



2010 Activity Report

I. Introduction

GERG has once again increased its membership, with twenty three members from thirteen countries, which is a remarkable increase over the past ten years. Paradoxically there has been a recent reduction in project activity, probably related to the economic crisis, but there are signs that this is a temporary situation.

II. General Matters

- Dr K Altfeld, E.ON Ruhrgas, was President of GERG during 2010;
- Mr T Williams, GL Noble Denton¹, was vice-President of GERG during 2010;
- Ms Trinidad Carretero replaced Ms M Beltran as the representative of Gas Natural in the Board/Plenary;
- Repsol, Spain, became a member of GERG in 2010. They are represented in the Board/Plenary by Mr Calogero Migliore.
- GASUM, Finland, became a member of GERG in 2010. They are represented in the Board/Plenary by Mrs Sari Siitonen.

III. Programme Committees

The Programme Committees each met twice in 2010; a list of their current and proposed projects is attached as an appendix to this report. They were chaired as follows:

- | | |
|-----------------------------|------------------------------|
| • 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 Groschl, DGW |

IV. GERG Secretariat

Mr D Pinchbeck was General Secretary of GERG during 2010.

¹ formerly known as Advantica

V. Highlights

- GERG, a founder member of ‘Knowledge 4 Innovation’, the K4I Forum of the European Parliament, had a major involvement in the preparations for the 2nd European Innovation Summit (EIS) in the European Parliament in early October 2010. GERG led the planning and preparation of the Session “Efficient Energy Provision”. The objective of the EIS is to provide contributions for the future development of Europe’s innovation policy, a key input into the FP8 planning process. The K4I Forum of the European Parliament is in a very good position to provide further input and take an active role in shaping the implementation of the proposed measures.

The GERG President, Dr K Altfeld, was responsible for moderating the "Efficient Energy Provision" of the Summit which included presentations from a number of prominent speakers, including MEPs. The conclusions of the session were presented, *inter alia*, during the Knowledge and Innovation Partnership reception, the EIS concluding event, to the newly appointed rapporteur for the Innovation Union proposal, MEP Judith Merkies, and other interested MEPs.

They are:

- In order to reduce CO2 emissions, contributions from all industries are very important and more collaboration between different actors is needed;
- Cost-benefit analysis is vital to judge most cost-efficient measures to reduce CO2 emission;
- Energy storage is increasingly important in particular for renewable electricity production (e.g. Conversion to hydrogen and feeding into existing gas infrastructure);
- Importance of commonly agreed metrics about energy efficiency/accurate comparison of different methods/standards;
- “Smart Subsidies”:
 - more and better tailored support for small innovative companies, “bottom-up approach”;
 - e.g. Smart metering: only for very initial phase, but should become self-sufficient as soon as possible.
- GERG held its 2nd Academic Network Event in Brussels in June 2010 to reinforce its academic network as a means of enlarging and strengthening links between selected universities and the European gas industry’s research centres.

The Academic Network is an opportunity for academics to:

- be a part of the gas industry’s contribution to a sustainable energy future;
- have closer links with gas industry experts across Europe;
- share knowledge & problems;
- be aware of international energy issues;
- publish papers and promote successful R&D.

Post-graduate students working towards a Ph. D. funded by, or relevant to, the gas industry were invited with their supervisors for the second year to present their work to a select audience made up of their peers, gas industry R&D experts and representatives from the EU institutions. Fifteen presentations were made and these can be seen on the GERG website: www.gerg.eu

The Event which once again proved very successful, with more than 60 attendees, comprised two days of very high quality presentations on research topics, with a convivial atmosphere for debate and discussion in the Radisson Blu hotel close to the Grand Place in Brussels.

The prizes for the best work, based on the criteria: Technical Quality, Innovation and the presentation itself, went to:

1st *Markus Richter*, Ruhr-Universität Bochum, Germany. “Feasibility Study for a new Densimeter for the Accurate Measurement of Densities of Liquefied Natural Gas”;

2nd *Shariff Lawal*, University of Leeds, UK. “Computational study of combustion in gas fired burners and flares: Structure and emission of a turbulent jet flame in cross-flow”;

3rd *Edwin Dertien*, University of Twente, Netherlands. “Development of an inspection robot for gas distribution mains – a Mars mission underground”.

The 2011 GERG Academic Network Event will be incorporated into the EGATEC2011 conference to be held in Copenhagen in May 2011. See: www.egatec2011.dk

- The Secretary continued his involvement in the following committees:
 - organising committee of the European Forum Gas (EFG 2009) conference, held in Loughborough, UK. in October 2010;
 - organising committee of EGATEC2011, formerly known as the European Forum Gas (EFG) conference, to be held in Copenhagen, Denmark in May, 2011;
 - IGU Task Force, TF1 - Building strategic human capital, which aims to address the shortage of talent in the industry, which is rapidly becoming a critical business issue. The Secretary made an invited on the GERG Academic Network at the TF meeting in Doha in October.
 - the EU-GCC (Gulf Coordination Council) Energy Experts Group, at the invitation of the European Commission's DG Energy.

- A number of articles have been written for publication:
 - "Collaborative Natural Gas R&D In Europe – The GERG Approach", Klaus Altfeld & Dave Pinchbeck. prepared for the early 2010 issue of GWF International (S1/2010), by K. Altfeld and D. Pinchbeck;
 - "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 will be published in early 2011;
 - "News from GERG – The European Gas Research Group" prepared for the early 2011 issue of GWF International, by K. Altfeld and D. Pinchbeck.

- The GERG Secretary has been actively involved in the final dissemination activities on the EU-funded GERG R&D project “ORFEUS - Optimised Radar to find every utility in the street” The final workshop took place at the headquarters of the Ordnance Survey, the UK mapping organisation, in February. The project has been a significant technical success and the partners are now working on plans to develop commercial products that will:
 - improve the range and resolution of conventional GPR;
 - provide a small rugged radar sensor and display system that will fit in the tip of an HDD drill or tunnelling device.

More detailed information is available at: www.orfeus-project.eu

- The GERG Board met twice during 2010:
 - Spring Rome, Italy;
 - Autumn Istanbul, Turkey.

VI. Members – 2010

- | | |
|------------------------------------|-----------------|
| • 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 |
| • Repsol | Spain |
| • Shell Global Solutions | The Netherlands |
| • Snam Rete Gas | Italy |
| • Statoil | Norway |
| • SVGW/SSIGE | Switzerland |
| • SYNERGRID | Belgium |

Appendix

GERG Activities Report – 2010

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. LEL value of natural gas |
| 4. Formation of elemental sulphur |
| 5. Development of density meter for LNG |
| |
| Projects in preparation: |
| 1. Impact on installations caused by siloxane present in biogas |
| 2. Correlative devices – Phase II (lab tests) |
| 3. Biogas analysis |
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| Programme Committee:- Transmission and Storage |
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| Projects in execution: |
| 1. Validation of ECDA (External Corrosion Direct Assessment) |
| 2. Long-range guided waves |
| 3. Inventory of natural gas emissions measurement method |
| 4. 'Integ-Risk' - Pipeline R.O.W. surveillance |
| 5. Friction-stir welding applied to pipeline steels |
| 6. C.A.T. (Compact Active Transponder) field evaluation |
| 7. Cathodic protection under AC/DC interference conditions (Ph. 2) |
| 8. FBE v. Polyethylene coating |
| 9. Inspection and test of two old concrete LNG tanks |
| 10. Performance of shock detection systems |
| |
| Projects in preparation: |
| 1. Decarbonising natural gas in distribution networks |
| 2. Improved ECDA survey methods |
| 3. Fibre-optic detection systems: on-site fingerprint tests |
| 4. Underground storage |
| |

| Programme Committee:- Distribution | |
|---|---|
| 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. | Technological and economical benchmark of plastic and steel pipeline systems for high pressure gas distribution systems |
| 4. | Gas dispersion in soil – tools to analyse situations at risk due to gas leakage in the soil (Phase 1) |
| 5. | Installation of new gas mains and service lines in new residential areas |
| Projects in preparation: | |
| 1. | Examining the Potential for Application of Micro-Electro-Mechanical Systems (MEMS) in Gas Distribution Systems |
| 2. | NDT techniques for existing (metal and plastic) gas pipelines (Ph 2) |
| 3. | Inspection of steel gas distribution lines : Detection capability and performances analysis of Long Range Guided Wave based on a developed standardized methodology |
| 4. | Natural Gas extraction unit for high pressure distribution pipes (4 bar) without digging hole |
| 5. | Vapour Extraction Unit in Emergency Response to control gas migration in soil |
| 6. | Improvement of Keyhole techniques – launching tee for visual inspection |
| 7. | Gas temperature metering (residential) |
| 8. | Testing behavioural effects of feedback and smart metering technologies |
| 9. | Decarbonising Natural Gas in Distribution Networks |
| 10. | New networks for (raw) biogas |
| 11. | Evaluation of the strain hardening method for PE Pipe materials |
| 12. | Developing a methodology for Assessing Geodata (Asset Data) of Gas Network Companies |
| 13. | Effect of re-rounding after squeezing off PE pipes |
| 14. | Real Options Analysis (ROA) as a modern instrument in future multi-gas network management |
| 15. | Internal Inspection System for Gas Grid using Autonomous Robots (PIRATE ISSGAR proposal) |
| 16. | Smart wear |
| 17. | Gas network geo -monitoring |
| 18. | Emergency response optimization |
| 19. | Validation of tapping and plugging equipment |
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| Programme Committee:- Utilisation | |
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| Projects in execution: | |
| 1. | ECO-DESIGN - Gas equipment for eco-design directive |
| 2. | GASQUAL - Gas interchangeability |
| 3. | LABNET |
| 4. | LABNET TQ – Quality mark |
| 5. | Micro-CHP & GHP standards |
| | |
| Projects in preparation: | |
| 1. | Methane octane number of NG |
| 2. | Small scale GHP development |
| 3. | Thermal storage |
| 4. | GHP workshop |
| | |

2. APPROXIMATE VALUE OF GERG PROGRAMME - BY PC, OCTOBER 2010

| PC | Value (k€) | EC funding (k€) | % of total |
|------------------------|-----------------------|----------------------------|-------------------|
| General Studies | 1,022 | 0 | 0 |
| Transmission & Storage | 2,246 | 715 | 31.8 |
| Distribution | 1,185 | 0 | 0 |
| Utilisation | 3,214 | 1,427 | 44.4 |
| Totals | 7,667 | 2,142 | 27.9 |