the development of an LNG hub in Thailand. One of key competitive advantages is growing gas demand, estimated to surpass 20 MTPA by 2030. Moreover, Thailand is located in close proximity to a number of emerging gas markets. PTT is currently in the evaluation process of the key requirements to facilitate and enable success of the LNG hub. In this paper, PTT shall provide pointed updates on several initiatives undertaken, which include TPA/regulatory analysis and review, LNG hub services and unbundling, and potential financial/fiscal inducements.



Nipon Kanongchaiyot
 Manager
PTT Public Company Limited

-

S14.How Demand Aggregation Will Help Make LNG Viable for Smaller Customers in Gas-Hungry Markets

New LNG import terminal developments are faced with one common challenges, bankable gas demand, which will directly impact investment. Liquid-fuelled power plants are typically too small to be viably served on a standalone basis because they are often remotely located, and cut-off from the main grid. This means a large portion of the market is left unserved, unless an innovative approach is used to connect the potential users to the import terminal. By aggregating customer demand, more projects could become viable, and attractive to investors, and the market's enormous potential could be unlocked. This presentation will discuss the benefits of AG&P's demand aggregation model, and how it plans to leverage its standardized infrastructure designs and modular approach towards terminal development.



Ryan Chua
 Director, Business Development
AG&P

3:00pm - 4:15pm

S10. Gas & LNG as a Transportation Fuel

Category: Gastech Strategic Conference

Stream: Natural Gas & LNG as Transportation Fuels including Bunkering

Moderator



Mark Bell

General Manager

Society for Gas as a Marine Fuel (SGMF)

Presentations

-

Panel Discussion



John Hatley

Americas Vice President

Wärtsilä Marine Solutions



Joaquín Mendiluce

Managing Director

Naturgy



Gareth Jones

Vice President Fortis LNG GP Inc. & General Manager, Business Development, FortisBC Holdings Inc.

FortisBC Holdings Inc



Walter Purio

Marine Adviser (CEO)

LNG Marine Fuel Institute



Fernando Impuesto

ENAGAS Empreende General Manager

Enagás

3:15pm - 3:45pm

Coffee & Networking

Category: Specialist Event

Stream: Diversity in Energy

3:45pm - 4:30pm

Leadership Panel – Reflections on the Journey to The Boardroom

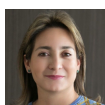
Category: Specialist Event

Stream: Diversity in Energy

Marta Margarit Borrás
Secretaria General
Sedigas



Laura Rejon-Perez
President RENA and REC, Director of Gas Trading North America
Repsol, S.A



Astrid Alvarez
CEO
Grupo Energía Bogota

Moderator



Eithne Treanor
CEO
E Treanor Media

4:00pm - 4:30pm

Technical Coffee & Networking Break Sponsored by ABS

Category: Networking

Stream: Networking

4:15pm - 4:45pm

Strategic Coffee & Networking Break Sponsored by ExxonMobil

Category: Networking

Stream: Plenary

4:30pm - 5:30pm

Power Play Drinks Reception on ExxonMobil Stand: (Registration required)

Category: Specialist Event

Stream: Diversity in Energy

4:30pm - 6:00pm

T1.10 Floating LNG - Regasification

Category: Gastech Technical Conference

Stream: Floating Structures including FSRUs and FLNG Projects

Moderator



Patrick Janssens
 Vice President, Global Gas Solutions
 American Bureau of Shipping (ABS)

Presentations

4:30pm - 5:00pm

T1.10 Hi-ReGAS System Assessment

Hyundai Heavy Industries and Bureau Veritas specialists are involved in a wide range of projects, including FSRUs perceived as a cost-effective solution to develop regasification terminals. Hi-ReGAS (Hyundai Integrated ReGASification) is a newly developed system which offers competitive advantages. The use of sea water and glycol water as heating media in the Hi-ReGAS system is more advantageous and attractive in many aspects. Bureau Veritas established a new regulation enabling the classification of all types of FSRUs. The new REGAS notation has been also implemented. Hyundai Heavy Industries got Bureau Veritas approval for the Hi-ReGAS system.



Philippe Cambos
 Director and Senior Technical Advisor
 BV Marine & Offshore

5:00pm - 5:30pm

T1.10 How Collaboration Helped to Overcome Technical & Environmental Challenges of Simultaneous FRSU Projects in the Bay of Bengal

EXCELERATE ENERGY and SUMMIT GROUP will install the two first offshore FSRU's in Bangladesh for state-owned Oil, Gas & Mineral Corporation (Petrobangla). They both have contracted with the GEOCEAN-MAC GREGOR consortium for the design, procurement, construction and installation of the fixed infrastructures around both FSRU's. The scope of work of both contracts includes for subsea mooring buoy system, associated risers, offshore PLEM's, 6 to 7 km-long import 24" pipelines fully trenched, shore approach and onshore PLEM. Both projects raised significant challenges through a combination of a tight weather window, very

strong marine currents, remote location and lack of local infrastructures & services.



Fabrice Novel
 Managing Director
Geocean

5:30pm - 6:00pm

T1.10 Exmar's FSRU Breaks Tradition

EXMAR was the first LNG infrastructure provider to develop FSRU technology and is once again a pioneer in the LNG market by being the first to build, own and operate an FSRU barge. Barge-based solutions for FSRUs, like the one developed by EXMAR, can fill the void in the market where larger FSRUs and expensive land-based plants are out of reach for the customer. At the same time, such small-scale projects can meet the fast-track requirements of customers. The rigorous safety studies performed also help ensure installations of the FSRU at or near shore can meet local requirements and regulations. The smaller size, customized capacity and lower capital costs all benefit the smaller markets where gas needs are evident but not massive.



Frederik Van Nuffel
 Technical Director
EXMAR



Sara O'Dell
 Project Engineer
Black & Veatch

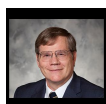
4:30pm - 6:00pm

T2.10 EPC

Category: Gastech Technical Conference

Stream: Engineering, Construction & Project Development for Natural Gas & LNG

Moderator



David Messersmith
 Manager of LNG Technology and Services Group
Bechtel Group, Inc.

Presentations

4:30pm - 5:00pm

T2.10 Behavioural Risks Associated with Contracts

For this presentation, the term "Behavioural Risk" is used to describe the behaviours that are driven

by contract types which are often opposing when viewed from both the client and contractor perspective.

Without the lens of behavioural risk, the commercial mitigations for both fixed price and reimbursable contract types often fail to address client / contractor actions which can re-assign commercial risk from one party to the other.

Through the use of multiple case studies, this presentation explores behavioural risk in an attempt to understand how we can better assign contract type for the successful execution of projects.



Mark Halligan

Global Director - Asset Services
SNC-Lavalin

5:00pm - 5:30pm

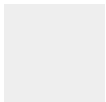
T2.10 The Next Wave of LNG EPC Projects is on the Horizon: Are You Leaders & Organisation Ready?

Before the oil price crash, most global-scale LNG projects failed to meet their objectives. Some were years late and billions of dollars over budget. Reasons include failures in organization and leadership. Although project execution improved, the leadership and development of people, culture and organization has not. The next wave of projects will be at least as complex, with multiple challenges in supply chains, remote locations, international joint ventures, first-of-a-kind technology and more. What are you doing to prepare for challenges that are more than technical and require excellent leadership, an adaptive culture and a resilient organization?



Christopher Rees

Consultant
JMJ



Chris Dantas

JMJ

5:30pm - 6:00pm

T2.10 Game Changer in the LNG Liquefaction Market: Flexible Licensing for the Optimised Cascade Process

As the LNG market has dramatically grown and market forces and client preferences evolved, ConocoPhillips and Bechtel mutually agreed to change strategies and pursue LNG projects independently. ConocoPhillips now offers the Optimized Cascade® Process to qualified LNG EPC contractors. ConocoPhillips has advanced its new innovative multi-contractor licensing approach by developing a comprehensive Licensing Design Package and is engaging and contracting with multiple EPC contractors that can design, build and maintain OCP plants. This change provides more choices to license the OCP and how that will benefit the various stakeholders in future LNG projects and the overall LNG market.



Michael Culligan

Manager, LNG Technology & Licensing
ConocoPhillips

-

T2.10 RESERVE PAPER: EPC Risk Management and Strategy - Using Blockchain

Blockchain has the capability to enable energy companies to reduce costs, improve process efficiency, eliminate IT security risks and enable new business models. Much more than a technology to automate business transactions, blockchain enables a new model for trust by establishing new types of transactional relationships between businesses via smart contracts, certifications and digital compliance. During this session we will explore several real-life examples of how companies are benefiting from blockchain technology to enable Energy industry executives to understand how best to extract value from these technologies and develop an adoption strategy to take advantage of the many possibilities.



Sunilkumar Ramakrishnan

Blockchain Leader - Oil & Gas Industry, IBM Europe
IBM

4:30pm - 6:00pm

T4.10 EAGE

Category: Gastech Technical Conference

Stream: Exploration, Production & Field Development

Moderator:



Kees Van Oort

Presentations

4:30pm - 5:00pm

T4.10 A Novel Approach for Structural Delineation with Multiple Faults from High Resolution Borehole Image Dips

Accurate structural delineation is very difficult in complex compressional tectonic regimes because of the challenge of seismic processing with large scale thrust faults. The high-resolution borehole image is commonly the first choice for structural framework construction in such environments. However, only one fault can be handled in one structural zone in previous traditional methods including one of most popular industry software application and the formation layering could not be displayed in a consistent cross-section direction. Moreover, it is very common that there are multiple faults developed in a horizontal well, and we cannot build a smooth structural model including multiple faults in one structural zone. We propose a novel approach to build a two-dimensional structural model with multiple faults from borehole image dips.



ShiDuo Yang
Schlumberger

5:00pm - 5:30pm

T4.10 Quantitative Interpretation of Gas Hydrate Bearing Sediment Using Inverse Elastic-Electrical Rock Physics Modeling Method

Reservoir parameters of gas hydrate bearing sediments are essential for reservoir characterization. In this study, we propose an inverse elastic-electrical rock physics modeling method to estimate reservoir parameters from elastic and electrical data. This method first generates the 3D constrained cubes of elastic and electrical properties in reservoir parameters domain. Then, prediction of reservoir parameters can be obtained by the isosurface intersections. Finally, we implement this approach to the well logs. Results show that the estimations match well with core samples. Based on these results, we conclude that inverse elastic-electrical rock physics modeling method is feasible for reservoir parameter estimation.



Shengjuan Cai
Research assistant
Research Institute of Petroleum Exploration and Development (RIPED)

5:30pm - 6:00pm

T4.10 Emerging digital technologies and their impact on Geosciences

The downturn in oil prices since late 2014 raised the profile of technology within many E&P organizations. The result has been an increasing focus on operational technologies that can help to lower costs and raise capital efficiency with emerging automation and digital technologies as one of the biggest winners. As the industry will return its attention towards production increase and exploration, the uptake of these technologies is expected to increase rapidly. This paper highlights the main impact of emerging digital technologies and discussed case studies of deployments.



Oscar Abbink
IHS Markit

4:30pm - 6:30pm

T3.10 Advances in Equipment & Technology

Category: Gastech Technical Conference

Stream: Subsea Technology, Innovation & Projects

Moderator

**Guy de Kort**

Vice President Development Integrated Gas
Shell

Presentations

4:30pm - 5:00pm

T3.10 Expanding the LNG value chain: Climate-friendly refrigeration through LNG Cold Recovery - An added value for LNG

**Uwe Becher**

International Sales, Key Account Manager
Eco ice Klte GmbH

5:00pm - 5:30pm

T3.10 Modular Construction for Multi Train Plant - Liquefin Technology

Modular construction for Multi train plant: Liquefin™ Technology value : To achieve lower CAPEX and shorter time to market, Air Liquide, LNG liquefaction technology provider, and Samsung Engineering, leader EPC in large scale projects, engaged in an open collaboration that overcame traditional challenges linked to modularization and standardization. A 2 Mtpy pre-engineered solution built around Liquefin™ technology - the most efficient liquefaction technology for large plant thanks to an innovative combination of DMR processes and Braze Aluminum Plate Fin Heat Exchangers (PFHE) - was developed which could support fast track project development while optimizing the general engineering to drive down the costs. Our Technical paper aims at quantifying benefits of proactive implementation of a major innovation into a modular approach.

**Thibault Marguet**

Liquefin Product Manager
Air Liquide Engineering & Construction

**Joonwoo Lee**

Business Development
Samsung Engineering

5:30pm - 6:00pm

T3.10 Dual Functioning for Simultaneous Import / Export Operations at the Cove Point LNG Terminal

The 5.25 mtpa Cove Point LNG facility simultaneously functioned as an import terminal while undergoing construction to build the export terminal. This was achieved through the management of boil-off-gas (BOG) by balancing the BOG generation with the fuel gas demand. We also focused on balancing the power requirements as well as the utilization of pipeline for bi-directional gas management. With an emphasis on implementing SIS strategies, including the resulting ESD actions and managing utilities through appropriate layers of protection, simultaneous operations were implemented safely throughout the facility.



Ani Ganguly
 Project Director
Kiewit

6:00pm - 6:30pm

T3.10 DirectLink LNG: How a Game-Changing Technology Enables the Medium Scale LNG business

The LNG market is now experiencing drastic changes due to the needs of emerging buyers and new environmental thresholds. This new scenario demands innovation in sales and trading strategies and leadership to drive and inspire change. As a leading global LNG operator, Gas Natural Fenosa has jointly developed with Connect LNG a revolutionary solution to address the recent challenges of the market. Direct Link LNG is the first Floating LNG Ship to Shore System which enables LNG transfer from ship to shore without the need of expensive fixed infrastructures, with a minimal environmental impact. This new system makes LNG accessible to locations where traditional supply schemes were not economically or environmentally viable. The solution is a single adaptable plug-and-play product which ensures connectivity to all of today's ports and vessels worldwide. A new robust, scalable, fast-to-implement and compelling model designed for small to medium scale volumes which could represent the key to open new markets around the World. With Direct Link LNG, Gas Natural Fenosa is taking a step forward by becoming a driving force in transforming the LNG market. A demonstration of the innovative spirit of the Company that will drive our commitment to address any new energy challenge that may arise



Carlos Costa
 Head of LNG Project Development
Naturgy

4:45pm - 6:00pm

S11. Corporate Risk, CSR & Local Content

Category: Gastech Strategic Conference

Stream: Operations & Maintenance

Moderator



Julie Nelson
 VP, State Government Relations
Cheniere Energy

Presentations

4:45pm - 5:10pm

S11.Preventing Your Next Accident - A Systemic View of Mitigation Against Major Accidents

Gill Kernick and Jim Wetherbee argue that the commercial, reputational and even moral case for the prevention of major accidents is clear. Yet, investigations reveal their 'awful sameness' highlighting our inability to learn. They will address how people, rather than being part of the problem, can be our greatest asset in preventing catastrophic events. Two of the adverse conditions in complex socio-technical systems that contribute to accidents will be explored:

- Allowing the violation of rules, policies and procedures, and
- Leaders not sufficiently listening to, engaging with or caring for their people


Gill Kernick

Senior Consultant, EMEA-London
JMJ


Jim Wetherbee

Americas Associate Consultant
JMJ

5:10pm - 6:00pm

S11.Panel Discussion


Paul Jeakins

Commissioner and CEO
British Columbia Oil and Gas Commission


Kelly Newnham

Director, Americas
Advisian WorleyParsons Group


Ben Ratner

Senior Director, EDF+Business
Environmental Defense Fund


John Baguley

Chief Operating Officer
LNG Limited


Dominic Ogbata

Senior Learning Analysis Officer

4:45pm - 6:00pm

S15. Emerging Customer Markets

Category: Gastech Strategic Conference

Stream: Global Gas & LNG Markets including National Spotlights

Moderator


Paul Sullivan

Project Advisor to the CEO & Strategic Governing Body CO-Chair

Presentations

4:45pm - 5:10pm

S15. LNG as an Affordable, Reliable and Flexible Fuel for Emerging Markets

Emerging economies are now turning to LNG as an affordable and reliable source of energy to compensate a declining domestic gas production or to displace fuel oil imports or coal-fired power generation. The advent of floating regasification terminals has cut significantly the cost and duration of building an import terminal but this is not the only enabling factor: LNG portfolio players are able to supply LNG at very competitive prices by optimising the entire supply chain, while guaranteeing both security of supply and flexibility.


Shammi Herai

 VP Business Development ,LNG
Total

5:10pm - 5:35pm

S15. Transforming Emerging Energy Demand to LNG in South East Asia

It is widely known that South East Asia is the place where the largest energy demand growth is expected, however, it's been years since many discussions came out about LNG receiving terminals and LNG import in this region and not so many projects have flown yet. This implies that there are something missing to transform the growing energy demand to LNG. This paper points out those missing pieces and proposes the solution to bridge the gap and enable investors, international LNG players to transform the demand to LNG.


Katz Sato

 Senior General Manager, Southeast Asian Energy Business Dept.
Osaka Gas Co., Ltd

5:30pm - 6:00pm

S15. LNG, An Alternative Fuel for an Even More Sustainable Railway

Although railway is the most efficient form of land transport, has gradually lost ground in terms of 'modal share' to less efficient technologies

From 2014, UIC approved an specific 'Roadmap' in order to recover "modal share" in an sustainable way, a roadmap conditioned by the long term and in most cases low profitability of the electrification process, and the short term impact of diesel technologies.

In this scenario, Natural gas is the most competitive alternative (from a qualitative and quantitative point of view) and the only alternative fuel that is available for attending any traction requirement yet, just in the way a Spanish consortium is demonstrating in Spain with an complete portfolio of projects, the most advanced of these: 'raiLNG-DMU' line (passengers), last January became to be the world's first experience of utilizing LNG as a fuel in a railway passenger unit.



Claudio Rodríguez
Gas Assets General Manager
Enagás

6:30pm - 8:00pm

Gastech 2019 Launch Party

Category: Networking

Stream: Networking

Conference Day Four

9:00am - 10:00am

10.CEO Panel: Engineering, Procurement & Construction Leadership Debate: “How Can EPCs Deliver New Gas & LNG Projects in Low-Cost, Low-Margin Times?”

Category: Gastech Plenary Stage

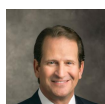
Stream: CEO Panel

Is the LNG liquefaction ‘mega-project’ dead? What appetite is there for multi-billion dollar, multiple-partnership projects? The role of the EPC has never fallen under greater scrutiny post-2015 when prices crashed. Demands from operators for greater efficiency, streamlining of costs and improved ROI have made the challenges facing EPCs greater than ever.

Speakers:



Alasdair Cathcart
President



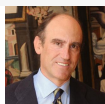
David Seaton
Chairman & CEO
Fluor



Stuart Bradie
President & CEO
KBR



David Dickson
President & CEO
McDermott



Juan Lladó Arburúa
CEO and Vice Chairman
Técnicas Reunidas

Moderators:



Paul Sullivan
Project Advisor to the CEO & Strategic Governing Body CO-Chair



Nick Milne
Senior Vice President - Offshore, Oil/Gas & LNG Finance & Strategic Governing Body CO-Chair
Macquarie Group

10:00am - 10:20am

Young Gastech Essay Competition Winner

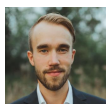
Category: Combined Strategic & Technical

Stream: Plenary

Presentations

-

"A Transition Towards Carbon Neutrality – What Part Does Natural Gas Play?"



Markus Norrgård
Process Engineer, Fuel Gas Supply Systems
Wärtsilä

-

Summary of Essay

By 2040 a significant part of the global electricity production should be carbon neutral. An issue with wind and solar is that the electric output almost never matches the demand. Natural gas powered quick ramp rate power plants act thus as a good complement. In the event of overproduction of electricity by the renewables, energy must be stored. For this power-to-gas plants producing methane, which is fully interchangeable with natural gas, is an interesting alternative. A potential next step could be remote plants solely producing synthetic methane from renewable energy. This could lead to carbon-neutrality also for applications which are not feasible to electrify, such as maritime transport. Until a full transition has been made, natural gas acts as an environmentally sound fuel and investments in technology and infrastructure made today can be utilized also in the future.

10:20am - 10:50am
C1. Engineering, Procurement & Construction
Category: Combined Strategic & Technical
Stream: Engineering, Construction & Project Development for Natural Gas & LNG

Moderator


Christopher Caswell

 LNG and FLNG Technology and Development
KBR

Presentations

10:20am - 10:50am

C1. Is Gas the Right Bet for Oil Majors?

Massimo Di Odoardo

 VP Research, Global Gas and LNG
Wood Mackenzie
11:15am - 12:45pm
C2. Engineering, Procurement & Construction
Category: Combined Strategic & Technical
Stream: Engineering, Construction & Project Development for Natural Gas & LNG

Moderator


Christopher Caswell

 LNG and FLNG Technology and Development
KBR

Presentations

11:15am - 11:45am

C2. Ichthys LNG - Review of Module Transportation & Execution

On behalf of the client Boskalis executed 24 shipments with 58 large modules on 3 vessels from Nantong and Qingdao, China, Batangas, Philippines and Laem Chabang, Thailand to Darwin, Australia for a new LNG plant. Boskalis would like to address the internal and external challenges and lessons learned of this project and illustrate with the various media available.

Lessons learned are detailed in the following categories: Contractual/Commercial, Engineering/Preparation, Operational and Internal processes/procedures.



Marco Tanis
 Senior Project Manager
Boskalis

11:45am - 12:15pm

C2. Tools for Preventing the Delay of Future Project (Managing Workforce Locations & Improvement of Safety Awareness)

One of the major obstacles the EPC companies are facing is the making of a feasible catch-up plan that can mobilize sufficient additional manpower in the event of project delay. The problem lies in the construction inaccurate reports for productivity and actual manpower work at site. To overcome this obstacle the authors has developed a data logging system that can acquire accurate workforce location data. Using this system, project team can obtain their own accurate workforce data. In this results, contractor will accumulate and analyze real-time data through this system.



Dr. Yuki Hamada
 Schedule Control, Project Management Department
Chiyoda Corporation

12:15pm - 12:45pm

C2. Advanced Challenges in Artic Module Logistics in the Yamal LNG Project

JGC Corporation, a part of joint venture contractor, is constructing a large-scale LNG plant at the Yamal Peninsula, in the Arctic. The key to success of this venture to overcome the difficulties posed by the 2 meter thick "sea ice" in the arctic is how we should confront the logistics challenge and deliver the super-large modules to the site safely. Our achievement in delivering all 156 modules with a total weight exceeding 400,000 metric tons without damage, and in opening the Northern Sea Route as a module transportation segment, represents a remarkable feat in both the shipping and project business.



Kota Ueki
 Logistics Manager
JGC Corporation

12:45pm - 1:15pm

Summary of Gastech 2018 from Gastech Governing Body Co-Chairs

Category: Combined Strategic & Technical

Stream: Conference

Presentations

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Chris Clucas

Corporate Expert - Liquefied Gas, Bernhard Schulte Ship Management Ltd & Principal Consultant,
 Liquefied Gas (GB member)
Bernhard Schulte Shipmanagement UK Ltd & Liquefied Gas

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Paul Sullivan

Project Advisor to the CEO & Strategic Governing Body CO-Chair

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Nick Milne

Senior Vice President - Offshore, Oil/Gas & LNG Finance & Strategic Governing Body CO-Chair
Macquarie Group

1:30pm - 5:00pm
Site Visit to Enagas LNG Terminal, Port of Barcelona
Category: Networking
Stream: Networking

Join this visit to continental Europe's first LNG regasification terminal in the Port of Barcelona courtesy of Enagás.

13:30 Coaches depart Fira Barcelona

14:00 Refreshments & Safety Briefing

14:30 Site visit

17:00 Buses arrive back at Fira Barcelona