



27th WORLD GAS  
CONFERENCE

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# 27th WORLD GAS CONFERENCE CALL FOR ABSTRACTS TOPICS

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## **About the Call for Abstracts**

The Call for Abstracts is an opportunity offered to industry experts worldwide. Authors are invited to submit abstracts relating to topics defined by the IGU Committees and Task Forces.

If selected, you will have an opportunity to be part of the official conference program, presenting in front of a global audience.

Speakers for the following conference sessions will be selected through the Call for Abstracts:

- **Industry Insights**

Industry Insights focus on the most relevant commercial issues and the latest technical innovations that represent each segment and aspect of the natural gas value chain.

- **Technical and Innovation Center**

Located on the exhibition floor, the Center will feature audience-friendly panels and interactive discussions on the latest developments and innovations in gas industry technology. It will also provide live demonstrations of technology, products and digital poster displays.

The Call for Abstracts topics are listed below. To submit an abstract, please visit [wgc2018.com/cfa/](http://wgc2018.com/cfa/).

## **EXPLORATION AND PRODUCTION INDUSTRY INSIGHT SESSIONS**

### **Exploration & development of new geological frontiers and new applications of conventional gas resources**

#### **Objectives**

This session will explore four different opportunities for conventional gas to maximize project value:

- New effective technologies application for the mature fields
- Identification and development of new geological frontiers
- Fiscal and regulatory incentives required to stimulate development in mature fields and new reservoir types
- Optimal development concept while ensuring safety and environment protection

#### **Call for Abstracts Topics**

- Latest discoveries of conventional resources
- Development of new geological frontiers e.g subsalt carbonates, large deltas, foothill, rift and graben, paleoplatform
- Technological advances for mature fields extraction
- The social acceptance, regulatory issues, fiscal regulation, projects economics

### **Impact of unconventional resource development on the world gas market**

#### **Objectives**

After the U.S., certain countries – Argentina, China, Algeria, Saudi Arabia – have huge unconventional resources. They will be the next ones where unconventional gas will be developed. The session will debate the key motivations of these countries, as well as the technical, economic and social challenges

to overcome. Will the development of these new resources affect the world gas flow? And particularly, can US LNG compete with Russian gas in Europe and the Far East beyond 2020?

### **Call for Abstracts Topics**

- Unconventional potential (geographical and geological context, resources, existing infrastructures)
- Main motivations (government revenue, gas independence, reduction of GHG emissions, displacement of electric mix, economy competitiveness)
- Main challenges (geology, technology, human resources, economic, environmental, political, fiscal)
- Status of current development (exploration, pilot phase, development phase)
- Impact on world gas market including LNG
- Competition between Russian gas and US LNG in Europe and Asia
- Unconventional potential (geographical and geological context, resources, existing infrastructures)

### **Digitization and big data transforming the E&P lifecycle**

#### **Objectives**

Oil and gas companies are now entering the era of digital business. The impact of the “Internet of things” (IoT) will create new dimensions of data (and big data). The blurring line between physical and digital, along with rapid adoption of IoT, shifts businesses into new paradigms. Oil and gas companies need to reinvent themselves in preparation for the next era of autonomous business driven big data, algorithms and artificial intelligence. In this light, this session aims to share case studies on how digitalization creates value, reduces cost and improves efficiency throughout the E&P gas lifecycle. The case studies will also discuss associated challenges and changes to operating models, and bridging physical and digital divide amid the widening gap between those that can exploit these technologies vs those that cannot and how it will affect the workforce.

### **Call for Abstracts Topics**

- Advance analytics, predictive and artificial intelligence
- Remote operations, automation and robotics (IoT, sensor, intelligent equipment)
- Additive manufacturing/ 3D printing
- Workforce of the future (digital tools to improve productivity and HSE)
- Integration of engineering and data driven science for evaluation and modelling
- Blockchain and smart contracts

## **EXPLORATION AND PRODUCTION TECHNICAL AND INNOVATION CENTER SESSIONS**

### **Technological advances to extend the lifecycle of conventional mature gas fields**

#### **Objectives**

This session will debate on the technological advances available for mature gas fields lifecycle extension.

### **Call for Abstract Topics**

- Maintaining production levels

- Replenishing production through developing reserves of under- and over-lying productive deposits
- Development of science intensive technologies
- Stimulating of gas production
- Maximize the recovery factor
- Development of predictive models to simulate subsurface phenomena
- Ways of solving operating problems
- Development of science
- Maintaining production levels
- Replenishing production through developing reserves of under- and over-lying productive deposits
- Development of science intensive technologies
- Stimulating of gas production
- Maximize the recovery factor
- Development of predictive models to simulate subsurface phenomena
- Ways of solving operating problems

### **New technologies to make unconventional gas development more resilient**

#### **Objectives**

The dramatic reduction in US shale gas development has not been followed by rapid and significant slowdown in production. Two main factors explain that production resilience – huge improvement in operational performances, and spectacular increase in well productivity. This session is devoted to all technologies able to improve these two factors.

#### **Call for Abstract Topics**

- Optimization of development strategy (rig number, well number by pad, optimal horizontal length, frac spacing, wells to refract, DUC – Drilled but Uncompleted wells)
- Improvement of operational performances (Digital, big data remote operation center, rig move, connection time)
- Optimization of well & design (open hole vs plug&perf, new completion technologies)
- New fracking technologies (alternative fluids, tailored chemicals, new proppant)
- Improvements in hydraulic fracture diagnostics
- Sweet spot and sweet area mapping (3D/3C seismic, innovative geological workflow and lab technologies)
- Stimulated Rock Volume modelling (earth model) and monitoring (microseismic)

### **Next generation materials to meet E&P needs**

#### **Objectives**

This session will explore the innovations in material science that are both cost-effective as well as superior in performance, e.g. in terms of weight, mechanical properties, durability, and resistance to environmental degradation. The discussion should include the qualification of new materials and the applications.

#### **Call for Abstract Topics**

- Nanomaterials (e.g., nanotechnology applied to proppants, equipment, separations)
- HPHT Materials (i.e., materials that can withstand much high temperatures and pressures)
- Carbon fiber and Advanced Composite Materials (e.g., strong materials that are much lighter)

- Multifunctional and Smart Materials (e.g., materials that can send information and self-repair)

### **Applied technology and innovations in sustainable unconventional gas development**

#### **Objectives**

This session will provide an overview of emerging technologies and approaches being applied in enhancing the production efficiency and environmental profile of unconventional gas development. The session will be comprised of case studies and overviews of new product and service applications in upstream unconventional gas fields.

#### **Call for Abstract Topics**

- Understanding and avoiding induced seismicity associated with unconventional gas development (i.e. investigations of the relationship between wastewater injection and seismicity; including research contributing to state of science regarding detailed characterization of the subsurface, controlling injections, and sensing/imaging technologies)
- Preventing the disposal of large volumes of produced water from unconventional natural gas wells (i.e. research targeting the development and application of non-aqueous fracturing fluid alternatives)
- Beneficial reuse of water produced from unconventional natural gas wells (including research targeting water treatment cost reduction, water and production systems integration, economic re-use for both oilfield and non-oilfield purposes)
- Methane emissions, both vented and fugitive, occur in all segments of the natural gas supply chain, which consists of three stages: production and processing, transmission and storage, and distribution. What are the cost effective proven technologies to mitigate methane emissions across the supply chain?
- Environmentally friendly drilling - dust control, noise, rig size, congestion

## **LNG** **INDSUTRY INSIGHTS SESSIONS**

### **Floating LNG Concepts: facts and differentiators**

#### **Objectives**

The objective of this session is to provide specific insights about aspects/issues for making the FLNG projects feasible, including success /non-success histories for FLNG developments and current projects for:

- Liquefaction FLNG concepts split into two main types: (i)LNG FPSOs in open sea conditions and (ii) Near-shore LNG producing projects (referred to floating production moored to a jetty in open sea conditions)
- Regasification FLNG concepts (FSRUs)

It is stressed to have insights about the niche for FLNG and its particularities both in terms of business (contracting, business drivers, financial viability, players) and technical aspects to provide a vision of the benefits/niche of the FLNG concept. Papers related to real and planned specific projects would be prioritized. Additionally, any comparison between FLNG vs onshore would be welcome.

#### **Call for Abstract Topics**

- Lessons learnt on LNG FPSOs and FRSUs projects' development: for new builds and for conversions.
- Business models / contracting

- Bridging solutions / expandability
- Facts and differentiators between offshore vs onshore LNG solutions
- Main potential benefits from FLNG solutions
- Trends and future for the FLNG niche
- Permitting
- Tax regimes

### **LNG competitiveness in the energy market**

#### **Objectives**

The objective of this session is to examine and document the competitiveness of LNG sustainability for both Sellers and Buyers, as well as other stakeholders, from overall viewpoints including price.

Liquidity is a measure of the ability to buy or sell a product without causing a major change in its price and without incurring significant transaction costs. The improvement of liquidity in the market can be beneficial for consumers because of:

- liquidity is needed by any new participant considering entering a market;
- liquidity may result in greater price transparency which can then provide opportunities for increased competition across the market; and
- improved liquidity can work to provide a level playing field for independent companies so they can compete in the market on the same terms as vertically integrated companies.

#### **Call for Abstract Topics**

- Global Price
- Capital Cost
- Shipping Availability
- Receiving Terminals / Small Scale
- Market (Supply/Demand)
- SPA's
- Quality Specification

### **Enhancing LNG Facility Functionality and Capability**

#### **Objectives**

Since the first commercial LNG cargo 50 years ago, many of the facilities have aged and/or are being faced with significant changes in supply/demand. This has triggered a wave of plant reconfigurations happening today. Examples of this are:

- Reconfiguring receiving terminals to export facilities by adding liquefaction, mainly in the USA, and also the reverse
- Extension or modification of existing plants, such as debottlenecking, accommodation of different feed-gas qualities, LPG/Ethane extraction, etc.
- Adding truck loading / bunkering / refueling to receiving terminals serving as base load natural gas supply points.
- Adding reloading capability to receiving terminals
- Rejuvenation or mothballing/abandonment of end-of-life facilities.

This session aims to present real life projects in existing LNG assets where functionality is enhanced or changed, addressing business drivers, business models and key success factors.

#### **Call for Abstract Topics**

- How to make most out of existing assets
- Response of existing assets to a new business reality

#### **World LNG Report: The Current Market and Emerging Issues**

##### **Objectives**

This session addresses activity and trends associated with development of the world-wide LNG industry including:

- LNG trading and terms of trade among importing and exporting countries, interregional markets, spot, medium-term, and long-term contracting, and LNG pricing
- LNG liquefaction capacity development and utilization, project development and financing, project risks, and technology
- LNG marine carriers including vessel technologies and utilization, fleet development, the charter market and structure
- LNG receiving terminal capacity development and utilization, innovative uses of storage including reloading and transshipment, project development and financing, and technology

The session also addresses prospects for future LNG industry developments that will shape the competitive positioning of LNG relative to other fuels and energy sources, and beyond near-term trends.

#### **Call for Abstract Topics**

- Project Commercial Description
- New project FID support structures
- Momentum for contract renegotiations
- New marketing partnerships
- Price convergence impacts
- Views on LNG commoditization
- LNG demand drivers
- LNG working with renewables
- Competing energy - coal; renewables

### **LNG** **TECHNICAL AND INNOVATION CENTER SESSIONS**

#### **Floating LNG Concepts: Technical challenges**

##### **Objectives**

The objective for this session is to provide specific insights about technical aspects/issues for making the FLNG projects feasible from a technical stand point, including success /non-success histories for FLNG developments and current projects. Both for:

- Liquefaction FLNG concepts split into two main types: (i) LNG FPSOs in open sea conditions and (ii) Near-shore LNG producing projects (referred to floating production moored to a jetty non in open sea conditions)

- Regasification FLNG concepts (FSRUs)

It would be prioritized, papers related to specific projects. Additionally, any comparison between FLNG vs onshore would be welcome.

### **Call for Abstract Topics**

- Safety (mooring system, offloading system, cryogenic spillage, risks assessment, etc.)
- Commissioning / start-up
- Operations
- Design (open sea and near-shore)
- New projects
- New technologies
- Innovative management of processes
- Consideration of offshore rules, classification
- Qualification of equipment for offshore use
- Re-deployability aspects

### **Enhancing LNG Facility Functionality and Capability**

#### **Objectives**

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- Extension or modification of existing plants, such as debottlenecking, accommodation of different feedgas qualities, LPG/Ethane extraction, etc.
- Adding truck loading / bunkering / refueling to receiving terminals serving as base load natural gas supply points.
- Adding reloading capability to receiving terminals
- Rejuvenation or mothballing/abandonment of end-of-life facilities.

This session aims to present real life projects in existing LNG assets where functionality is enhanced or changed, addressing opportunities, challenges and best-practices.

### **Call for Abstract Topics**

This TIC session will be composed from practical and applied case studies on:

- New projects
- New technologies
- New products
- New services
- Innovative management of processes

### **Small Scale LNG: technology applications and case studies**

#### **Objectives**

The session aims to address new developments in small scale LNG and its associated value chains. It will present new projects, case studies and technology applications, including break-bulk projects, small scale LNG liquefaction & receiving projects and LNG bunkering.

The IGU defines small scale as less than 1 mtpa (for plants) or 30,000 cubic metres (for tanks farms and carriers) of capacity.

### **Call for Abstract Topics**

This TIC session will be composed from practical and applied case studies on:

- New projects
- New technologies
- New products
- New services
- Innovative management of processes

## **TRANSMISSION** **INDUSTRY INSIGHT SESSIONS**

### **Transmission pipeline growth and diversification**

#### **Objectives**

All over the world several large gas transportation pipeline projects have been executed to fulfil an increased demand for and secure supply of natural gas. In some countries gas infrastructure developments are new experiences. Many of these projects are facing challenges ranging from harsh environments to public and other stakeholder engagements.

In the light of the climate change issue, various ideas have been raised to meet that challenge, in addition to optimize overproduction of electric power from renewables (e.g. solar and wind) (Power to Gas - P2G). A number of pilot projects have looked into alternative use of existing natural gas pipeline infrastructures and systems by injection of other gases such as bio-methane, syn-gas and hydrogen. There are still some open issues related to this in terms of gas quality, asset integrity and regulatory requirements.

#### **Call for Abstract Topics**

Challenging pipeline projects, in terms of:

- Long distance
- Demanding profile / geography
- Harsh environment
- Deep water
- Earthquake and land-sliding areas

Handling of public and other stakeholders (incl. management) engagement related to gas pipeline developments:

- EIA - Environmental Impact Assessments
- Societal aspects
- International agreements (treaties/political issues)
- Security of supply

Pipeline projects and challenges to meet regional security of supply.

Alternative use of existing pipeline networks and systems, and preparation for the future, e.g. other gases in traditional pipeline systems.

- Natural gases of different quality (GCV, WI, O<sub>2</sub>, Sulphur, CO<sub>2</sub>, siloxanes, etc.)
- Injection of bio-methane (upgraded biogas)
- Injection of syn-gas and hydrogen (Power to Gas – P2G)

- Hydrogen production from natural gas
- Hydrogen admission - effects on gas quality and pipeline integrity
- Regulatory issues regarding biogases and hydrogen
- Other potential alternatives (e.g. CO2)

### **Effective operations — a precondition for market competitiveness**

#### **Objectives**

Cost-effective operation and maintenance of gas transmission systems / pipelines, compressor substations, transfer points with metering etc. / is an essential precondition for an increase, or at least maintenance, of the position of natural gas in a global energy mix, as well as to further development of the global market of natural gas.

#### **Call for Abstract Topics**

- Cost-effective operation and maintenance of gas transmission systems
- Identification and reduction of losses
- Gas balance - analysis, metering, improvement
- Asset management approach (such as ISO 55001 or others)

### **Safety and environmental performance of gas transmission systems**

#### **Objectives**

Environmental and societal impact of gas transporting systems and their operations, as well as safety of operation, are key factors for public acceptance of gas facilities. Excellent environmental and safety performance streamlines the way to authorization of constructions and may have a principal impact on an economy of installations and operations.

#### **Call for Abstract Topics**

- Pipeline integrity management
- Corrosion control and management
- Global standards and practices for improving safety
- Reduction of methane and other emissions

## **TRANSMISSION** **TECHINCAL AND INNOVATION CENTER SESSIONS**

### **Transmission pipeline growth and diversification**

#### **Objectives**

All over the world several large gas transportation pipeline projects have been executed to fulfil an increased demand for and secure supply of natural gas. In some countries gas infrastructure developments are new experiences. Many of these projects are facing various challenges ranging from harsh environments to public and other stakeholder engagements.

In the light of the climate change issue, various ideas have been raised to meet that challenge, in addition to optimize overproduction of electric power from renewables (e.g. solar and wind) (Power to Gas - P2G). A number of pilot projects have looked into alternative use of existing natural gas pipeline infrastructures and systems by injection of other gases such as bio-methane, syn-gas and hydrogen.

There are still some open issues related to this in terms of gas quality, asset integrity, regulatory requirements etc.

### **Call for Abstract Topics**

This TIC session is to be composed from practical and applied case studies and/or papers on:

- New projects
- New technologies
- New products
- New services
- Innovative management of processes

### **Effective operations for transmission pipelines**

#### **Objectives**

Cost-effective operation and maintenance of gas transmission systems / pipelines, compressor substations, transfer points with metering etc. / is an essential precondition for an increase, or at least maintenance, of the position of natural gas in a global energy mix, as well as to further development of the global market of natural gas.

### **Call for Abstract Topics**

This TIC session is to be composed from practical and applied case studies and/or papers on:

- New projects
- New technologies
- New products
- New services
- Innovative management of processes

### **Pipeline integrity management**

#### **Objectives**

A primary goal of PIM is to determine the overall process for the integrity assessment of pipelines and to control and optimize the implementation of inspections, maintenance, and repairs of the network. This task involves a broad array of procedures, processes and products. This TIC session will provide case studies and product and process examples related to pipeline integrity management. This session will explore the latest technologies and approaches being applied around the world.

### **Call for Abstract Topics**

This TIC session is to be composed from practical and applied case studies and/or papers on:

- New projects
- New technologies
- New products
- New services
- Innovative management of processes

## **STORAGE** **INDUSTRY INSIGHT SESSIONS**

### **New underground storage (UGS) projects - global review**

## Objectives

This session will focus on key insights based on the IGU Storage Committee report. At the moment total UGS working gas volume (WGV) of 411 billion m<sup>3</sup> has been operated in about 737 storage facilities all over the world with the peak withdrawal rate (PWR) of some 6770 million m<sup>3</sup> per day. Annual growth of natural gas consumption stimulates global development of UGS system. North America represents the region with the highest amount of WGV worldwide. North America is also the most developed gas market with storage originating there more than 100 years ago. For the last triennium USA shows more than 7% in WGV increasing. At the same time some regions (Europe) show decline in storage demand in short term. It is more likely that there will be more divestments and mothballing of low performance storages with parameters not reflecting current demand from market. Nations of CIS are using gas significantly. Based on favorable geological characteristic storages show relatively high representation of porous storages with high WGV but limited PWR.

Areas of focus and link to areas of strategic interest include:

- Track regions with major UGS developments
  - Europe
  - CIS
  - Central and Latin America
  - Asia
  - Middle East
- Advocating storage's role in energy systems
- Case studies of new UGS projects
- Design of UGS with reduced environmental footprint

## Call for Abstract Topics

- New UGS projects
- New design for UGS
- New UGS projects with reduced footprint
- Advocating storage's role in energy systems
- Case studies of new UGS projects
- New opportunities for UGS development
- Case studies of new storage projects

## Safe operation and best practices of UGS

### Objectives

In spite of some similarities between gas production activities and underground gas storage (UGS) there are fundamental differences. Two factors make safe operation of UGS matter of special attention.

1. UGS works under fluctuating pressures between maximum and minimum levels. In such conditions well casings, wellhead equipment, connections and other equipment are exposed to cycling of differently directed thermobaric stresses.
2. In Underground Storage created by converting depleted oil-gas fields usually rely on a certain number of the existing production wells. Design, construction and installed equipment of these original wells may not meet current standards for storage wells. Wells constructed for oil production may not correspond to UGS requirements.

Therefore, UGS equipment should be under precise control and evaluation of its technical condition to maintain it in safe and reliable mode.

Areas of strategic interest include:

- Integrity management of UGS assets, (wells/caverns integrity management, micro-seismicity, subsidence measurement, wells/caverns-logging operations) and its practices towards a safe and reliable operation;
- Quantitative Risk Assessment (QRA): major accident probability analysis, methodology, standards and norms, public advertising (for better public acceptance);
- UGS tightness monitoring (reservoirs, caprock, aquifers, landscape, soils, wells, etc.);
- Innovative and modern technology to improve safety in the following areas: maintenance and inspection; repair; replacements/renewals; emergency procedures;
- Reduction of UGS environmental footprint (aquifers contamination, leak of gas, landscape transformation and contamination), Improving societal acceptance & communication.

#### **Call for Abstract Topics**

- Integrity management of UGS assets
- Quantitative risk assessment (QRA)
- UGS tightness monitoring
- Case studies of major incidents
- Reduction of emissions and environmental footprint

#### **Storage market & conventional/unconventional value of UGS**

##### **Objectives**

Today UGS can also provide to the global energy market some new services: back-up of renewable sources of energy (solar, wind, geothermal), back-up of electric grids, price hedging in gas trade operations, storage of unconventional gases, and development of so called “Energy storage” system. Speaking about commercialization of underground gas storage, we should not forget about their core business targeted at improving reliability and flexibility of gas supplies to the market to compensate for seasonality factor, assure supplies of additional volumes in the conditions of gas consumption fluctuations, as well as to cover the peak demand.

Areas of strategic interest:

- Non hydrocarbon UGS: He, N<sub>2</sub>, CO<sub>2</sub>
- Non typical UGS (CH<sub>4</sub>+): H<sub>2</sub>, Associated gas, Shale gas, tight gas, Green gas, Coal beds methane, Synthetic methane, Petroleum gas
- Effects of concentration of other gas in natural gas on operations and safe storage and regulations
- Resolving of some scientific and technical problems related to unconventional gas storage in conventional UGS: risk of wells corrosion, destructive chemical reaction, acidification of formation water, impact on aquifers and porous rocks, etc.
- Cushion gas replacement by other gases: CO<sub>2</sub>, N<sub>2</sub>, ... and necessary PVT conditions when substituting CH<sub>4</sub> cushion gas by other gases
- Carbon capture and sequestration in UGS: opportunity for ensuring an acceptable continued use of natural gas in a carbon – constrained world
- Development of new technologies and R&D efforts to create “energy storage” (Power for Gas and Gas for Power technologies)
- UGS as insurance against supply risk. Timely response to demand: cold peaks, prolonged demand periods, technical failures

- UGS as optimization tool for better gas production, transportation and distribution management and hence reduction of operations and maintenance activities/costs through all gas industry chain (plateau vs. swing)
- Decreasing of volumes of flaring of associated gas through injection into the temporary UGS at the oil fields

### **Call for Abstract Topics**

- Value of storage function
- Innovations and best practices in market arrangements
- Renewable sources of energy
- Electric grids
- Price hedging in gas trade operations
- New technology for “Energy storage”
- Effects of concentration of other gas in natural gas
- Cushion gas replacement
- Carbon capture and sequestration
- Carbon – constrained world
- Power for Gas and Gas for Power technologies
- Reliability and flexibility of gas supplies
- Energy safety
- Peak demand shaving
- Insurance against supply risk
- Reduction of operations and maintenance activities/costs
- Investment optimization

## **STORAGE TECHNICAL AND INNOVATION CENTER SESSIONS**

### **Innovations in gas storage technology and applications**

#### **Objectives**

Creation of a highly efficient underground gas storage system capable of assuring engineering and environmental safety, using new technologies, information technology innovations and best practices will allow reinforcement of UGS operations and management towards more sustainability and to help to assure reliable and flexible gas delivery to end use consumers. The further development of underground natural gas storage facilities is impossible without a certain progress in scientific research, high standards for analytical and experimental studies, and at the same time without a close connection between science and industry.

Areas of strategic interest include:

- Better integrated facilities & subsurface equipment (design, operation and monitoring)
- Best Practices: advanced compressors, modern drilling technology, automation and intellectualization
- 3D & 4D modeling linked to facilities models for better optimization & operations
- Complicate geological conditions specific issues and solutions: Low permeability and/or fractured reservoirs (e.g., carbonates), adapted well design and placement, logging when drilling, opening-up of low pressure reservoirs, well operational conditions to improve Productivity Index

- Salt cavern integrated design, development and operation by integrated data and IT tools suite to improve monitoring efficiency, Technology for tunnel-type cavern construction, salt caverns with two wells

### **Call for Abstract Topics**

- Innovations and best practices, new technologies and research
- Increased performance of wells and deliverability
- Integrated facilities & subsurface equipment
- Modern drilling technologies
- Automation and intellectualization
- 3D & 4D simulation
- Opening-up of low pressure reservoirs
- Logging when drilling
- Salt cavern integrated design
- Tunnel-type caverns
- Caverns with two wells

## **DISTRIBUTION INDUSTRY INSIGHT SESSIONS**

### **Access to isolated areas and promotion of new connection points**

#### **Objectives**

This session will look at the DSO's activities promoting, developing and facilitating the maintenance and expansion of the market for natural gas. Key topics to explore will be the i) DSO-customer interaction for maintaining existing customers and encouraging new attachments; ii) new technologies and techniques for expanding the infrastructure and attaching new customers; and iii) strategies for expanding the availability of natural gas "beyond the mains" to isolated areas or orphaned industrial or power plants.

Papers should focus on successes and lessons learned. Panel discussions of interacting topics with gas industry (and other underground utility) representatives and contractors /manufacturers /vendors may also be assembled.

#### **Call for Abstract Topics**

- How the DSO views opportunities, as well as the potential threats to limiting market expansion
- LNG/CNG virtual pipeline case studies
- Opportunities for medium-pressure storage with adsorption technology (ANG)
- Role of the stakeholders (i.e., DSO, manufacturers, vendors, retail appliance sales, etc.) in promoting natural gas
- Advocacy of Natural Gas
- Establishing "digital trust": Keeping existing customers and enticing new end-users to gas with new customer service apps and interaction
- How do regulated attachment policies affect market expansion?
- What can we learn from the other underground utilities?
- Privacy issues in the age of the 360° customer
- Outlook for new gas appliances (e.g., micro-turbines, fuel cells, combination solar-gas, small-scale CHP, etc.)
- How do we bring the benefits of digitalization to the customer

- Beyond the meter: new techniques for piping the residential customer

### **Reliability, Safety and Performance - Exceeding stakeholder expectations**

#### **Objectives**

This session will look at operational excellence (OE) as a strategy and goal of the distribution companies to fulfill customer (and society) expectations. The OE will be considered from the following points of view: Safety management systems including System integrity, Safety of personnel and customer safety; Improvement of customer experience; Optimization of training and competence assessment of personnel with special focus on Blue Collars as field work force; Certification of distribution companies as a way to achieve OE.

#### **Call for Abstract Topics**

- Operational Excellence programs in gas Distribution Companies, including effects on customers and other stakeholders
- Safety management in Gas Distribution
- Safety of gas distribution networks; System integrity (construction, operation, inspection and maintenance, supply chain, pipeline integrity testing)
- Safety of own personnel and contractors of gas distribution works
- Customers experience, (reliability, safety, awareness, communication before/during/about issues/ interruptions, quality and safety of gas installations)
- Training and competence assessment of personnel working on gas distribution mains
- Certification of gas distribution companies
- Blue Collar: field work force applications (technology, training, human factors...)
- New Technology/Applications/data processing to improve maintenance and safety (drones, asset tracking, GPS, IoT, data collection)

### **Gas distribution and sustainability considerations**

#### **Objectives**

This session will focus on the integration of green gases in the gas distribution system. It will include case studies and innovative approaches for the deployment and facilitation of green gas in a gas distribution system. Specific considerations include:

- Implementation and experiences of integrating green gases in gas distribution systems
- Innovative technologies to facilitate green gas injection, gas mixing, blending, flow balancing, grid control
- Benefits delivered by green gases in a smart integrated energy system (electricity, gas, heat)
- New ways for producing and injecting green gases in the gas network
- Network management for the integration of green gases into gas distribution system

#### **Call for Abstract Topics**

- Biomethane, Hydrogen, Syngas, green gases
- Demonstration and case studies, best practices
- Upgrading, blending, odorization, metering, Injection into the gas distribution grid, gas quality calorific value monitoring and control
- Energy management by using IT systems, remote control

- Quality of management of multiple sources of gas – flow balancing and prioritisation – buffering of gas – compressing of higher pressure network – gas storage in distribution
- Technical regulation, incentives, guarantee of origin, pricing, RIIO (Revenue, Innovations, Incentives, Outputs) assessment, standardization, environmental benefits
- Power to Gas, Integration of gas, electricity and heat

### **Cyber-Security: Ensuring Protection of the Gas Industry Infrastructure**

#### **Objectives**

The natural gas industry is relying more and more on mobile devices and smart sensors to manage its system. As it also moves increasingly to Internet of Things (IoT) technologies, such as low-power Bluetooth sensors, the network becomes increasingly sensitive to cyber-security issues.

This session explores the developing technologies making the network more prone to security issues and the tools being developed to secure it. Key topics will be in the: i.) application of IoT devices to operations and maintenance; ii.) development of security software applications; iii.) advantages and limitations to remote monitoring; and iv.) data storage of customer data.

Papers should focus on successes and lessons learned. Panel discussions of interacting topics with gas industry (and other underground utility) representatives and contractors /manufacturers /vendors may also be assembled.

#### **Call for Abstract Topics**

- Defining the extent of cyber-threats to the gas infrastructure
- Use of RFIDs and Low-Power Bluetooth (BLE) for asset monitoring and identification
- Software apps for asset protection
- Cyber security protocols for gas operations
- When not to use remote monitoring
- Encrypting smart sensors
- What is the security of the cloud?
- Billing security
- Protecting smart meters from intrusion into customer data
- Protecting SCADA from hacking

## **DISTRIBUTION** **TECHNICAL AND INNOVATION CENTER SESSIONS**

### **Advances in Gas Distribution Technologies**

#### **Objectives**

Natural gas operations, in particular gas distribution, has benefited from an increase in new technologies over the last decade. These advances have been in materials for pipe, as well as construction and maintenance activities.

This session explores the latest in materials developments, construction and system maintenance practices; as well as applications for renewable technologies in gas operations. Key topics are i) integrity management; ii) underground locating/marketing of facilities; iii) third-party damage mitigation; iv) 3D design; v) ILI technologies; and vi) UAV use in gas operations.

Papers should focus on successes and lessons learned. Panel discussions of interacting topics with gas industry (and other underground utility) representatives and contractors /manufacturers /vendors may also be assembled.

#### **Call for Abstract Topics**

- Beyond bi-modal PE and PA: What is the future for composite-plastic and PEEK/PAEK?
- HDD and micro-tunneling
- Robotic inspection of “unpiggable” pipe
- Monitoring of underground assets with low-power Bluetooth
- Applications for the use of “green technologies” in gas operations
- How the DSO identifies new technologies and implements these within the company crews and with contractors
- 3D design and construction management
- Does 3D printing have a future in gas operations?
- How is the industry addressing crossbore issues?
- New developments in ILI technology
- Use of drones in gas operations
- Technology development for Inside the building installations

#### **Advances in Gas Distribution Practices**

##### **Objectives**

The need for knowledge transfer, and the increase in data relating to system operations and conditions are pushing the natural gas industry to use technologies from social media and the retail business industries.

This session explores the use of augmented reality for knowledge transfer and Big Data analytics in managing the new reality of natural gas distribution operations. Key topics are i) integrity and risk management; ii) underground locating/marketing of facilities; iv) third-party damage mitigation; v) adapting social media tools to gas operations; vi) knowledge transfer and training.

Papers should focus on successes and lessons learned. Panel discussions of interacting topics with gas industry (and other underground utility) representatives and contractors /manufacturers /vendors may also be assembled.

#### **Call for Abstract Topics**

- Field operations use of augmented reality (AR)
- What role can AI bots play in better operations?
- Managing the data dump from DIMP
- Linking and monitoring operations with asset and risk management
- New techniques in training and continuing education
- SaaS in gas operations

### **GAS MARKETS** **INDUSTRY INSIGHT SESSIONS**

#### **The role of gas demand for the development of new sources of supply up to 2040**

##### **Objectives**

This session will focus on the long term role of gas in fueling the future. Key factors for the evolution of gas demand in major consuming countries and the development of new sources of supply up to 2040 will be explored through submitted papers on analysis, case studies, and projections.

#### **Call for Abstract Topics**

- What place and role for gas in the future energy mix?
- Gas demand drivers: economics, uses, sustainable development, regulation/energy policy
- Gas market developments in countries consuming 2/3 of global gas in 2015 (Asia, Middle East, Europe, North America)
- Prospects for gas supply for these countries up to 2040
- Conventional and unconventional production
- Import options and routes by pipeline, LNG developments, and the associated investment requirements.

#### **Changes in emerging gas markets: Middle East, Southeast Asia and Latin America**

##### **Objectives**

Gas has tremendous growth opportunity in currently underserved markets. This session will focus on the changing landscape, opportunities and barriers associated with emerging gas markets of Middle East, Southeast Asia and Latin America. The session will also analyze the current market characteristics and how they are changing.

#### **Call for Abstract Topics**

- Gas field development
- LNG imports/ exports
- change of gas markets and environments
- Incentive in gas development in Middle East
- LNG imports by Middle East countries
- Fuel for power generation in Middle east, Southeast Asia
- LNG exports and imports of Southeast Asia
- Increase of power demand in Middle east, Southeast Asia
- Gas development in Brazil
- LNG imports in Latin America
- Gas market development in Latin America

#### **Obstacles encountered for the development of new sources of gas**

##### **Objectives**

There is a robust array of gas sources to supply growing global demand, but there are costs and other obstacles impacting prospective supply growth. This session will address and identify the main obstacles and potential areas of possible cost reductions (R&D spending, subsidies, tax breaks, standardization of the equipment and easing its imports) that might impact new gas sources.

#### **Call for Abstract Topics**

- How recent reduction of oil and gas prices has influenced the capital costs of methane hydrates, biogas and electricity-to-gas projects?
- What is the potential for gas production from different sources in long-term low oil and gas price scenarios?

- To what extent the Governments of the import-dependent countries are ready to provide subsidies and other forms of support
- Main areas of possible cost reductions (R&D spending, subsidies, tax breaks, standardization of the equipment and easing its imports, etc.
- What are the most efficient measures that the Governments should take to support gas production from the new sources?

## GAS MARKETS

### TECHNICAL AND INNOVATION CENTRE SESSIONS

#### **Potential impact of new sources of gas on global energy markets**

##### **Objectives**

This session will focus on the potential impact of new sources of gas (e.g., methane hydrates, biogas, power-to-gas) on gas prices in the long-term perspective. The session will also explore the potential impact of new sources of gas on public acceptance of the gas industry and how the gas industry might reduce the greenhouse gas emissions through offering innovative business models and deploying best practices.

##### **Call for Abstracts Topics**

- Economics, prices and feasibility of methane hydrates, power-to-gas and biogas projects
- Willingness and possibilities of the Governments to provide support for these projects
- How these projects' implementation could affect the global gas market and the international gas trade?
- How these projects could improve a public acceptance of the natural gas industry in different countries, especially in Europe?
- New opportunities for the natural gas industry
- New business models for the natural gas industry.
- Methane hydrates
- Biogas
- Syngas
- Power-to-gas
- Public acceptance and image

#### **Innovations that stimulate gas demand and develop new markets**

##### **Objectives**

This session will cover the technologies or innovations that would stimulate natural gas demand in new markets or applications.

##### **Call for Abstract Topics**

- Small scale LNG and regasification enabling growth in small markets (e.g., modular LNG, smaller FLNG, FSRU)
- Virtual pipeline for markets and customers with midstream infrastructure challenges (e.g., trucking, terminals and breaking bulk, ISO tanks, customer access to storage, support growth in non-generation and heating sectors like industrial and city gas)
- Innovations that stimulate demand in marine and road transport (e.g., flex fuel ships, longer distance CNG trucks, tank design)

- Technologies that support natural gas with renewables (e.g., solar thermal and gas; CHP in microgrids, blended w/ biogas)
- Innovation in financing and commercial structures to support infrastructure development
- Carbonized price mechanism that supports move from coal to gas

## STRATEGY INDSUTRY INSIGHTS SESSIONS

### Long term demand/supply

#### **Objectives**

There are broad drivers impacting global and regional gas markets and the supply/demand balance – both positively and negatively. This session will focus on the strategic drivers impacting the long term prospects for natural gas, including:

- Opportunities for the gas industry from COP21 in Paris
- Usage of gas in large cities for improved urban air quality
- Reduction of methane emissions in the gas industry

#### **Call for Abstract Topics**

- Developments significantly affecting supply and demand of gas in the world
- Opportunities for the gas industry from COP21 in Paris
- Recommendations for the global gas industry and key messages for the world

### Gas pricing

#### **Objectives**

This session will focus on the multiple aspects of gas pricing in current and emerging gas markets. Specific areas of focus that will be addressed in the session include:

- Latest Wholesale Gas Price Survey
- Convergence of global gas prices, hub price correlation, oil price correlation
- Financing infrastructure projects in the new pricing and contracting world
- Gas v coal competition in power generation - long run, short run, baseload and peak
- LNG pricing in the new world - impact of US LNG, shorter contracts, LNG into developing markets, LNG trading hubs
- Pricing for end users, what do final consumers want, how are domestic prices affected by LNG exports

#### **Call for Abstract Topics**

- Development of Trading Hubs in Asia
- Pricing mechanisms and infrastructure financing
- Impact of lower gas prices on the industry
- Global price convergence and price correlation
- Gas v coal competition
- Future for cross-border long term contracts
- Impact of new LNG terminals and imports on markets

## **Best practices in governance and regulation**

### **Objectives**

This session will cover an overall assessment and best practices for governance and regulatory approaches and will include case studies of the success or failure of governance and regulation approaches in different regions of the world. Other aspects to be considered include the interrelation between innovation, technology and regulation and facilitation of market liquidity and examples of international cooperation in the field of regulation.

### **Call for Abstract Topics**

Specific regulatory issues in the natural gas sector that could be tackled are:

- Unbundling,
- Third-party access arrangements
- Allowed revenues and tariff design
- Benchmarking practices
- Security of supply
- Facilitation of market liquidity
- Infrastructure planning
- Innovation and energy system integration
- Impact of technology in regulation
- Energy poverty
- Cases on international cooperation in the regulatory field, particularly between regulatory authorities and the industry
- Issues and dilemmas in international cooperation

## **SUSTAINABILITY** **INDUSTRY INSIGHT SESSIONS**

## **From Social License to Privilege to Operate: Is the Gas Industry Meeting Communities Expectations?**

### **Objectives**

A social license to operate has often been deemed as 'nice to have' and not a factor which can derail a project particularly as it is not a regulatory requirement in many countries. Over the past decade, this idea has evolved where companies have made it mandatory for communities concerns to be included in their respective decision making processes. However, is the industry doing enough to demonstrate they are meeting the growing expectations of the communities and not just paying lip service to gain its social license? The session aims to provide insights on what defines social license to operate and how different approaches are taken to successfully manage the changing landscape of stakeholder's expectations.

### **Call for Abstract Topics**

- Free, Prior and Informed Consent (FPIC) for projects involving Indigenous Peoples
- Are project financing standards encouraging a win-win outcome for the industry and communities?
- Balancing social benefits and investors' interests throughout the value chain
- Project financing requirements for social inclusion in projects

## **The new role of gas in a low carbon world**

### **Objectives**

This session will be structured as a panel on policy and regulatory issues that need to be solved to enable the natural gas industry to contribute to a decarbonizing world.

- Synergy with renewable and electricity and heat and the digitalization needed
- The role of natural gas fired power generation in a low carbon world

The moderator will introduce recent IGU committee-developed information and promote an open discussion about the role for natural gas in a low carbon economy and in supporting the uptake of renewable energy. This vision comprehends the functionality of natural gas as back-up or balancing energy source for intermittent renewable energy and the functionality of the gas grids for storage and transport of energy from renewable sources.

In this discussion we would invite governments; strategic consultancy companies, renewable and other energy industry associations; academic organizations; end user organizations (from consumers to industrial); NGO's and TSO's to provide their perspective and vision about the role of natural gas.

### **Call for Abstract Topics**

- Microgrids - Heat - New Gas Business models - Energy Mix - Energy Security - Carbon reduction - Flexibility - Load Profile - Seasonal Storage – Biomethane
- Power-to-gas
- Integrated energy systems
- Natural gas and renewable energy

## **The importance and role of methane emissions mitigation**

### **Objectives**

This session will focus on case studies demonstrating successful implementation of tools and practices to reduce methane emissions. These include current methods, tools and practices to successfully reduce methane emissions in the upstream, midstream, transmission, storage, LNG and distribution segments.

### **Call for Abstract Topics**

- Methane Detection – Technologies and Best Practices
- Methane Quantification – Technologies and Best Practices
- Methane Mitigation
- Policies and Practices
- Prioritization of sources

## **SUSTAINABILITY** **TECHNICAL AND INNOVATION CENTER SESSIONS**

## **Using Corporate Social Initiative (CSI) to avoid conflict**

### **Objectives**

Corporate social initiative (CSI) is typically seen as efforts by companies to establish relationships with their stakeholders in areas of their operations. This normally includes financial support for community infrastructure, education and skills development, among others. However, there is much potential for CSI to be used as a risk management tool, which means that initiatives can be tailored to a project based on the risks identified and ensure sustainability of the initiatives. There is vast literature on CSI's potential discussed by academics in the theoretical sense but not many examples by companies which have explored the innovative use of CSI to manage project risks. This session aims to highlight case studies by those who have used CSI to further improve their management of risks, and what are the lessons learned.

#### **Call for Abstract Topics**

- Role of CSI in contributing to a project's success
- Integrating CSI in risk management process
- CSI minimizing associated project costs

#### **Successful application of detection technology and methods for methane emissions quantification and reduction**

##### **Objectives**

This session will focus on case studies demonstrating a variety of technologies implemented successfully to drive low cost methane emissions reductions in upstream, midstream, transmission, storage, LNG and distribution segments. Application of technology or methods to reduce uncertainty in the quantification of methane emissions. The session will also include case studies demonstrating the application of current technologies to reduce uncertainty in methane emissions measurement.

#### **Call for Abstract Topics**

- Methane Detection - technology and best practices - economic value
- Efficacy of the method including sensitivity, accuracy and time parameters.
- Technologies can be successfully used to reduce uncertainty in methane emissions measurement
- Comparative analysis of methods or systems used to estimate and/or report methane emissions across different governmental jurisdictions

### **MARKETING AND COMMUNICATION INDUSTRY INSIGHT SESSIONS**

#### **Power of the people: the role of public acceptance in business decisions**

##### **Objectives**

It looks like a perfect storm for public acceptance of natural gas in Western economies. The climate accord in Paris, the debate on the country of origin of gas, local anxiety over earthquakes, shale gas and gas infrastructure disruptions; and the image of the sector as an old-fashioned out of touch business. It is all hands on deck to define a role for natural gas in a sustainable energy future. That role is not only driven by what we want to be – affordable, available, acceptable -- but very much so by how society believes gas contributes to the larger goals of sustainability and environmental care. The conversation with society will be central to our success. Is gas part of the problem, or part of the solution?

This session will investigate new and improved strategies and methods for public communication, social media outreach and stakeholder dialogue. Our premise is that the industry must find novel ways of stakeholder engagement. Ways that are more transparent, more open and more collaborative. Ways

that promote dialogue and two-way communications. Ways that put the stakeholder's goals central, makes listening a promise and is not afraid to communicate in question marks, not exclamation marks.

### **Call for Abstract Topics**

- Cases of successful stakeholder engagement - in and outside of the gas industry.
- Examples of coalition building – how to bring stakeholder groups together to tackle a common issue
- Models, examples and approaches to improve public acceptance
- Insights into how to build support of for new business projects
- New formats of successful dialogue and engagement
- Campaign examples that build common ground among stakeholders
- Education and public relations campaigns that help build support for gas in the public and policy circles
- How to create a more receptive environment for gas projects, including outreach to youth
- How to deal with opposition groups effectively – how to make them part of the solution
- How to make social media a channel for the industry to engage stakeholders

### **Marketing the benefits of LNG in marine transportation**

#### **Objectives**

Approximately 90% of world trade is carried by the international shipping industry on more than 50,000 vessels and many of those vessels are powered with diesel fuel. As the shipping industry moves toward standards to reduce emissions, LNG as a marine fuel is well-positioned to increase its role in the transportation market. In addition to reducing emissions, LNG can provide financial reliability and economic advantages.

Given the new market opportunities for LNG in the marine market, this session will examine ways to communicate and market the benefits of LNG - specifically the environmental and health benefits.

The session will also demonstrate how the whole gas value chain can work together to reduce emissions by increasing the use of LNG for marine transportation.

### **Call for Abstract Topics**

- How to communicate and promote the environmental, health and safety benefits of LNG for vessels
- How the entire value works together to develop a successful project
- How the natural gas sector is communicating with ship owners, ports and others to promote clean marine transportation using LNG
- How to link and communicate LNG for marine use to social responsibility
- Ways to increase the acceptance of LNG in the market place
- Initiatives promoting clean marine transportation
- What are the challenges the natural gas sector faces and how have they overcome those challenges
- Successful partnerships promoting clean marine transport
- How to communicate the positive attributes of LNG to influence acceptance and policy

### **Marketing innovation and innovations in marketing**

#### **Objectives**

Natural gas and the awareness of its applications varies greatly around the globe. In many countries, natural gas enjoys a large market share as every-day energy uses for both industry and mass markets. The International Gas Union is seeking to improve the awareness and competitiveness of the technological advances of natural gas around the world.

Natural gas is generally a low interest market category, making the advancement of new technology innovations into the market difficult, even in high market share environments. In industrial applications, the price of natural gas tends to be the dominant factor in decision making, while energy reliability and clean air (or sustainability) are secondary considerations. The technology of natural gas is often taken for granted and the advantages that gas brings to industrial processes or life style, are also often overlooked.

Natural gas in emerging markets represents an interesting challenge for companies who have yet to establish customer relationships, making the use of innovative marketing approaches critical in gaining both acceptance of the fuel and trust in the technology.

The objectives of this session include:

- Demonstrate how a marketing communications approach can create a demand pull for innovative natural gas technologies and acceptance for the new technology.
- Demonstrate that using both proven and innovative marketing techniques can create market demand for natural gas technologies.
- Demonstrate how the use of innovative marketing communications can influence stakeholders and decision makers to gain trust in and support the adoption of new natural gas technologies.

#### **Call for Abstract Topics**

- How marketing approaches have enabled the successful adoption of emerging gas technology in emerging and developed markets
- How marketing of new technology has assisted the penetration of gas into a new market
- Innovative uses of social media in marketing communications for innovation / new innovative solutions
- Successful case studies or approaches taken to turn a pilot project in commercial business using marketing communications
- Success in marketing of natural gas combined heat and power (CHP), power-to-gas projects, gaswind, gas to liquid projects, gas & renewable solutions, gas for cooling, compressed natural gas (CNG) for mobility, synthetic natural gas (SNG)
- Innovative techniques to better understand your market: what do people know about new technologies, and how is that important for your strategy
- How do you excite people in new gas technology?
- Use of the public media for technology messages
- How to make gas technology attractive?
- What can the NG sector learn from other industries about the acceptance and even excitement over new technology
- Examples of how marketing communications can attract investment and create a market pull

### **MARKETING AND COMMUNICATION TECHNICAL AND INNOVATION CENTER SESSIONS**

#### **Best practices in gas industry marketing and communications**

##### **Objectives**

Gas industry players around the world continue to produce effective marketing and communication programs and campaigns to further the position of natural gas as an economic, environmental and valued energy option. This TIC session will highlight innovative marketing processes, programs and collateral from around the globe. It will showcase integrated campaigns as well as application and market-specific video, print, electronic and social media examples for an array of gas industry opportunities and issues. This session will be an interactive and illuminating look at state-of-the-art marketing and communication campaigns for the gas industry.

#### **Call for Abstract Topics**

- Integrated marketing campaigns
- Gas industry communications
- Media relations
- Social media applications
- Television, radio and print advertising
- Customer communications

### **RESEARCH, DEVELOPMENT & INNOVATION** **INDSUTRY INSIGHTS**

#### **Innovation: Implementing future energy systems through technology**

##### **Objectives**

Due to society's energy demands, energy market growth tends to be more decentralized and accepts more renewables. In this context, gas infrastructure has the potential to be a valuable backbone of energy systems of the future. Existing gas infrastructure has many qualities such as geographic presence, operational flexibility, safety culture and capacity of industrial implementation which can complement new innovative technologies to create the energy systems of the future. Papers presented in this session address latest technologies which outline new energy systems and show the change as a whole.

#### **Call for Abstract Topics**

- Convergence
- Power to Gas
- Smart Grid
- Information and Communications Technology
- Virtual Pipelines

#### **Innovation: Creating acceptance for natural gas**

##### **Objectives**

As a fossil fuel, natural gas faces social challenges, leading to a need to rewrite its story to remain a viable element of national energy policies. The papers in this session demonstrate how emerging gas technologies have effectively addressed social barriers and have contributed to sustainable energy solutions. Examples include:

- Bio methane and hydrogen as options for low-carbon fuels
- Power-to-gas as an energy storage carrier and platform to integrate gas and renewables
- Cases demonstrating strengthening of the industrial base and economic and energy independence

- Means of emission reduction and improved urban air quality
- Visions of gas infrastructure being used as the foundation of the distributed energy system of the future
- Climate-change related topics such as emission reduction and integration of renewables

### **Call for Abstract Topics**

Innovations in:

- Bio-methane
- Hydrogen
- Power-to-gas
- Emissions reduction
- Carbon footprint

### **Innovation: Driving growth in transportation markets**

#### **Objectives**

In most countries transport on roads is dominated by gasoline and diesel driven engines whereas maritime transport uses heavy marine oil. The steady increase in traffic volume worsens these air pollution problems especially in large cities and coastal areas. Less carbon intense fuels like natural gas or biogas can provide the solution, help to lower air pollutants, gain a better environment and deliver also a significant contribution to the CO<sub>2</sub> reduction targets of a country as transport is one of the most energy intense sector. The session will provide insights on latest innovative transport concept based on the use of LNG, NG, biofuels and hydrogen.

### **Call for Abstract Topics**

- New technologies and innovation for gas transportation
- LNG transportation application
- CNG
- Hydrogen fueling and transportation
- Fueling infrastructure

### **Innovation: Effectively characterizing and addressing methane emissions**

#### **Objectives**

Natural gas itself is the cleanest fossil fuel. Although power produced with natural gas produces 50 percent less CO<sub>2</sub> emissions than power by coal, the clean image of NG is threatened by unsubstantiated claims of excessive methane emissions impacting global warming. Papers in this session will:

- Show latest scientific methodologies
- Deliver facts and figures on real measurements
- Provide innovation on tools and approaches for methane detection and mitigation
- Present effective and innovative means of emission reduction in practice

### **Call for Abstract Topics**

- Methane measurement technology
- Innovations in methane assessment

- Research and advances related to climate change topics

## RESEARCH DEVELOPMENT & INNOVATION TECHNICAL AND INNOVATION CENTER SESSIONS

### What's hot in gas research - upstream applications and gas infrastructure

#### **Objectives**

The gas industry continues to develop and offer innovative technology solutions across the entire value chain. This interactive TIC session will highlight recently introduced and emerging technologies developed for the gas industry. This session will focus on research and technology for the upstream, storage and infrastructure areas including E&P, LNG, storage and gas transmission & distribution.

#### **Call for Abstract Topics**

- Natural gas research and development (R&D)
- Exploration and production technology
- Unconventional gas
- Transmission & distribution technology
- Smart grid
- Natural gas and renewables integration
- Power-to-gas
- Nanotechnology
- Robotics
- Augmented and virtual reality

### What's hot in gas research - utilization technologies and environmental footprint

#### **Objectives**

The gas industry continues to develop and offer innovative technology solutions across the entire value chain. This interactive TIC session will highlight recently introduced and emerging technologies developed for the gas industry. This session will focus on research and technology for gas market utilization topics:

- Climate and environment
- Cross cutting topics
- Domestic & Commercial gas utilization
- Energy convergence and marketing
- Gas Driven Mobility
- Industrial gas utilization

#### **Call for Abstract Topics**

- Energy storage
- Energy convergence and marketing
- Climate and environment
- Cross cutting topics
- Domestic & Commercial gas utilization
- Industrial gas utilization
- Gas driven transportation and mobility

## UTILIZATION INDUSTRY INSIGHT SESSIONS

### **Natural gas: the essential fuel for industry in a sustainable future**

#### **Objectives**

Natural gas is a preferred fuel choice for steam generation, process heating, power generation and other industrial applications. This session will explore an array of industrial applications and topics that showcase gas in current and emerging markets, including:

- Demand growth and marketing strategies to drive international gas for industrial markets
- Natural gas for efficient & sustainable power production
- Natural gas applications in energy and environmental efficiency in industrial facilities
- Energy transition in industrial market
- New potential growth of natural gas uses and markets
- Natural gas and thermal energy storage

#### **Call for Abstract Topics**

- Industrial gas markets
- High efficiency power generation
- High-efficiency natural gas processes
- Heat recovery in industrial applications
- High efficiency combustion systems
- Technologies for future low carbon foot print factories
- New natural gas processes and uses
- Natural gas and “Future Factories 4.0”

### **The role of natural gas in buildings in 2030 in response to regional energy policies**

#### **Objectives**

Natural gas has a strong and growing role in domestic, commercial and institutional applications ranging from appliances, space heating and cooling, power generation, and other building applications. This session will explore the latest applications and case studies showcasing natural gas in an array of building applications. The areas that are expected to be covered include:

- Bridging the technology gap – moving from condensing systems to new consumer products (gas heat pumps, micro-CHP, fuel cells and other leading technologies)
- Decreasing CO2 emissions with domestic gas appliances
- Increasing energy efficiency with gas appliances and applications
- Improving local air quality with gas appliances
- Hybridization – gas as an integral component of combined energy systems

#### **Call for Abstract Topics**

- Energy technology and systems for buildings
- Advanced gas equipment and applications
- Domestic and commercial markets and applications
- CHP systems

- Hybrid gas and renewables
- Energy systems

### **Natural gas for transport: driving clean mobility forward**

#### **Objectives**

Natural gas has a large current and potential high-growth market for gas transportation applications, ranging from domestic and fleet vehicles to rail, off-road, heavy duty, rail and marine applications. This session will explore the broad suite of offerings and applications for natural gas in transportation applications. The session is expected to be comprised of case studies of vehicle technology and applications, fueling and related infrastructure, economics and environmental drivers.

#### **Call for Abstract Topics**

- Demand growth and marketing strategies to drive transport markets
- Role of renewables as driver for development of natural gas mobility
- Development of regional policies targeted at growing gas for transport markets
- The potential of LNG for bunkering – international case studies
- Overview on typical LNG and CNG refueling infrastructure options
- Overview on international and regional standards related to gas for transport
- Macro-economic effects on natural gas-related Total Cost of Ownership scenarios for NGVs
- Well-to-Wheel emission benefits from using gas as a transportation fuel

### **The impact of gas quality on current and future use**

#### **Objectives**

The session will address the challenge of the gas quality variations worldwide and their impact of gas utilization applications. The session will both cover technical and non-technical aspects, such as standardization of gas quality, and include technical developments to mitigate the impact of gas quality on appliances. In the introduction of the session, the results from the conducted IGU survey on the impact of gas quality upon utilizations of gas in the transport and industrial sectors will be presented.

#### **Call for Abstract Topics**

- Gas quality for CNG road vehicles (including oil carryover and methane number)
- Gas quality and LNG road and marine use (including gas quality parameters such as Wobbe index, methane number, heating value, sulfur content)
- Gas quality adjustment
- Gas quality impact
- Harmonization of gas quality, combustion control, hydrogen mix in natural gas (H2NG)
- Process technical solutions to counterbalance gas quality, real experience with gas quality variations, renewable gases

## **UTILIZATION** **TECHNICAL AND INNOVATION CENTER SESSIONS**

### **Innovations in industrial utilization**

#### **Objectives**

This TIC session will cover the latest technologies and applications related to the industrial market – including steam generation, process heating, power generation, CHP, and hybrid systems and other applications.

### **Call for Abstract Topics**

This TIC session will be composed from innovations and applied case studies on:

- New technologies and products
- Hybrid systems
- Emerging technologies and applications
- New services

### **Innovations in residential and commercial gas technologies**

#### **Objectives**

This TIC session will cover the latest technologies and applications related to the domestic (residential), commercial, institutional, and other building markets. The session will look at the latest technology, products and applications related to appliances, HVAC systems, CHP and micro-CHP, and hybrid technologies and system approaches.

### **Call for Abstract Topics**

This TIC session will be composed from innovations and applied case studies on:

- New technologies and products
- Hybrid systems
- Emerging technologies and applications
- New services

### **Innovations in natural gas vehicles and fueling infrastructure**

#### **Objectives**

This TIC session will showcase the latest technologies and applications related to the transportation market – including NGVs, vehicles, fueling systems, rail marine, heavy duty, off-road and other applications.

### **Call for Abstract Topics**

This TIC session will be composed from innovations and applied case studies on:

- New technologies and products
- Hybrid systems
- Emerging technologies and applications
- New services

## **WORKFORCE DEVELOPMENT INDUSTRY INSIGHT SESSIONS**

### **HR opportunities and challenges in a digital world**

#### **Objectives**

We are entering a digital world where new technologies, IT, virtual tools are changing the way we work, the way we manage and the way we recruit. This digital transformation poses two fundamental HR challenges. First, HR managers must help leaders, employees in their daily work to master their digital approach. Secondly, new technologies are an opportunity for the HR manager to optimize their process in order to attract, develop and retain talent. This session will explore these two directions and will analyze the specificities of the gas industry regarding these new approaches.

#### **Call for Abstract Topics**

- Best practices developed by companies to attract, develop and retain talent
- Using Innovative Digital HR Tools
- Preparing the Workforce for Digital Future
- Increasing STEM knowledge for the gas industry

#### **Building a workforce for gas industry needs**

##### **Objectives**

The energy industry faces numerous challenges: prices volatility, environmental issues, changing market regulations, development of new usages. This session will try to design the most efficient HR strategy in this complex context. What are the priorities in terms of workforce development? Are cross generational programs an opportunity to develop skills and competencies? How do you build-up diverse workforces in when recruitment is challenged?

#### **Call for Abstract Topics**

- Strategic workforce planning in uncertain market conditions
- Building up a skilled workforce for new markets
- Cross-Generational knowledge transfer
- Competency-Based workforce selection and development
- Increasing diversity in the gas industry
- Generational strategies

#### **Attracting and retaining staff for the gas industry**

##### **Objectives**

This session will look at how the gas industry can recruit the best staff in a very challenging context even in terms of reputation. What are the values the gas industry should promote to attract millennials? Who are the leaders and role models to be publicized? What are the HR opportunities that the gas industry can propose to its existing staff?

#### **Call for Abstract Topics**

- Employer branding in Gas
- Keeping your workforce engaged
- Cross-Generational knowledge transfer
- Increasing diversity in the gas industry
- Attracting millennials

### **WORKFORCE DEVELOPMENT TECHNICAL AND INNOVATION CENTER SESSIONS**

## **Advances in workforce management, training and development**

### **Objectives**

This TIC session is meant to highlight success stories on three specific HR issues:

- Training programs and notably Workforce planning case studies
- Skills development and management
- Case studies in skills development and knowledge retention

### **Call for Abstract Topics**

- Training programs
- Workforce planning case studies
- Skills development and management
- Case studies in skills development and knowledge retention

## **PROPANE APPLICATIONS INDUSTRY INSIGHT SESSIONS**

## **Collaboration between natural gas and LPG in market development**

### **Objectives**

Natural gas and LPG (propane) gas are natural partners, particularly in utilization and clean energy supply applications where they are both seen as clean and efficient sources of energy. LPG is often used to develop new markets prior to gas infrastructure being developed. In addition to a broad array of domestic and commercial application, propane is also commonly used in peak-shaving and blending applications for industrial and energy service companies. This session will highlight emerging opportunities and case studies for collaborative LPG and natural gas applications.

### **Call for Abstract Topics**

- Propane/natural gas applications and case studies
- Indoor air pollution and the transition to cleaner fuels
- Energy poverty and regional socio-economic development
- Energy efficiency applications
- Energy market development with propane

## **PROPANE APPLICATIONS TECHNICAL AND INNOVATION CENTER SESSIONS**

## **LPG Technology and Innovation**

### **Objectives**

Technology developed for propane applications continues to offer benefits to consumers around the world in expanded and affordable clean energy options, reduction in energy poverty and flexible supply options. This interactive Technical and Innovation Center session will showcase emerging LPG technology and applications that are addressing global energy needs. Typical applications include cooking and other domestic uses, commercial and institutional uses, power generation, transportation fuels, and energy blending uses.

### **Call for Abstract Topics**

- Innovations and new products in propane research and technology
- Propane applications and case studies of innovative technology in domestic and commercial markets
- Reduction in energy poverty
- Improved indoor air quality
- Propane and natural gas applications for industrial and power generation
- Remote power applications
- Synthetic natural gas (SNG) applications