

2011 Activity Report

I. Introduction

GERG has enjoyed a lively and exciting 2011, celebrating its 50th anniversary and, again, acquiring a new member, raising the total to twenty four members from thirteen countries.

Challenging opportunities, particularly associated with Power to Gas, are presenting themselves for 2012 with strong collaborative ventures recently set up and others appearing over the horizon.

II. General Matters

- Mr Enrique Palomino Bilbao, Naturgas Energia, became President of GERG effective 1st January, 2011. He stepped down as President at the autumn Board meeting as he was taking up a new position outside Naturgas Energia.
- Mr David Salisbury, National Grid, Vice-President of GERG from 1st January, 2011, took over as President of GERG with effect from the autumn Board meeting.
- Open Grid Europe (OGE), Germany, became a member of GERG in 2011. They are represented in the Board/Plenary by Mr Markus Linneman.
- Mr Angel Gutierrez replaced Mr Enrique Palomino Bilbao as the representative of Naturgas Energia in the Board/Plenary, following the autumn Board meeting.
- Mr José Rivera Ysasi-Ysasmendi replaced Mr Antonio Garcia Mateo as the representative of Enagas in the Board/Plenary;
- Mrs Elzbieta Kramek replaced Mr Pawel Stanczak as the representative of Gaz System in the Board/Plenary;
- Mr Enrico Aceto represents Italgas in the Board/Plenary;
- Mr Carlo Spinelli represents Eni S.p.A. Gas & Power Division in the Board/Plenary.

III. Programme Committees

A list of Programme Committees' current and proposed projects is attached as an appendix to this report. They were chaired as follows:

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|-----------------------------|-------------------------------|
| • PC General Studies | Mr G Roslonek, Gaz System |
| • PC Transmission & Storage | Mr J-L Zurita, Enagas |
| • PC Distribution | Mr J-P Capdevielle*, GDF SUEZ |
| • PC Utilisation | Mr F Gröschl, DVGW |

*(Mr Capdevielle retired during 2011 and was replaced by Mr Y Onfroy, GDF SUEZ, in time for the autumn meeting.)

IV. GERG Secretariat

Mr D Pinchbeck was General Secretary of GERG during 2011.

V. Highlights

GERG Board meetings - 2011

- Spring Barcelona, Spain;
- Autumn Essen, Germany.

50th anniversary

GERG celebrated its 50th anniversary in 2011... 50 years of promoting collaborative R&D in a European Gas Industry which has responsibility for supplying some 115 million domestic, commercial, industrial and power station gas customers connected to the natural gas grid in EU27.

Leading players from the European gas research community joined representatives of the European and major international gas institutions, at a celebration dinner held in Copenhagen on 11 May to mark the 50th anniversary of GERG.

The event was hosted by the Danish Gas Technology Centre as part of the EGATEC2011 conference, under the auspices of GERG and its President, Mr Enrique Palomino Bilbao, Director General, Liberalised Business, Naturgas Energia. Invited guests included retired GERG past-Presidents, representatives from Eurogas and Marcogaz and, from as far afield as the USA, Japan and Malaysia, notably Datuk Abdul Rahim Hashim, President of the International Gas Union (IGU) and the Malaysian Gas Association (MGA).

The Joint Gas Advocacy Programme

GERG is an active member of JGAP (the Joint Gas Advocacy Programme) which was set up in Brussels during 2011 in response to the Commission's initial EU Energy Roadmap 2050 which omits to mention natural gas, in its drive towards decarbonisation of Europe. JGAP is made up of gas-related lobbying organisations who are now pooling their resources, with the aid of external professional help, to influence the critical political thinking in Brussels.

External consultants have been contracted to lead a vigorous lobbying campaign over the coming months, including a 'Gas week' in Brussels in April 2012.

GERG Academic Network

The 3rd GERG Academic Network Event took place in Copenhagen on 12th and 13th May, as part of the EGATEC2011 conference. Its aims are to reinforce the GERG Academic Network by enlarging and strengthening links between selected universities and the European gas industry's research centres.

As usual, post-graduate students working towards a Ph. D. funded by, or relevant to, the gas industry were invited with their supervisors to present their work to a select audience made up of their peers, gas industry R&D experts and representatives from the gas industry worldwide. Unusually, students were asked to prepare a high quality poster detailing their projects and 20 were presented from the more than 30 applicants for places.

Mr Enrique Palomino Bilbao, President of GERG, presented prizes for the best work, based on the criteria: Technical Quality, Innovation and Poster Quality, to:

- 1st.** Eric Cloarec, Université de Pau et des Pays de l'Adour, "Experimental studies of solubility of elemental sulphur in methane";
- 2nd.** Andreas Hielscher, Ruhr-Universität Bochum, "Gas Quality Tracking in Distribution Grids";
- 3rd.** Iker Agirrezabal-Telleria, University of the Basque Country - Faculty of Engineering, "Design and optimisation of a 10 m3 biodigester to valorise pig manure in a small size farm".

GERG also awarded an additional prize of a fully funded trip to IGRC 2011, in Seoul, to the winner, Mr Eric Cloarec.

N.B. The 4th Academic Network Event will take place in Brussels in its normal two day format on 14 & 15 June 2012.

K4I

GERG is a founder member of Knowledge4Innovation's, (the K4I Forum of the European Parliament) and was involved in the 3rd European Innovation Summit (EIS), which was held in two parts: in Brussels, with the patronage of President Jerzy Buzek, and as a Ministerial Conference and one of four flagship Polish Presidency events, in Warsaw. In Warsaw the focus was on adapting EU research and innovation policies to national and regional contexts, and on increasing synergies between different policy areas. In the European Parliament in Brussels, participants discussed the role of people and talent for innovation and the challenges of innovation funding and financing.

K4I has continued the success story of the last two years. More than 200 speakers, including the Presidents of the European Parliament and the European Commission, and some 2000 innovation stakeholders from Europe and beyond engaged in numerous dinner debates and the first two summits.

IGRC2011

GERG was a sponsor of IGRC2011 which took place in Seoul, South Korea, and provided a small stand. GERG also sponsored the winner of the GERG Academic Network competition, Mr Eric Cloarec, to attend the conference and display his winning poster on the GERG stand.

Power to Gas Workshops

The increasing availability of wind energy has highlighted the issue of shortage of electricity storage. GERG and its members are preparing a project that will enable the use of surplus electricity for the generation of hydrogen by electrolysis and its direct injection into the natural gas network. This would make an important contribution to the transportation and storage of surplus or non-transportable renewable electricity and is particularly attractive if it helps to avoid construction of new electricity lines.

However, the volume of hydrogen that may be added to natural gas is limited. The GERG project, NATURALHY, showed that, with certain restrictions, admixtures of approx. 10 – 15 mol% are not critical in most cases except for three important applications:

- modern gas turbines with premixed burners;
- underground porous rock storage;
- steel tanks in NGVs and CNG fuelling stations.

Two expert workshops were held in the autumn to examine these points in more detail and define the bottlenecks associated with modern gas turbines and underground storage. A project will be set up in early 2012.

Gas for Energy

GERG has signed a cooperation agreement with the Publisher, Oldenbourg Industrieverlag GmbH to participate in the journal "Gas for energy" and has entered into editorial co-operation. GERG will be represented on the Advisory Board and will take the opportunity to use "Gas for Energy" to inform its members of, and reporting on, key activities, events, specialist conferences and congresses, etc.

Collaborative activities

The Secretary continued his involvement in the following committees:

- organising committee of EGATEC2011, formerly known as the European Forum Gas (EFG) conference, to be held in Copenhagen, Denmark in May, 2011;
- organising committee of the European Forum Gas 2012 conference, EFG2012, to be held in Dresden, Germany, in June, 2011;
- JGAP Steering Committee;
- K4I Management Board;
- the EU-GCC (Gulf Coordination Council) Energy Experts Group, at the invitation of the European Commission's DG Energy;
- REFINE initiative.

Articles/Papers

A number of position papers/articles have been prepared and submitted for publication:

- GERG Response to the Green Paper: "From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation Funding"
- GERG Response to the THINK document: "Transition to a low carbon energy system by 2050: what role for the EU?"
- GERG Academic Network - Gas for Energy (formerly GWF International)
- GERG Anniversary - IGU Magazine
- "Is there still a role for gas industry fundamental research?" based on an interview by John Elkins for the prestigious UK publication, Gas Matters, with GERG President, Klaus Altfeld, just before standing down as President. The article was published in February 2011;
- "News from GERG - The European Gas Research Group" published in the early 2011 issue of GWF International, by K. Altfeld and D. Pinchbeck.

VI. Members – 2011

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|------------------------------------|-----------------|
| • ARGB | Belgium |
| • BP | U.K. |
| • Danish Gas Technology Centre | Denmark |
| • DVGW | Germany |
| • Enagas | Spain |
| • E.ON Ruhrgas | Germany |
| • Eni Gas & Power | Italy |
| • Gas Natural | Spain |
| • Gassco | Norway |
| • Gasum | Finland |
| • Gasunie Engineering & Technology | The Netherlands |
| • Gaz System | Poland |
| • GDF SUEZ | France |
| • GL | U.K. |
| • IGDAS | Turkey |
| • Kiwa Gastec | The Netherlands |
| • National Grid | U.K. |
| • Naturgas Energia | Spain |
| • OGE (Open Grid Europe) | Germany |
| • Repsol | Spain |
| • Shell Global Solutions | The Netherlands |
| • Snam Rete Gas | Italy |
| • Statoil | Norway |
| • SVGW/SSIGE | Switzerland |

1. Appendix

GERG Activities Report – 2011

1. GERG PROGRAMME COMMITTEE TOPICS: Current

Programme Committee:- General Studies for the Gas Industry
Projects in execution:
1. Uncertainty determination of response factors for gas components determined by gas chromatography.
2. Aqueous dew-point - development of a method for determination of water dew point for natural gas taking into account the impact of trace materials
3. Installation, calibration and validation guidelines for on-line hydrocarbon dew point analysers.
4. Formation of elemental sulphur
5. Development of density meter for LNG
Projects in preparation:
1. Total acceptable error in fiscal metering systems
2. Biogas - siloxane
3. Installation, calibration and validation guidelines for on-line hydrocarbon dew point analysers (Ph.2)
4. Correlation techniques – (Ph.2) lab tests
5. Clamp-on meters as diagnostic device
6. Instrumentation and verification procedures at metering station
7. Expansion of water dew point/water content calculation proposed in ISO Standard 18453
8. Comparison of hydrocarbon dew point measurement principles
9. Olfactory of odorized biomethane

Programme Committee:- Transmission and Storage
Projects in execution:
1. 'Integ-Risk' - Pipeline R.O.W. surveillance
2. Cathodic protection under AC/DC interference conditions (Ph. 2)
3. Inspection and test of two old concrete LNG tanks
4. Performance of shock detection systems
5. Fibre-optic detection systems: on-site fingerprint tests
6. Improved ECDA survey methods
7. COSHER
Projects in preparation:
1. Decarbonising natural gas in distribution networks
2. Methane emissions measurement - Air flow method
3. Feasibility study: Power to Gas
4. Next step - No pig
5. 2050 Smart pipe
6. Best practices - Biomethane
7. FOTOS: Fibre-optics test on site
8. PIT-STOP: Early detection of pipeline integrity threats using a smart optical fibre surveillance system
9. Method for the Integrity Management of Sleeved Crossings
10. Life extension of pipeline systems
11. Condition monitoring at PRS

Programme Committee:- Distribution	
Projects in execution:	
1.	Non-destructive techniques to measure the integrity of butt fusion and electro-fusion joints in new and existing PE gas pipeline systems
2.	Qualification procedure for self-compacting backfill
3.	Gas dispersion in soil – tools to analyse situations at risk due to gas leakage in the soil (Phase 2)
4.	Examining the Potential for Application of Micro-Electro-Mechanical Systems (MEMS) in Gas Distribution Systems
5.	Evaluation of the Strain Hardening Method (SHT) for PE Pipe Materials
6.	Methods to Reduce or Prevent the Free Gas Outflow During Operational Gas Distribution Activities
7.	New Networks for (Raw) Biogas - Best Practices and Cost Analysis
Projects in preparation:	
1.	Preparation and execution of demos of decarbonisation options for natural gas
2.	Examining the effect of using re-rounding clamps after squeezing off PE gas pipe
3.	Monitoring the Safe Injection of Biomethane into the Gas Distribution Grid
4.	Adhesive process for PE fittings
5.	Bagging-Off System for high pressure distribution pipes (4 bar)
6.	Systematic methodology for inspection and quality assessment of excavated pipe materials and joints after use
7.	Investigating (new) methods for safer gas flaring
8.	Technical assessment and optimisation of trenchless domestic service connections for existing housing stock
9.	Unconventional PE Pipe Laying Methods

Programme Committee:- Utilisation	
Projects in execution:	
1.	ECO-DESIGN - Gas equipment for eco-design directive
2.	GASQUAL - Gas interchangeability
Projects in preparation:	
1.	Gas equipment for eco-design directive
2.	Thermal energy storage of Gas heat pump and mCHP systems
3.	Methane number calculation

2. APPROXIMATE VALUE OF GERG PROGRAMME - BY PC, OCTOBER 2011

PC	Value (k€)	EC funding (k€)	% of total
General Studies	987	170	17.2
Transmission & Storage	1,903	715	37.6
Distribution*	1,332	0	0
Utilisation	2,914	1,427	49.0
Totals	7,136	2,312	32.4