

## WGC2009 – Post-Conference Report from the Technical Committees

The Technical Programme of the 24th World Gas Conference showcased three years of work by 750 experts from around the world. Indeed, the readiness of people to serve on the IGU Technical Committees and the support of their companies has been described by Roberto Brandt, Chairman of the Coordination Committee during the 2006-2009 Triennium, as the Union's "life blood". Together with outgoing CC Secretary Andrés Kidd, he will formally present the post-conference report during the Executive Committee meeting in Bali, which is set to take place as this issue of the IGU Magazine is being distributed. Here we present an edited summary, with the full reports of the Technical Committees available on [www.wgc2009.com](http://www.wgc2009.com).

### ● Working Committee 1 – Exploration and Production

During the 24th WGC, WOC 1 arranged two Committee Sessions, two Expert Fora and a Poster Session in the Technical Café. Attendance was high with audiences of about 140 for the first Committee Session, 120 for the second and 80 for each of the Expert Fora.

**Committee Session 1.1 – Difficult Reservoirs and Unconventional Natural Gas Resources** looked at the assessment of resources and problems facing the exploration and production of gas from unconventional sources and difficult reservoirs. The Vice Chairman of WOC 1, Kamel Chikhi from Algeria, presented the results of WOC 1's study on this topic. Then Committee members and invited independent experts gave presentations on four of the most promising kinds of unconventional gas sources: hydrates, coal-bed methane, tight gas



The CC Chairman and Secretary for the 2006-2009 Triennium, Roberto Brandt (right) and Andrés Kidd.

and shale gas. The key messages from this session are:

- The role of unconventional gas in the global energy balance is growing faster than was expected at the time of the 23rd WGC in 2006.
- Unconventional gas sources can be divided into two groups: really unconventional (coal-bed methane, shale gas, gas hydrates, underground water-dissolved gas) and pseudo-unconventional (tight formation gas, deep [more than 4,500 metres] gas, sour gas). This is important for future governmental regulation of production.
- The investment approach for unconventional gas must be different to that for conventional gas as much more patience is required until profits appear.

**Committee Session 1.2 – Remaining Conventional World Gas Resources and Technological Challenges for their Development** was focused on mature regions, the prospects for exploration and production there and innovative technologies for gas monetisation. Study Group 1.1 leader Dominique Copin presented the study results on mature areas, and then there were four presentations by invited experts on the prospects for the

development of remaining conventional gas resources, the paradigm shift in gas production brought about by the exploitation of unconventional resources, gas monetisation and the major gas project in the Yamal peninsula of Russia. The key messages from this session are:

- The general trend in all the mature areas studied is that while conventional gas reserves have not increased significantly in recent years, the total number of discovered fields has been growing constantly.
- In mature areas more and more gas is being produced from smaller and more complex fields than before.
- New large gas production projects are based on discoveries made decades ago.
- Offshore areas are the most promising for large new discoveries.
- The Hubbert Paradigm (after the geologist who worked on peak oil) is true for conventional gas production, but should be reconsidered if unconventional gas accounts for an increasing share of overall production.
- There has been progress in the development and application of gas monetisation technologies, but this has been slower than expected in 2006.

The **Expert Fora** looked at the – *Exploration of New Reserves and Areas* (EF 1.A) and *Production and Processing Techniques* (EF 1.B). The following presentations were given, all of which were of high quality and aroused great interest from the audience:

- Different approaches to E&P in frontier and mature basins;
- Resource potential and trends in the development of unconventional gas resources;
- Implementation of the huge Shtokman project;
- Utilisation of the methane from working and abandoned coal mines;
- Shale gas;
- Ecological solutions for the development of offshore Arctic gas resources;

- Gas potential of the sub-Andean basins;
- Application of new technology to tight gas development;
- Hydraulic fracturing and acidising techniques in complex natural gas reservoirs;
- Sweetening technologies;
- Complex problem solving for the effective development and exploitation of a large gas field;
- A flexible model-based optimiser for a complex gas production system;
- Management of flow assurance constraints in the remote Arctic environment.

WOC 1's **Poster Session** included 14 posters from nine countries. There were presentations on unconventional gas resources and new techniques in exploration, production, processing and gas monetisation.

#### ● **Working Committee 2 – Storage**

Underground gas storage (UGS) is the main focus of WOC 2's activities, and four topics were covered during the 24th WGC in two Committee



WOC 1 reported that the role of unconventional gas such as shale is growing fast.

Sessions and two Expert Fora. There was also a Poster Session in the Technical Café.

**Expert Forum 2.A – Major Trends in UGS Development**

looked at new strategies in the UGS sector. The report of Study Group 2.1 was presented and the updated UGS database introduced. There were interesting contributions by leading experts from China, France, Germany, Russia and the USA.

**Committee Session 2.1 – New Technologies for UGS**

gave an overview of current technologies in the UGS sector and looked at likely future developments. The report of Study Group 2.2 was presented and there were speakers from the Czech Republic, France, Poland and Russia.

**Committee Session 2.2 – Main Drivers and Changing Role of UGS** focused on the changing role of UGS in the supply matrix and the need to develop more capacity. Issues such as the legal framework and environmental and safety regulations were also covered. The status of the European storage market was described with a specific focus on the Netherlands. Two examples based on advanced technologies were presented as

possible approaches to achieving an optimum UGS operation. For this forum there was a keynote speaker from the USA – Frederick W. Metzger, Vice President, Storage, Kinder Morgan Energy Partners. There were also speakers from Austria, the Czech Republic, the Netherlands and Russia.

**Expert Forum 2.B – UGS Technologies and Applications for CO<sub>2</sub> Sequestration**

assessed to what extent the gas industry’s extensive storage experience might be applicable to CO<sub>2</sub> sequestration. The contributions focused on case studies of CO<sub>2</sub> storage, potentials and risk evaluation and applicable techniques for UGS. The main issues in terms of promoting the necessary investments were the legal and policy framework, CO<sub>2</sub> pricing, emissions and the lifecycle of CO<sub>2</sub> storage. Norbert Liermann from Clausthal University of Technology in Germany was invited as the keynote speaker. There were also speakers from the Czech Republic, Germany, Poland and Russia.

Many well-known experts in the UGS industry honoured WOC 2 with their presentations. The Committee’s intention was to show the trends in the UGS sector and introduce new approaches by combining existing practice and theoretical knowledge including new experimental methods.

The Committee was pleasantly surprised by the greater number of people interested in the UGS sector compared with previous triennia. This is probably related to concerns about security of supply as well as to new trading opportunities using stored gas.

● **Working Committee 3 – Transmission**

During the 24th WGC, WOC 3 arranged three Committee Sessions, two Expert Fora and a Poster Session in the Technical Café.

**Committee Session 3.1 – News on Pipeline Transmission Systems: The Impact of Economic Regulation and Environmental Legislation, New Monitoring Technologies and Challenging New**



WOC 2 Chairman, Vladimir Onderka, addresses delegates.

PROMIGAS: VISIONARY, FARSIGHTED  
AND WITH REGIONAL INTENTIONS.



**TRANSFORMING ENERGY INTO PROGRESS.**

For more than 30 years we have boosted the industrial sector, powered million of vehicles and helped more homes and families improve their quality of life. Thanks to an integral vision and to team work we have converted gas and energy into progress for all in Colombia and Latin America.

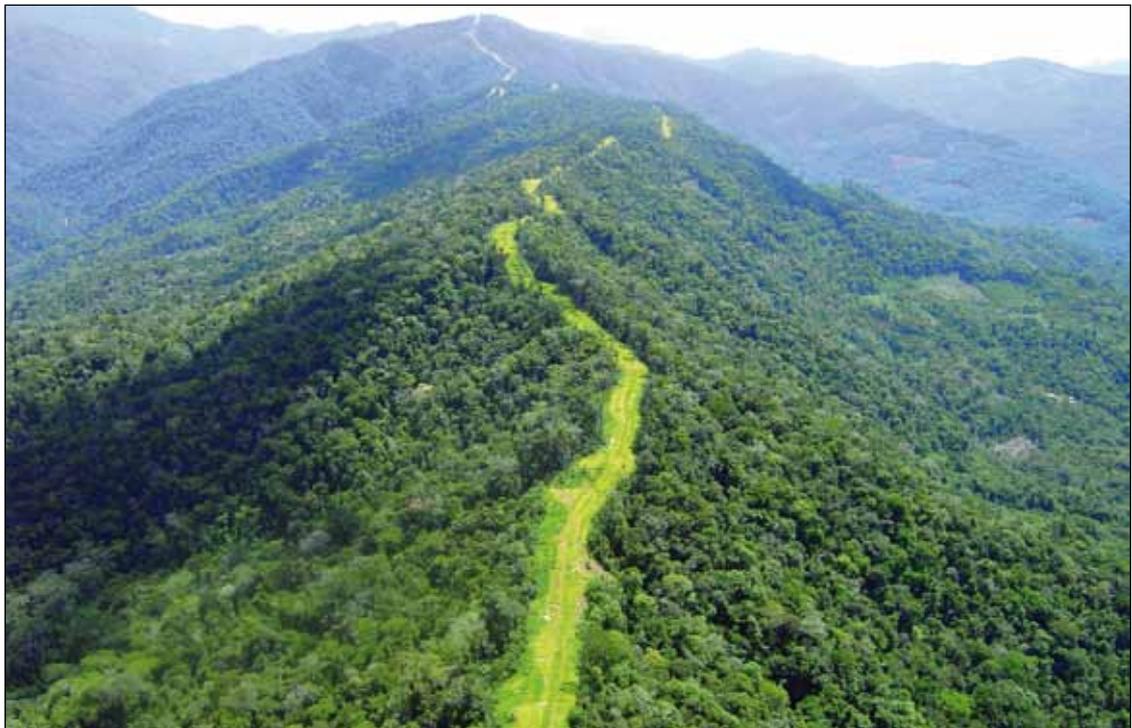


*Pipeline Projects* started with a presentation of WOC 3's overall Triennium report. The Committee's Vice Chairman, Eric Dam, introduced the report and gave its summary and outlook. He was followed by the leaders of the three Study Groups who reported on their individual studies. In addition, there were papers on the BBL pipeline between the Netherlands and UK, and on the challenges of dealing successfully with a changing regulatory environment. The session was attended by 135 people.

**Committee Session 3.2** was entitled – *Evaluating Challenging New Off- and On-shore Pipeline Projects: Security of Supply in an Era of Growing International Gas Pipeline Networks and Energy-hungry Markets*. Five papers were presented on: the trans-Andean Camisea pipeline in Peru; the pipeline linking Denia in mainland Spain with the islands of Ibiza and Mallorca; the pipeline transmission system operated by Eustream in the Slovak Republic; the construction of the

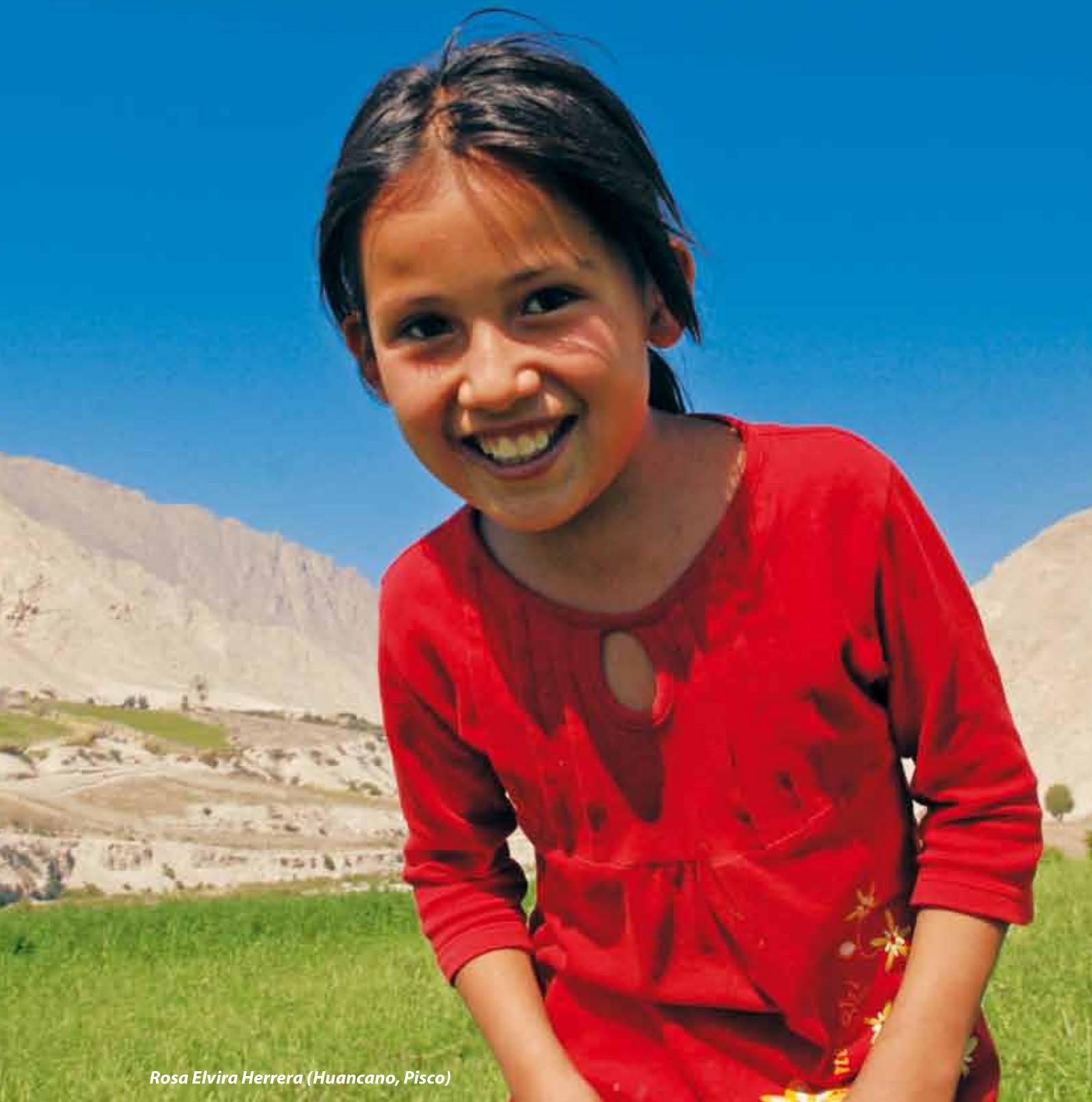
Bovanenko-Ukhta trunk pipeline through the Arctic tundra in Russia; and the construction of the Chuo pipeline beneath central Tokyo, which is in an earthquake zone. The session was attended by 65 people.

During **Committee Session 3.3** – *Review of New Technologies in Pipeline Monitoring*, six papers were presented on: stress corrosion detection and remedy; progress in the detection of high pH stress corrosion cracking; electromagnetic ground conductivity techniques for pipeline integrity surveying; the management of the integrity of a condensate pipeline with on-line internal corrosion monitoring techniques; a new concept and test method on running ductile fracture arrest for high pressure gas pipelines; and two methods of leak detection – CHARM, a helicopter-based leak detection system, and GASCAM, a mobile device that can detect small gas leaks. The session was attended by 95 people.



The Camisea pipeline in Peru was one of the projects covered in WOC 3's presentations.

**SHE IS FIVE YEARS OLD,  
AND HAS BREATHED CLEAN AIR HER WHOLE LIFE.**



*Rosa Elvira Herrera (Huancano, Pisco)*

Camisea have been working **five years** for a clean, economical and environmental friendly energy source. As the main natural gas pipeline carrier, TgP is proud to be part of the most important energy project in Perú.



**Expert Forum 3.A** – *Impact of Regulation on Gas Transmission, Safety and Security of Supply* was attended by 70 people and there were presentations on:

- Planning the transition from an integrated gas company to an independent transmission system operator (TSO) using the example of Nederlandse Gasunie;
- The gas value chain in terms of quality management and security of supply;
- The effect that the increased market share of LNG will have on the regulation of gas transport by pipeline;
- Robust investment decisions in gas network planning, introducing the network supporting tool PANDA;
- The impact of the regulatory framework on the integrity management of gas transmission pipelines.

**Expert Forum 3.B** – *Contribution of Gas Transmission to Climate Protection and Sustainable Development* was attended by 55 people and there were presentations on:

- A study prepared by Marcogaz on methane emission reductions in the EU natural gas industry;
- The identification and minimisation of methane emissions in Eustream’s gas transmission network;
- Neural networks and artificial intelligence for the management of energy consumption in pipeline networks in north-western Iran;
- The reduction of gas flaring in Sonatrach’s gas production and transport system in Algeria.

There were 19 posters in WOC 3’s **Poster Session** covering a wide variety of subjects connected with gas transport. They included new formulas for more exact pipeline capacity calculation, interesting smaller pipeline projects and pipeline corrosion detection techniques to prevent pipeline failure.

● **Working Committee 4 – Distribution**

During the 24th WGC, WOC 4 arranged three Committee Sessions, two Expert Fora and a Poster Session in the Technical Café. There were audiences of about 120 for the Committee Sessions and 80 for the Expert Fora, and participants engaged in active debate during the Q&A sessions.

During **Committee Session 4.1** – *Gas Distribution Asset Management*, WOC 4’s overall Triennium report and a summary of the report of Study Group 4.1 (Review of asset management and strategies) were presented. There were also four papers that approached the topic of asset management from different perspectives: those of regulators, national associations and companies. The key messages from this session are:

- Public safety remains the most significant factor;
- Data and information management is a critical area of focus;
- Long-term asset management strategies are central to the underpinning of long-term investment programmes;
- The industry is seeing significant potential for the intelligent management of distribution networks;
- The generic nature of asset management means that the gas industry can learn from other industry sectors;
- There is a trend towards adoption of accreditation under recognised asset management standards e.g. PAS55.

**Committee Session 4.2** – *Review of Leakage Reduction Strategies and Practices* started with a summary of the report of Study Group 4.2 (Review of leakage reduction strategies and practices). This was followed by five papers which approached the topic of leakage management from the different perspectives of technical and management solutions. The key messages from this session are:

- Gas leakage is part of a wider issue of unaccounted for gas;

## About Gaslink

Gaslink is Ireland's licensed Gas Transmission and Distribution Network System Operator.

Gaslink operates, designs and maintains the natural gas network. Gaslink is required to carry out this function in a safe, efficient and reliable manner.

Gaslink facilitates new market entrants in both the Wholesale and Retail markets. It develops all arrangements for new Entry Points and Large Connections to the Irish Natural Gas network.

Gaslink is an independent subsidiary of Bord Gais Eireann (BGE) with independent decision-making rights with respect to the assets necessary to operate, maintain and develop the natural gas network. Gaslink achieves this through a maintenance contract with Bord Gais Networks (BGN).

Gaslink was incorporated in October 2007 in compliance with the unbundling requirements of the EU Gas Directive 2003/55/EU. On the 4th of July 2008, Gaslink became responsible for the operation,



maintenance and development of Ireland's natural gas (transmission and distribution) network.

Gaslink does not own the natural gas network nor is it responsible for its financial performance.

## Gaslink, offering open access to the Irish Natural Gas Network

Gaslink is the Independent System Operator in Ireland who develops, operates and maintains a Transmission and Distribution network of 12,800km. Gaslink transports gas for Shippers active in all Irish market segments from Power Generation and Industrial and Commercial to Residential customers. Gaslink offers open and competitive access to the network.

For further information please contact  
Gaslink on: + 353 (0)21 5006100  
email: [info@gaslink.ie](mailto:info@gaslink.ie)  
[www.gaslink.ie](http://www.gaslink.ie)

**gaslink**  
Gas System Operator

- From the responses to a survey carried out, an indicative figure of 2.7% loss as a percentage of total throughput was estimated as the typical industry level of unaccounted for gas;
- The climate change agenda is leading to a sharper focus by stakeholders on levels of gas distribution network leakage;
- Pipe replacement programmes are making the most significant contribution to the reduction in the levels of leakage;
- A small number of companies use pressure management as a tool to minimise leakage.

**Committee Session 4.3 – Prevention of Third Party Interference Damage to Distribution Assets** started with a summary of the report of Study Group 4.3 (Development of best practices for the prevention of third party damage to distribution assets). This was followed by five papers which approached the topic of third party damage from the different perspectives of technical and management solutions. The key messages from this session, as best practices identified to minimise damage, are:

- The use of call centres to afford ease of information exchange;
- Robust advertising to promote damage prevention programmes;
- A focus on the education of field workers in damage prevention;
- R&D with the objective of driving improvements in locating underground plant;
- Strong legal approaches to third parties who damage plant and facilities;
- The installation of a tracer wire and warning signs;
- The continued exchange of best practice between member companies;
- Benchmarking performance levels on specific indicators.

During the two **Expert Fora**, papers were presented which showcased technical innovations, as

well as innovative management approaches, adopted or implemented by different organisations to tackle issues related to WOC 4's study topics.

Six posters were selected for the **Poster Session**, but, although their quality was comparable to that of the papers presented during the oral sessions, unfortunately only a small number of delegates attended.

#### ● **Working Committee 5 – Utilisation**

During the 24th WGC, WOC 5 organised three Committee Sessions, two Expert Fora and a Poster Session. Attendance was high with audiences of between 100 and 140 for the Committee Sessions and 80-120 for the Expert Fora, and participants engaged in active debate during the Q&A sessions.

**Committee Session 5.1 – Industrial Utilisation: Technologies for Tomorrow** started with a presentation of Study Group 5.1's report. This was followed by eight short contributions on:

- The European standardisation and regulatory framework for industrial gas installations;
- A study of savings in gas consumption to reduce natural gas demand and enhance energy security;
- The development of technology for an ultra-high efficiency gas cogeneration system;
- Flameless oxy-FGR (flue-gas recirculation): an energy-efficient combustion concept that complies with environmental regulations and offers a direct CO<sub>2</sub> capture solution for existing and new gas furnaces;
- Two examples of CHP (combined heat and power): the efficient use of CHP for process and heating in industry in Italy, and distributed cooling and CHP in cooling in Malaysia;
- Practical ways of improving the effectiveness of natural gas utilisation in Russia;
- The rational use of energy for industrial processes in Japan;



WOC 5's first Committee Session looked at industrial utilisation.

- The development of technology related to biogas in order to enhance gas sales.

**Committee Session 5.2 – Domestic and Commercial Utilisation: Appliances and Products for Tomorrow** started with a presentation of Study Group 5.2's report. This was followed by contributions on:

- Gas quality standards in the EU;
- Perspectives for gas utilisation under Germany's new climate legislation;
- Gas heat pumps (GHP) – the renewable energy heating system of the future;
- Development of GHP featuring a generator capable of servicing external loads.

**Committee Session 5.3 – Natural Gas Vehicles: Methane – A Global Eco-efficient Mobility Solution** started with a presentation of Study Group 5.3's report. This was followed by contributions on:

- Best practices, the state of the art of technology and breakthrough technologies;

- The successful development of the NGV sector in Europe through different country approaches;
- Prospects for the extension of international transport corridors for NGVs between Russia and Europe;
- Challenges in the development of CNG infrastructure – India's experience;
- Economic and administrative leverages to encourage greater use of CNG as a vehicle fuel – Ukraine's experience over 25 years;
- Monitoring CNG quality in Germany.

**Expert Forum 5.A – Micro-CHP Knocks at the Door** featured contributions on:

- Micro-CHP and electrical vehicles: a brilliant future for the gas industry;
- Development strategies for promoting and expanding the use of residential micro-CHP fuel cell systems in Japan;
- Technology state of the art, market and trends: the Japanese situation;

- Technology state of the art, market and trends: the European situation;
- Examples of gas industry activity: field tests;
- How the gas industry supports micro-CHP technologies;
- How renewables will support the natural gas business.

**Expert Forum 5.B – How Renewables Will Support the Natural Gas Business** featured contributions on:

- Biomethane and transportation – an example from Switzerland;
  - Renewables and natural gas in Japan;
  - Renewables (solar energy) and natural gas in Spain;
  - Renewables and natural gas in Germany.
- Then, as an introduction to a roundtable discussion, short descriptions of the production, transport and use of renewables were presented:
- Future production of “green” natural gas – biomass gasification etc.;
  - Transport of renewable gas in the natural gas distribution system – (biomethane, hydrogen etc.);
  - Use of biomethane and hydrogen in the transportation sector in the future.

There were 21 posters in WOC 5’s **Poster Session**, which was visited by between 50 and 75 people.

● **Programme Committee A – Sustainable Development**

During the 24th WGC, PGC A organised a Strategic Panel, two Expert Fora, a Committee Session and a Poster Session.

**Strategic Panel 4 – Natural Gas and the Sustainability Question: How Many Answers Can We Provide?** was attended by an estimated 250 people. PGC A’s acting Chairman, Juan Puertas, moderated and the four panellists highlighted that:

- There is a need for new models for transit to a low carbon future;
- Natural gas can play a vital role as a low carbon energy source in mitigating climate change;
- There is no “silver bullet” for solving climate challenges, rather a “toolbox” of mitigating measures needs to be used;
- Lack of knowledge relating to climate challenges imposes a significant threat to achieving a low-carbon future;
- Climate change is part of an overall global change, where major challenges related to population changes, weather changes, deforestation and other issues need to be understood and linked to be able to mitigate the coming future challenges.

Around 50 people attended PGC A’s **Poster Session**, and two of the 13 posters presented won best paper awards: *Methane’s role in promoting sustainable development in the oil and gas industry* and *BP Noel – A Canadian unconventional gas development and example of environmental impact reduction*.

**Expert Forum A.A – Gas Chain Sustainability** was attended by an estimated 33 people. It was chaired by Katarzyna Steczko (Oil & Gas



Roberto Brandt presents a best paper award for one of PGC A’s posters during the closing ceremony.

## Galp Energia

Galp Energia is an integrated operator present throughout the whole oil and natural gas value chain. Its activities are expanding strongly worldwide and are located in Portugal, Spain, Brazil, Angola, Venezuela, Mozambique, Cape Verde, Guinea-Bissau, Swaziland, Gambia, East Timor, Uruguay and Equatorial Guinea.

The ongoing Exploration & Production projects support the strategy that will enable production goals to be achieved. Brazil and Angola are core countries for the execution of this strategy. The current base of hydrocarbon resources, which exceeds two billion barrels as identified by intensive exploratory work, is a solid foundation on which Galp Energia's strategy for its production business rests.

In Gas & Power Galp Energia is the leading company in Portugal for natural gas supply, distribution and sales with about 900,000 clients and 5 billion cubic metres (bcm) of annual sales. In Spain its presence started in 2008 as a natural gas supplier for the industrial market and will increase significantly in 2010 with the

completion of the purchase by Gas Natural of over 400,000 customers in the Greater Madrid region, adding about 0.4 bcm of annual consumption. With this acquisition Galp Energia will become the second player in terms of customers served in the Iberian Peninsula. In the power sector, Galp Energia aims to become an important player in Portugal, both in terms of production and supply to the final market.

Galp Energia's priority is to double the capacity to source natural gas by developing its ongoing projects in the Exploration & Production business segment, having various LNG upstream and midstream opportunities under review, among which are Delta Caribe LNG in Venezuela and Angola LNG II.

In Refining & Marketing, Galp Energia is focused on extracting additional value from its assets, namely from its refineries and Iberian network for marketing oil products, which expanded significantly in 2008 following the acquisition of Agip's and ExxonMobil's marketing platforms in the Iberian Peninsula.

# Our energy crosses borders

Galp Energia leads the natural gas market in Portugal and is a major energy player on the Iberian Peninsula.



We are an integrated energy company exploring, producing and refining oil and natural gas across four continents. We deliver energy to millions of people every day.



Institute, Poland) and five panellists gave presentations on:

- How to improve the energy efficiency of oil and gas facilities;
- Life cycle assessment (LCA) of the European natural gas industry;
- Geo-ecological risk management for stable development of the gas industry;
- New well survey methods minimising environmental impacts;
- Recompression of natural gas saving the environment and money.

A sixth panellist showed a film about the cooperation of a gas company with NGOs and local communities to improve social conditions while getting the right to build the Norandino pipeline from Argentina to Chile.

**Expert Forum A.B – Energy Efficiency, Gas and Renewables** was attended by an estimated 110 people. It was chaired by Elbert Huijzer (Aliander), the Leader of Study Group A.2. The aims of the forum were to find examples of energy efficiency and discover how gas and renewables can be used to reduce environmental impact. There were five presentations:

- Current issues and prospects of substituting natural gas with renewable energy sources for generating electric and heat energy in the Russian Federation;
- State of biogas injection into the gas grid in Germany;
- Maximising the efficiency of natural gas use: the case for solar water heating;
- Assessment of distributed carbon capture and sequestration in Japan: distributed CCS for a city gas system in Japan;
- The role of natural gas in energy efficiency improvement.

**Committee Session A.1 – The Gas Industry Response to Climate Change** was attended by an estimated 40 people. It was chaired by Kari

Lindøe Hunsbedt (Statoil), PGC A's Secretary. The main points of the three presentations are detailed below.

While in general the gas industry is implementing the recommended Guidelines for Sustainable Development, more work needs to be done and there has to be increased focus among stakeholders. To this end, PGC A has elaborated more comprehensive rules. It is also important to increase R&D efforts in the gas sector.

Natural gas is the fuel with the lowest carbon content and should be more favoured in a future post-Kyoto cap and trade system. Several allocation methods for CO<sub>2</sub> credits were considered, and the different impacts they would have on the gas industry were discussed.

A case study on the Lithuanian energy situation was presented, which looked at the new policies to be developed post-Kyoto and the impact they would have on the country. For Lithuania it will be challenging to meet the conditions of a new emissions trading system.

### ● Programme Committee B – Strategy, Economics and Regulation

During the 24th WGC, PGC B organised three Committee Sessions, two Expert Fora and a Poster Session. The Committee Sessions looking at gas supply and demand and pricing were each attended by 700 people, while the third session on regulation was held in a smaller room with an audience of around 120. Each Expert Forum was attended by about 60 people.

**Committee Session B.1 – Gas Supply and Demand to 2030** started with a brief presentation by the Chairman of PGC B, Pedro Moraleda (Gas Natural/Sedigas), who outlined the Committee's overall objectives and introduced its three Study Groups. Then the leader of Study Group B.1, Jaap Hoogakker (GasTerra), presented the group's specific objectives, methodology and conclusions, and chaired a panel of six members who



## All this in our pipeline

The National Gas Company plays a major role in the development of Trinidad and Tobago's natural gas sector and by extension our country's growth and development. Our contributions enable T&T to enjoy a quality of life that is envied by many developing countries worldwide. We see our responsibilities to the nation as being a major driver of our values, mission, vision and strategy, as we set our sights on the future.



THE NATIONAL GAS COMPANY  
OF TRINIDAD AND TOBAGO LIMITED

T: (868) 636-4662/4680 | F: (868) 679-2384 | [www.ngc.co.tt](http://www.ngc.co.tt)

approached the topic from regional perspectives and the views of independent consultants.

The shared message was that natural gas is in a better position than ever before due to:

- Abundant and increasing gas reserves;
- The fact that production is growing in almost all regions;
- The environmental advantages of natural gas over coal which are triggering higher demand;
- And no shortage is foreseen in the 2030 horizon.

**Committee Session B.2 – Gas Price Formation and Trends** was also opened by PGC B's Chairman. Then the leader of Study Group B.2, Runar Tjersland (Statoil), outlined the group's objectives and introduced its work, while Michael Stoppard (IHS CERA) chaired a panel of six members who shared the following messages:

- The history of gas price formation has had three main drivers: the costs of exploration and production, competition with alternative fuels such as oil, oil products and coal and, finally, regulated gas prices;
- Eight different gas price formation mechanisms were analysed: the observations based on global data from 2005 and 2007 show that the gas-on-gas pricing formula is progressing, while the oil price escalation formula is losing ground worldwide;
- The growth in the LNG trade is likely to contribute to a more globalised pricing of natural gas, mainly based on a gas-on-gas competition mechanism;
- Volatility is becoming the norm and the challenge for the industry is to develop mechanisms that mitigate undesired risks associated with high volatility.

**Committee Session B.3 – Regulation and Future Industry Structure** was co-chaired by Margot Loudon (Eurogas) and Jayesh Parmar (Oliver Wyman) with six panellists from the Americas and

Europe. The session gave an overview of regulatory developments in different parts of the world and how these are impacting the gas value chain. The presentations allowed the main contributors to Study Group B.3's report to set out its contents in summary form to the audience, including the key recommendations to regulators and authorities. During the panel discussion there was a vigorous debate about the levels of unbundling in Europe and what approach was necessary if a market were to be perceived as truly competitive. Among other issues highlighted were:

- There is a growing broad commonality of regulatory issues and practices related to the trend towards more competition in gas markets. At a detailed level, there are differences, especially depending on the maturity of the market, but at the same time the benefits of improved regional cooperation and coordination are increasingly acknowledged.
- There is a need for a pragmatic approach to harmonised business practices among operators, arriving, where possible, at a consensus-based approach that takes account of the interests of different market participants and is sensitive to the costs issue. It is not evident that such harmonisation necessarily has to be binding but if it were not there might be concerns about effective implementation.
- It is essential to have a predictable regulatory framework conducive to industry meeting the huge investment challenges.
- At the distribution level, notably in the wake of the financial crisis, there are also particular issues about which regulators should be heeding industry's concerns.
- There is an increasing convergence of gas and electricity business strategies.

During the two **Expert Fora**, one covering supply and demand chaired by Jaap Hoogakker and Mark Robinson (JMR Energy Infra) and the other regulatory issues chaired by Margot Loudon and

Global Aftermarket Services

Global

Proven Reliability

Product Innovation

Flow

Flow Management Solutions

Global Footprint

Leadership

Operational Excellence

Turnkey Systems Integration

## Cameron's Valves & Measurement Group

Productivity. Performance. Premier brands you trust for precision and reliability. Field-proven products designed for critical service. Global availability. Solutions tailored for even the most demanding environments. Superior service after the sale. All are available from one source – Cameron. Naturally, you have a choice, but when you can have everything you seek in a world-class leader like Cameron, why choose anyone else? [www.c-a-m.com](http://www.c-a-m.com)

Exploration   Gathering   Production   Transportation   Refining & Mktg   Process Industries

CAMERON® DEMCO® ENTECH™ GENERAL VALVE® GROVE® NAVCO® NUTRON® ORBIT® RING-O®  
 TBV™ TECHNO™ TEXSTEAM™ THORNHILL CRAVER® TK® TOM WHEATLEY™ WHEATLEY® WKM®  
 BARTON® CALDON® CLIF MOCK™ JISKOOT™ LINCO™ NUFLO™ PAAI™ CAMSERV™ AFTERMARKET SERVICES

Ottar Skagen (Statoil), papers were presented related to PGC B's study topics. The presentations reflected how, despite differing situations across regions and countries in respect of regulatory frameworks, market structures, and indeed economic circumstances, concerns about developing market growth and responding to the challenges of a changing market place are similar worldwide. Speakers from Qatar, Japan and Australia addressed LNG issues and strategies including development and pricing in their presentations, while other speakers focused on regulatory frameworks and business models in relation to the challenges of infrastructure investment.

The **Poster Session** gave the opportunity to present a group of nine additional papers.

● **Programme Committee C – Developing Markets**

During the 24th WGC, PGC C organised three Committee Sessions, two Expert Fora and a Poster

Session. All sessions saw a respectable turnout, varying between 60 and 150 people.

The key messages and conclusions highlighted during **Committee Session C.1 – Developing Gas Markets in South, West and Central Asia** centred on the importance of geopolitical factors in shaping the future course of gas market integration in the region. In particular, recognition of gas interdependence between the region's gas producing and consuming countries was seen to be an important step in developing the region's gas markets and in providing the motivation to reduce existing barriers to integration. Geopolitical factors were considered the primary challenge in realising cross-border gas pipeline interconnections between Iran, Pakistan and India, as well as from the Middle East and the Caspian Area to Europe via Turkey. Participants also noted that gas resources in Central Asia are becoming increasingly attractive as several alternative export options are now being developed. On the one hand, this



PGC C's Committee Sessions looked at developing gas markets around the world such as Iran.

# Connected for life

Imagine if both new energies and fossil resources  
were meant to work together



To meet growing energy demands and prepare for the future, Total is contributing to the boom in new energies, which complement fossil fuels. One of our priorities is the development of solar energy. Present for over 25 years in the photovoltaic field, Total is involved in a large part of the industrial chain with our subsidiaries Tenesol (manufacturers of solar panels, system development) and Photovoltech (cell manufacture). Total will invest 45 million euros between now and 2009 to increase Photovoltech's production capacity. [www.total.com](http://www.total.com)

will increase the value of the region's gas resources and encourage exploration activities, but it could also create greater competition for the resources to support internal market integration.

Views on the impact of alternative regulatory regimes on the attractiveness of upstream projects in the region were presented. To this end, it was felt that Kazakhstan's present regime ranked amongst the most attractive. The growing importance of Turkey – not only as a consuming market but also as a natural energy bridge between East and West – was highlighted, while the state of gas market development in India, which is expected to make the largest contribution to this region's demand growth, was also discussed.

**Committee Session C.2** – *Developing Gas Markets in South America (from a more integrated perspective)* addressed the need for gas market integration to evolve beyond merely constructing interconnections and for it to be implemented at a systemic level, supported by effective coordination between governments, companies and other agents. Closer market integration was deemed vital if the potential of recent discoveries both onshore and in the deepwater areas is to be harnessed in support of growing demand. The session noted the importance of underpinning integration efforts by a broad intergovernmental cooperation programme, with a proper, transparent balance of risks and benefits for all parties involved being thoroughly addressed. These themes were echoed in greater detail in specific presentations covering the gas markets of Argentina and Venezuela. The role that LNG could potentially play in complementing more traditional modes of integration was also considered.

**Committee Session C.3** – *Developing Gas Markets in South Eastern Europe* looked at the importance of integration to realise the region's gas market potential and become more than an energy corridor linking the gas markets of Western

Europe with resources to the east. While a key step in this direction is the creation of a common and comprehensive regulatory framework, participants noted that only a few countries had well-developed basic legislation; secondary legislation had generally yet to be sufficiently structured. One important aspect of a regulatory framework was seen to be the development of modern tariff systems to attract sufficient investments in transmission and distribution networks to support the development of the region's gas markets – the revenue cap methodology was considered the preferable regime in this regard. It was also argued that the region's industry players needed to play a more active role during the current phase of the regulatory architecture, instead of attempting to modify adopted regulations at a later stage if they were found to be inadequate. The uncertainties created by this piecemeal approach would, it was felt, deter timely investments.

Discussions during **Expert Forum C.A** – *Future Impact of Geopolitics and Globalisation on Sustainable Gas Supply and Trade* centred on the geopolitical and security issues affecting the accessibility and sustainability of gas supplies. Participants noted that more than two-thirds of the remaining proven gas reserves are located in politically sensitive regions and that the Middle East (in particular, Iran), although well-placed to meet the world's gas supply challenges, could only make its contribution if various geopolitical barriers were surmounted. Other discussions on the subject touched upon the challenges of securing access to new reserves and maintaining access to existing ones. In this context, it was argued that "resource nationalism" should be seen as attempts by states to exercise their sovereign control over natural resources against the backdrop of changes in circumstances that had not been foreseen at a contract's inception and which resulted in a distribution of rents deemed as unfair

compared to the spirit (if not the letter) of that contract. Resource nationalism, therefore, far from being a one-off phenomenon is more accurately thought of as a cyclical phenomenon. Mitigating this threat in future will require ensuring that sufficient flexibility exists within contractual arrangements. Views were also expressed that, taking this line of reasoning further, the idea of international cooperation based on the principle of reciprocity should also be considered.

**Expert Forum C.B – Developing Natural Gas Markets: How Issues Including Security of Supply, Alternative Fuels, Pricing and Technological Improvements Interact for a Sustainable Development** provided a diverse collection of papers and presentations on various strategic options in developing natural gas markets, taking into consideration the interaction of various technological, economic, social and political drivers. Participants noted:

- Turkey’s experiences in liberalising its gas market following its Law on Natural Gas Market No. 4646 and how this has played an instrumental role in boosting gas utilisation in Turkey’s residential sector;
- The possibility that successful implementation of various measures to curb rapid gas consumption growth in Iran could lead to a surplus situation emerging by 2013 and that this surplus could reach 320 bcm by 2025;
- The successes of the World Bank’s Global Gas Flaring Reduction (GGFR) Partnership in fostering more sustainable use of gas, as well as the challenges the initiative faces in attempting to enlist the participation of various major producing countries;
- That gas is one of the most realistic choices for China in its bid to promote cleaner energy, increase the efficiency of energy use, reduce emissions, improve the quality of the environment and achieve energy supply diversification.

Five posters were exhibited in the **Poster Session**, covering developments in the Russian gas industry, as well as the role of natural gas in contributing towards energy sustainability in Argentina.

● **Programme Committee D – LNG**

During the 24th WGC, PGC D organised three Committee Sessions, two Expert Fora, and a Poster Session, with audiences ranging from 100 to 160.

**Committee Session D.1 – LNG Quality** was chaired by Martin Josten (BP) and Ted Williams (American Gas Association). It started with the presentation of Study Group D.1’s report on LNG quality and interchangeability, the topic having been studied in response to widespread industry interest in the implications of global gas/LNG commoditisation. The ground was covered comprehensively, and it is hoped that the report provides a useful tool for evaluation of the quality issue.

The Committee’s report was complemented by the presentation of five papers from industry, and then there was an interesting Q&A session which was fielded by a knowledgeable panel. The five papers were:

- An exporter’s view of LNG quality adjustment to fit the end user market;



LNG developments considered by PGC D included floating regasification as used at Argentina’s Bahía Blanca GasPort.

- New approaches in LNG quality and energy determination during LNG carrier unloading;
- Terminal flexibility to receive different kinds of LNG;
- European gas interchangeability;
- Manufacturer testing of US appliances on LNG compositions and other gases.

**Committee Session D.2 – Economic Aspects in the LNG Industry** was chaired by Bo-young Kim (Kogas) and Alaa Abujbara (Qatargas). As well as the presentation of Study Group D.2's report, there were papers on:

- The new LNG trading model – short-term market developments and prospects;
- Global LNG demand in a new economic environment – the forecasting challenges;
- A new business approach to conventional small scale LNG;
- The impact of the global economic crisis on the global LNG trade and spot LNG prices.

The session considered the impact of the global economic crisis on gas demand, and presented a short-term outlook for gas supply/demand fundamentals based on analysis of gas and electricity demand by sector, domestic gas production and imports of pipeline gas and LNG under contracts allowing limited volume flexibility. The analysis concluded by quantifying the availability of, and calls on, flexible and spot LNG supply; thereby determining the extent by which the global market is oversupplied and the length of time before supply and demand come back into balance.

**Committee Session D.3 – Creative Solutions for New LNG Facilities** was chaired by Rob Klein Nagelvoort (Shell Global Solutions) and Arrigo Vienna (ENI). The session started with the presentation of Study Group D.3's report covering LNG production, shipping, transfer and regasification. The technical innovations of the last three years were analysed and a view was presented on what

was to be expected in the future. It was stressed that the report had been prepared by a diverse team from various companies across the LNG chain and that it therefore presented an independent view. An acceleration of innovations was observed as compared to previous periods, underlining the inherent strength of the LNG business.

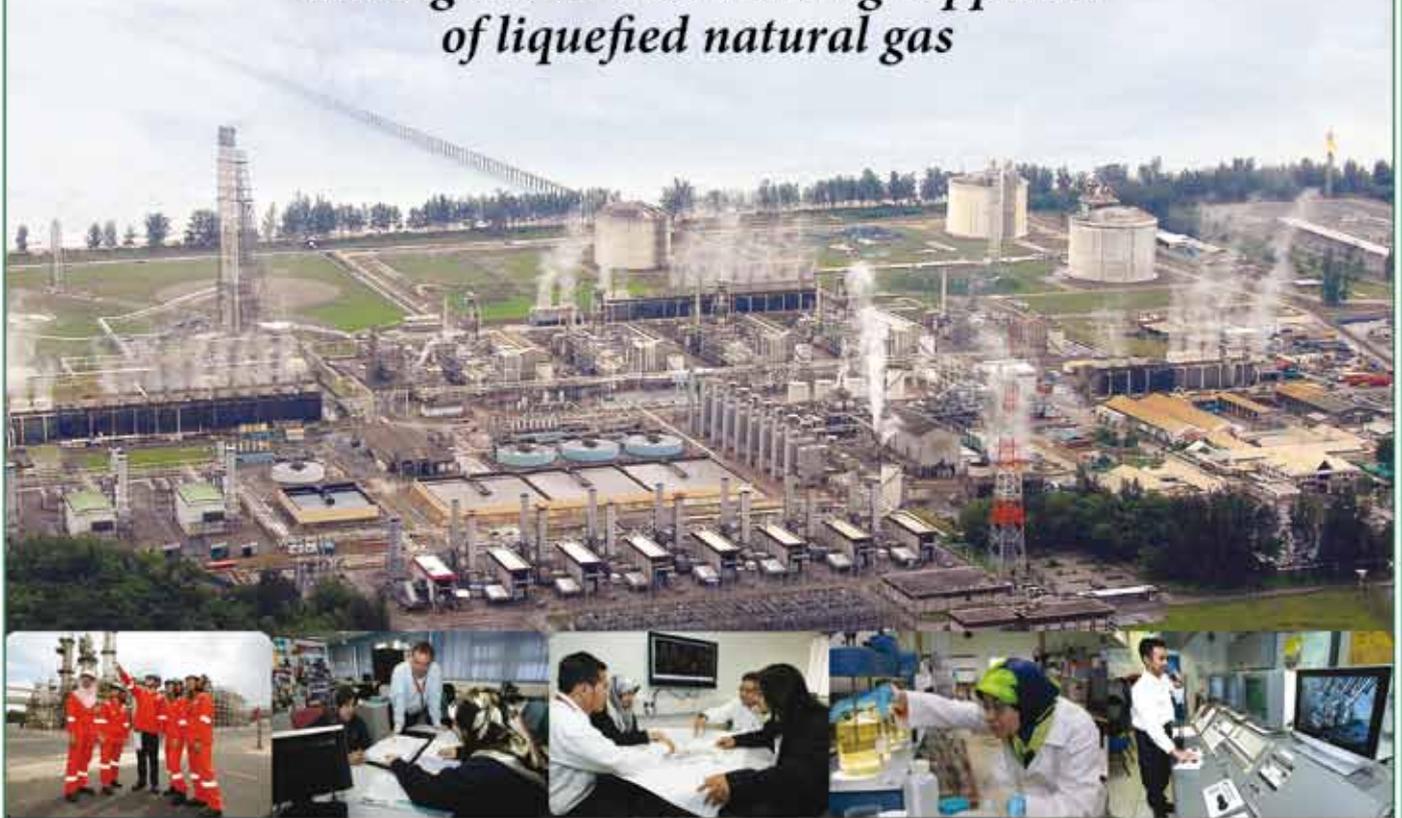
Subsequently four papers were presented, viz. on LNG technology developments, large LNG trains, the Shtokman development and small LNG plants. A fifth paper on floating LNG was unfortunately withdrawn. A joint panel of the chairmen and the presenters of the papers then fielded questions from the audience for the last half hour or so. There were lively debates in a workshop style.

**Expert Forum D.A – Operational Improvement** was chaired by Seiichi Uchino (Tokyo Gas) and Luis Gorospe (Repsol), and there were five presentations:

- Growing challenges facing the operation and maintenance of heat exchangers in LNG plants;
- A self-contained training system for LNG receiving terminals;
- Challenging the traditional approach to safety management and how leadership behaviour affects safety performance;
- How to develop a new terminal in Europe in the context of globalising LNG markets and global societal sensitivity as regards safety and the environment;
- Improving the energy efficiency of LNG plants. The panellists insisted on the growing importance of:
  - The improvement of operation, maintenance and energy efficiency in LNG plants;
  - New training systems and training simulators;
  - The engagement of managers and leaders in safety performance;
  - Reducing the environmental impact of new LNG terminals.

# BRUNEI LNG

*Among the world's leading suppliers  
of liquefied natural gas*



**B**runei LNG Sendirian Berhad which was established on 9th December 1969, is the first LNG Plant in the Western Pacific and among the world's leading suppliers of liquefied natural gas (LNG).

Led by four decades of growth and a proven track record, the company has been a preferred LNG supplier to Japan and Korea since 1972 and 1994 respectively. To date, more than 6000 shipments have been delivered uninterrupted from Lumut to Japan and Korea. The company strives to move forward towards its vision of being one of the top performing LNG plants in the world, synonymous with reliability and quality. Some of its past achievements include first ranking amongst Shell's Joint Venture operated LNG plants in 2008 and Best Shell Laboratory in Correlation results in 2008, which it has achieved for five consecutive years. As a responsible organisation that cares for the environment, Brunei LNG operates in harmony with the natural surroundings of the Liang Lumut area of Brunei Darussalam where it is based. Its successful environmental management system (EMS) was accredited to EMS ISO14001:1996 series in 2000. The EMS was upgraded to EMS ISO 14001:2004 series in 2005 and then recertified for another three years in 2008. Brunei LNG employs more than 500 personnel, of which 95% are locals. The company strives to be the Employer of First Choice within the community and in Brunei Darussalam generally. Plant capacity is 7.2 million tonnes of LNG per annum. To ensure continuous plant reliability and efficiency, two major rejuvenation projects were implemented in 1990 and 2004, which have proven to be critical factors in securing ongoing long-term sales contracts beyond 2013. Brunei LNG is committed to maintaining its strength as a Supplier of First Choice to customers, and to move forward with increased business potential into the future.

**BRUNEI LNG SENDIRIAN BERHAD**  
"Sustaining Operational Excellence"



**Expert Forum D.B – New LNG Projects** was chaired by Jean-Yves Capelle (Total) and Mohamed Syazwan Abdullah (Malaysia LNG), and focused on floating LNG for regasification and particularly liquefaction. The floating liquefaction plant was seen as the key new technology prospect, and there was much discussion about where the first installation will be and how it will work. Panellists concluded that PGC D should resurrect interest in sharing developing technology at future events, and that there is a need to bring in technology providers/licensors such as APCI, Linde and ConocoPhillips, as well as key equipment manufacturers.

● **Task Force Research and Development**

The R&D Task Force was in charge of organising Strategic Panel 2 of the 24th WGC entitled – *Innovation and New Technologies for Increasing Gas Competitiveness*. More than 250 delegates attended the panel and their active participation during the Q&A session was highly appreciated. Many delegates asked for a copy of the Task Force’s final report.

The Chairman of the R&D Task Force, Marc Florette, served as moderator and started

proceedings with a presentation of the Task Force’s work and its four main recommendations:

- Enhance dialogue between CEOs, regulators, investors and customers to emphasise the role of R&D as a solution to business issues;
- R&D programmes focused on topics of importance for the gas industry should be encouraged by IGU;
- Focus marketing efforts to gain corporate support for R&D by maintaining a direct dialogue with CEOs, and enhancing the dialogue between R&D staff and business strategy divisions;
- Encourage international conferences such as IGRC and other technology based conferences.

Then five panellists gave illustrations of the role of technology in the future gas business.

Firstly, Robert Catell (AERTC/New York State Smart Grid Consortium) emphasised how new technology such as new industrial boilers, micro-CHP, robotics, biogas, solar and wind can address key strategic challenges, and used the example of New York to explain the rapid changes expected with the breakthrough in smart grids.

Sam Bernstein (Bernstein Enterprises) looked at the approach of venture capital investors to clean technologies. He considered the role of a cooper-

ative technology watch between utilities and venture firms, and emphasised how venture investors could accelerate the development of emerging technologies.

Carlos Fraga (Petrobras) explained how the technological challenges facing gas production and associated gas transportation routes in Brazil’s offshore pre-salt area were being addressed.

Shigeki Hirano (Osaka Gas) dealt with the response of Japanese gas companies to



The Chairman of the R&D Task Force, Marc Florette (left), moderated Strategic Panel 2.

- Diverse and balanced portfolio
- Full LNG chain participation
- Clear growth opportunities
- Capturing value for customers, investors and partners



## Shipping

35+ years experience

Leading owner  
and operator

## Floating Regasification

First mover in the market

Proven technology



## Liquefaction

Field First Approach

Powerful partnerships

Changing the world of LNG through innovation

[www.golarenergy.com](http://www.golarenergy.com)

increased competition from electricity in the residential sector. He explained in particular how new technologies such as micro-cogeneration are part of the answer, and raised the question of the future gas industry's strategic architecture.

Finally, Walter Thielen (DVGW) focused on the impact of regulation and the opening up of the European energy markets on technological development, and on the new requirements of customers and markets. He discussed the impact of the current change from simple gas utilisation to new energy systems.

The key messages from this panel are:

- The gas business needs new technologies: deep water drilling and offshore LNG for the upstream or smart grids for the downstream are clear illustrations;
- Electricity and gas convergence is a strong reality: smart grids and micro-cogeneration are linked;
- We are facing a sudden change in competition which requires new gas consumers to be found (e.g. in the NGV sector and for industrial applications);
- Sustainability is of growing interest, but methodologies like LCA should be used to assess the effective sustainability of the different energy solutions;
- Several research management models exist: collaborative research through dedicated associations is an answer to engage all stakeholders in the same development. Collaboration between venture investors and multi-utilities is necessary to accelerate the market penetration of new energy systems.

#### ● **Task Force on Gas Market Integration**

During the 24th WGC, the Task Force on Gas Market Integration (GMI) organised a Committee Session, which was attended by an estimated 180 people, a Strategic Panel, which was attended by an estimated 600 people, and a Poster Session.

The Chairman, Jorge Doumanian, began the Committee Session by presenting the GMI model developed by the Task Force and the conclusions of its triennial report. Then nine regional case studies were presented:

- Gulf Cooperation;
- Russia Turns East;
- Russia and Germany: A Solid Regional Energy Partnership;
- Canada-USA-Mexico: Different Integration Stages with a Common Partner;
- Exxon and Qatar Petroleum;
- The Evolution of the UK Gas Industry;
- Asia's LNG Market Integration;
- TAGP, Accelerating Gas Market Integration in ASEAN;
- Iran, Pakistan, India.

Finally, the Guiding Principles for Gas Market Integration were presented.

The key messages from the session are:

- Every integration process is an exchange process;
- In terms of the GMI model:
  - It is a step-by-step process rather than involving big leaps forward,
  - Communication and coordination are needed,
  - Continuous tweaking is needed at every stage,
  - It is important to have stability and predictability at all stages of the market phase,
  - Determination is needed in carrying out the execution plan;
- Each case is unique due to variations in drivers, market conditions and policy options;
- The model and common language are useful tools to aid progress.

**Strategic Panel 5 – Finding the Links for Gas Market Integration** was moderated by Jorge Doumanian with the interesting participation of Alexander I. Medvedev (Gazprom), Gertjan Lankhorst (GasTerra) and Kazuo Kakehashi



# NABUCCO Gas Pipeline: Gas Bridge between Caspian Region and Europe.

[www.omv.com](http://www.omv.com)

## OMV keeps natural gas moving to where it's needed

Approximately 66 bcm of natural gas is transported annually by OMV via its gas turntable in Baumgarten (Austria), along the West and South corridors: to countries like Germany, France, Italy, Hungary, Slovenia, Croatia.

Until 2010 we plan to increase our gas trading volumes to 18 bcm via our trading companies EconGas in Central Europe and Petrom in South East Europe.

With the International Nabucco gas pipeline project we plan to build a gas bridge between the Caspian Region and Europe together with five partners.



Strategic Panel 8 was organised by the IGU Marketing Committee.

(Osaka Gas). Discussion centred on the cooperation needed at all stages of market integration processes and the benefits resulting in each case.

There were six posters in the **Poster Session** looking at gas markets in Africa, Asia, Europe and South America, with members of the Task Force and other delegates joining in discussions.

#### ● **IGU Marketing Committee**

During the 24th WGC, the IGU Marketing Committee organised Strategic Panel 8 entitled – *Marketing Natural Gas in a Demanding Environment*, which was attended by an estimated 340 people.

The event was designed as a multimedia show with a presenter, keynote speaker, six panellists, films, several live acts, giveaways and brochures. The brochures which were available at the event summed up the main messages of the session.

In his keynote speech, Gertjan Lankhorst (GasTerra) emphasised the important role of

natural gas as the back-bone of global energy transition, and presented a long-term vision and a roadmap towards a sustainable energy future. He urged that the industry's knowledge and capabilities be used to develop and apply new technologies and local energy solutions in order to support the natural gas sector.

In the following panel discussion led by Geert Greving (GasTerra) as presenter, six high-level executives of the gas industry from different regions of the world discussed the advantages of natural gas and how to market it. The main messages of the panel discussion are detailed below.

- Natural gas is no longer a self-selling product and marketing is becoming increasingly important.
- *Future*: Natural gas builds bridges to the future. The environmental pollution caused by burning fossil fuel and the need for sustainability requires new energy concepts worldwide. Natural gas is a transition fuel that offers the ideal approach.
- *Clean*: Natural gas offers great potential to clean up your town and your planet. Compared to other fossil fuels natural gas has the lowest emissions.
- *Flexible*: Natural gas can interact perfectly with other energy sources. Renewable energies have irregular patterns of power production and natural gas serves as the ideal balancing partner.
- *Comfortable*: Natural gas is a convenient, readily-available fuel for heating and cooking using a wide range of modern appliances.
- *Efficient*: Natural gas is a driving force for

technological improvement. Due to the high percentage of hydrogen in natural gas, this fuel is highly suitable for all kinds of energy efficient solutions, for instance for modern condensing boiler technology which can achieve the highest energy efficiency.

- **Competitive:** Natural gas offers great added value in competitive markets where millions of consumers and society as a whole recognise its high value.
- **Multifunctional:** Natural gas is used for more purposes than ever before. Energy supply through natural gas has significant advantages over other fuels. Whenever comfort, reliability, good environmental performance and flexibility are demanded at home or at work, natural gas offers a winning solution.
- **Everywhere:** Natural gas has no geographical boundaries with the gas industry serving consumers all over the world. Creative approaches make it possible to find perfect solutions even for remote areas.
- **Innovative:** The flexibility of natural gas makes it a genuine engine of innovation, responding to future demands as regards new products, production methods and services.

The two Study Groups of the IGU Marketing Committee contributed in different ways to the Strategic Panel.

Members of Study Group M.1 (Natural gas and renewables) developed the concept of “nine reasons why natural gas is the energy of the future”, which served as the agenda for the panel discussion.

Members of Study Group M.2 (How can marketing contribute to promote natural gas in new areas and new technologies?) produced short promotional videos to introduce three of the topics: “efficient” (micro-CHP in the Netherlands), “everywhere” (mother-daughter systems in Austria and Iran) and “multifunctional” (district cooling and heating in Egypt).



# Let us refresh your image of Germany.

The German gas market is worth 960 billion kilowatt-hours and is extremely dynamic. An active participant in this market, Bayerngas has developed a strong position in the last 40 years. As an integrated company providing gas trading, storage, exploration & production, pipeline operation and technical services, we procure natural gas on the European market for our customers. This makes us the right partner for importing gas to Germany. Why not contact us?



**bayerngas**  
Energiepartnerschaft mit Zukunft

*The French Gas Association*  
*The professional union gas in France*



# *Bringing our energy together*

- Promotion and development of the gas industry
- Supplier of services in the fields of standardization, certification and training

[www.afgaz.fr](http://www.afgaz.fr)



## FEATURES

This issue's features section starts with coverage of the UN climate change talks in Copenhagen, where IGU staged a special gas event, followed by articles on Algeria which is hosting LNG16, gas finance and the US Congressional Natural Gas Caucus. Then there are reports from the Task Force "Building Strategic Human Capital", WOC 4 – Distribution, WOC 5 – Utilisation and PGC E – Marketing. Due to the later than usual start of the current Triennium, the first full progress report from the Technical Committees will not appear until the second issue of 2010.

IGU has three new Charter Members and we have profiles on Equatorial Guinea and Timor-Leste plus an article from the World Bank-led Global Gas Flaring Reduction Partnership on the Angola LNG project.

We complete the series of case studies by the Task Force on Gas Market Integration set up during the 2006-2009 Triennium by publishing those looking at Russia/China and the UK.

Finally, we have a report from the Nigerian Gas Association and an update on GECEF, before rounding up with a description of the publications and documents available from IGU and the events calendar.

# NATURAL GAS

**— A REAL ENERGY SOLUTION  
FOR A LOW CARBON ECONOMY**

Dedicated to clean energy

