International Gas Union

Working Committee 4 – Distribution

Third Meeting

8th – 11th October 2013

Paris, France

Minutes of Meeting

List of Participants

1. Spohn, Dietmar – Germany WOC 4 Chairman
2. Almacellas Gonzalez, Jose Maria – Spain WOC 4 Vice Chairman
3. Klaas, Uwe – Germany WOC 4 Secretary

4. Broisler Oliver, Jose Carlos – Brazil Leader SG 4.1
5. Flosbach, Peter – Germany Leader SG 4.2
6. Vercamer, Pascal – France Leader SG 4.3

7. Somers, Rory – Ireland Vice Leader SG 4.2

8. Asada, Akiharu – Japan
9. Biederman, Nicholas – United States
10. Cagala, Libor – Czech Republic
11. Chaczykowski, Maciej – Poland
12. Chaintreuil, Benoit – France
13. Cimerman, Franc – Slovenia
14. Cordier, Remy – France
15. Demec, Peter – Slovakia
16. Drozdowski, Roch – France
17. Hakkoum, Mohamed – Algeria
18. Hassanine, Ahmedzine – Algeria
19. Hec, Daniel – MARCOGAZ
20. Herskind, Birgitte – Denmark
21. Hiranuma, Makoto – Japan
22. Jensen, Flemming – Denmark
23. Kraitongsuk, Thiranan – Thailand
24. Lambregts, Ben – The Netherlands
25. MacAll, Rosemary – United Kingdom
26. Pachernegg, Manfred – Austria
27. Piazza Junior, Walter Fernando – Brazil
28. Pulles, Kees – The Netherlands
29. Schicketmüller, Christian – Austria
30. Seong Kyeong, Hong – South Korea
31. Takahashi, Tohru – Japan
32. Thauvin, Catherine – France
33. Toriumi, Ryoichi – Japan
34. Tverskoy, Igor – Russia
35. Verbeek, Peter – The Netherlands
36. Vranken, Kim – Belgium
37. Wehnert, Paul – United States
38. Capela, Sandra – France (guest presenter)

Agenda item 1 - Welcome and Opening

Dietmar Spohn welcomes the participants to the fourth meeting of IGU WOC 4, thanks **Pascal Vercamer** for the kind invitation to Paris and opens the meeting. **Pascal Vercamer** welcomes the members of IGU WOC 4 in France and explains the French contributions to the meeting's agenda.

Agenda item 2 – Introduction of new members

There are some members attending for the first time a meeting of IGU WOC 3:

- Mr. Thiranan Kraitongsuk from Thailand;
- Mr. Manfred Pachernegg from Austria;
- Mrs. Catherine Thauvin from France;
- Mr. Paul Wehnert from the United States of America.

All participants of the meeting briefly introduce themselves.

Agenda item 3 – Adoption of the agenda

Mr. Spohn briefly explains the draft agenda for the meeting. This agenda is accepted by the members of the committee.

Agenda item 4 – Presentation AFG, the French Gas Association

Mrs. Madeleine Lafon from AFG's information and communication department gives a presentation about the French Gas Association AFG. After the presentation, a number of members forward some questions (Biedermann, Chaczykowski, Flosbach, Hakkoum, Klaas, Lambregts, Spohn and Vranken). **Mrs. Lafon** answers their widespread questions, giving some interesting information:

- For France, it is intended to replace 70 % of the natural gas consumption by biogas in 2050;
- For the future of LNG supplies, France has contracts with Algeria, Nigeria, Egypt and, for a smaller amount, Trinidad;
- For power production, natural gas in playing only a minor role in France where approx. 80 % of the electric power is produced in nuclear plants.
- The French national assembly has forbidden the development of shale gas fields.

Mr. Spohn thanks **Mrs. Lafon** for her informative presentation.

Agenda item 5 – Presentation GdF-Suez

This presentation is given by **Mr. Pascal Vercamer**, leader of SG 4.3. He informs about the profile of the group which features

- Electric power,
- Natural gas and
- Energy services.

No questions were asked at the end of the presentation. **Mr. Spohn** thanks **Mr. Vercamer** for the presentation.

Agenda item 6 – Presentation GrDF

This presentation is given for the first part by **Mr. Benoit Chaintreuil** and for the second part by **Mr. Roch Drozdowski**. GrDF is the largest gas distribution grid operator in France, with approx. 195 000 km of pipeline and a staff of 12 000 to look after it. GrDF was founded out of GdF on 1 January 2008.

After the presentation, members of the committee had the opportunity to ask some questions. **Mr. Biedermann** asked about the duration of the replacement program, **Mr. Flosbach** about the installation of smart meters for electric power and for gas. Some questions in the same field were raised by **Mr. Wehnert**, **Mr. Klaas** and **Mr. Hec**.

Agenda item 7 - Follow-up Time Schedule of WOC4 for the 2012 – 2015 Triennium

Mr. Klaas explains the committee's schedule for the current triennium:

Meeting	Proposed date	Meeting topics	Corresponding meeting of IGU-CC
1	9 – 12 Oct. 2012 Cologne / Germany	- Analyse study group topics - Define areas of study - Questionnaire framework - Intermediate deliverables framework	15 Oct. 2012 Ottawa, Canada
2	19 – 22 Mar. 2013 Sao Paulo / Brazil	- Work on intermediate deliverables (e.g. keywords, articles IGU newsletter)	9 – 11 Apr. 2013 Seville, Spain
3	8 – 11 Oct. 2013 Paris/France	- Analyse input for study group reports - First draft intermediate deliverables	23 Oct. 2013 Beijing, China
4	3 – 7 Mar. 2014 Madrid / Spain	- First draft WOC 4 report - Final draft intermediate deliverables	2 – 3 April 2014 Sydney, Australia
5	30 Sept. – 3 Oct. 2014 Vienna/Austria **New date!**	- Final draft WOC 4 report - Final intermediate deliverables - WGC preparation: Papers selection	15 Oct. 2014 Berlin, Germany
6	2 – 6 Mar. 2015 Location tba	- Presentation final WOC 4 report - WGC preparation	24 – 26 Mar. 2015 Cairo, Egypt (?)

Also, he explains the key milestones set by the IGU-CC which must be met by the committees:

Year	Date	Milestone/Venue	Event
2014	1st February	Call for papers	Issuing call for papers
	2nd April	Sydney, Australia	CC meeting
	July	Call for papers	reminder
	1st September	Call for papers	Abstract submission
	14th October	Berlin, Germany	CC meeting
	1st November	Call for papers	Final selection by Committees
	15th November	Call for papers	Author notification
2015	1st February	Call for papers	Full paper submission
	24th March	Cairo, Egypt (?)	CC meeting
	1st – 5th June	Paris	26th World Gas Conference

The conference will, besides opening and closing ceremony and the keynote speeches, feature three types of events:

Committee Session: "SG x.y Title" (in relation with the SG in charge and the ToR of the Group)

Objectives: In 5 to 10 lines

Content: In 5 to 10 lines

Recommended size of the room: 1000 / 500 / 350 /250 /150

Nota : the presentations would be selected from the "call for abstracts"

Expert Forum: "Title" (transversal topic different from the special panels and committee's sessions)

Overview: In 10 to 15 lines

Recommended size of the room: 1000 / 500 / 350 /250 /150

Special Panel: "Title"

Overview: In 15 to 25 lines, linking with the 4 Pillars

Recommended size of the room: 1000 / 500 / 350

Mr. Lambregts inquires about the size of the presentation rooms at the 26th World Gas Conference. They should be large enough to accommodate 200 participants. In principle , they are:

- Palais des Sports around : Plenary (1000 to 4000 pax)
- 1 room of around 500 pax : Amphi
- 1 room of around 475 pax
- 2 rooms of around 350 pax
- 2 rooms of around 240 pax
- 2 rooms of 150 pax

For the timing of the events, the IGU-CC proposes the following allocation:

Group	Sessions (CS & EF)	Group	Sessions (CS & EF)
WOC 1	5	PGC A	4
WOC 2	3	PGC B	4
WOC 3	4	PGC C	4
WOC 4	5	PGC D	5
WOC 5	5	PGC E	4
TF 1	3	PGC F	2
TF 2	2	Sub Total	23
TF3	1		
Sub Total	28	Total	51

The five sessions of IGU WOC 4 will be distributed over the entire time of the congress:

Day1: Tuesday	Day2: Wednesday		Day3: Thursday		Day4: Friday
Afternoon	Morning	Afternoon	Morning	Afternoon	Morning
WOC 4	WOC 1	WOC 1	WOC 1	WOC 1	WOC 1
TF2	WOC 2	TF1	TF2	WOC 2	WOC 2
WOC 3	WOC 3	WOC 4	TF1	WOC 3	WOC 3
WOC 5	TF 1	WOC 5	WOC 4	WOC 4	WOC 4
PGC C	WOC 5	PGC A	WOC 5	PGC B	WOC 5
PGC D	PGC A	PGC B	PGC A	PGC C	PGC A
PGC E	PGC C	PGC D	PGC B	PGC D	PGC B
PGC F	PGC D	PGC E	PGC C	PGC E	PGC D
TF 3	TWP	TWP	PGC E		PGC F

Agenda item 7 - SG 4.1: Regulation of Third Party Access to Gas Distribution Networks – A Standard Approach

Mr. Broisler Oliver explains the state of work progress of study group 4.1. He presents the study group's action plan for the third meeting.

The refined tasks for SG 4.1 are to:

- Present different experiences around the world regarding TPA legislations and regulation, stage of implementation and evolution,
  - Benefits
  - Problems
- Identify trends of TPA around the world
- Prepare a “World Map” of TPA
- Prepare “IGU guidelines” of TPA – to be referenced – instead a “IGU Network Code”
- *Contribution to the IGU magazine, by the second semester 2014*

For the current meeting, **Mr. Broisler Oliver** defines the following tasks:

- Sao Paulo homework evaluation
- Discussion of the study cases (US, UK, Thailand, Slovakia, South Korea)
- First evaluation of the raw material
- Key Inputs until now
- Structure of the final paper
- Key Words

Agenda item 8 - SG 4.2: Diversification of Gas Quality and Nonconventional Sources in a Carbon-free future

Mr. Flosbach explains the state of progress of study group 4.2. The plan of action of study group 4.2 may be summarized by the following prefaces for the study group's final report:

Objectives:

- Introduce new gas sources for securing long term competitiveness (greening the gas – CO_2 targets, economics)
- Enable the diversification of gas quality through advanced technologies
- Increasing injection of gases from non-conventional sources
- Development of strategies to determine and secure an acceptable gas quality range

Content:

- Different sources of supply due to short term contracts
- Change between pipeline-based and LNG-based supply
- Development of local gas fields (e.g. shale gas)

To underline the objectives and to appear more attractive to the audience at the 26th WGC, **Mr. Flosbach** proposes to reconsider the title of the working group respectively of its report and session.

For this study group, **Mr. Hec** proposes to start a liaison with WOC 5 because the injection of gases other than natural gas as well as the diversification of natural gas supply also states a challenge for gas appliances. The members of IGU WOC 4 agree with this proposal.

Agenda item 9 - SG 4.3: Smart Grids in Gas Distribution

Mr. Vercamer introduces the work progress of study group 4.3. This study group is evaluating a group internal questionnaire, with 93 questions and 25 projects featured. As major tasks for the third meeting, **Mr. Vercamer** defines:

- Identifying the objectives and priorities of the study group's report
- Development of a draft summary
- Start-up of the content of the report
- Development of a proposal for an expert forum thematically related to SG 4.3

Agenda item 10 – Member's presentations

Power to Gas

Mrs. Capela gives a presentation on "Power to Gas". The presentation is also embedded in the meeting's presentation slides. The linking of regenerative power production and the natural gas infrastructure is recently a much discussed issue in many countries, predominantly in Europe. The trigger to start this link is the fact that most ways to produce electric power by means of renewables (wind, solar) depend heavily on influences hardly to manage as e.g. the weather conditions. This leads to a lack of energy production when there is no wind or at night, but a surplus production at times when the energy is not needed. To buffer this and therefore enable the renewable sources of energy to cover base load needs, the idea is to use the surplus electric energy to produce hydrogen via electrolysis. This hydrogen can than, to some extent, be injected directly into the natural gas grid or, at larger amounts, be transformed into methane using a methanisation process and carbon dioxide.

The presentation is followed by some questions and comments from **Mr. Hec**, **Mr. Flosbach** and **Mr. Klaas**.

After this item of the agenda, the study groups had the opportunity to meet and work on their objectives. The meeting of IGU WOC 4 continues in the afternoon of the following day in order to collect the results of the study groups.

Shale gas development in Poland

Mr. Chaczykowski gives by presentation some information about the current development of shale gas reserves in Poland. Opposite to other countries in Europe where the production of shale gases either became forbidden by law (France) or raise massive protests of the local population if only the very idea of producing gas from shale formations by employment of fracking techniques, in Poland the exploration and production of shale gases has started in some regions.

Change of gas quality in Denmark

Mr. Jensen gives a presentation about the general change of the gas quality in Denmark. This became necessary due to the dwindling national gas reserves. These were of a very high calorific value so that all gas appliances were adjusted to it. However, with the need to import natural gas mainly via northern Germany other gases entered the Danish gas distribution systems. Those are still H-type natural gases, but with a significant lower calorific value and Wobbe-index. This change then caused the readjustment of all gas appliances installed in Denmark to that lower Wobbe-index.

Agenda item 11 – Frame structure of the committee report 2015

Mr. Klaas briefly presents the proposed structure of the entire committee report in which the study group report will be embedded:

0 Abstract (1/2 page)

1 Introduction (1 page)

2 Committee members (2 – 3 pages)

3 Committee Meetings (list, 1 page)

4 Topics of the Committee Report (brief introduction of study group topics, max. 3 pages)

5 Report of Study Group 4.1 “Regulation on Third Party Access to Gas Distribution Networks – A Standard Approach” (1 page header)

- 5.1 Introduction (1 – 2 pages)
- 5.2 Background and Purpose (1 – 2 pages)
- 5.3 …5.x Report text (30 – 40 pages)
- 5.y Conclusion (1 – 2 pages)
- 5.z Literature (2 – 4 pages)

6 Report of Study Group 4.2: "Diversification of Gas Quality and Non-conventional Sources in a Carbon-free Future"

- 6.1 Introduction (1 – 2 pages) …
- 6.2 Literature (2 – 4 pages)

7 Report of Study Group 4.3: “Smart Grids in Gas Distribution"

- 7.1 Introduction
  - 7.1.1 Background
  - 7.1.2 Purpose
  - 7.1.3 Definitions and Summary
- 7.3 Gas distribution systems
  - 7.3.1 Inlets
  - 7.3.2 Outlets
  - 7.3.3 Metering and regulating station
  - 7.3.4 Dispatching …
- 7.4 Best practices for smart grids
- 7.5 Conclusions
- 7.6 References

8 Conclusion and Perspectives

- 8.1 Conclusion (1 – 2 pages, by Committee Chairman)
- 8.2 Outlook (1 page, by Committee Vice-Chairman/Incoming Chairman)

9 Gratitude (1/2 page, by Committee Chairman)

Agenda item 12 - Presentation of results SG 4.1

Mr. Broisler Oliver presents the results of a rather fruitful meeting of study group 4.1. The presentation is embedded in the meeting's general presentation. The study group's objectives presented under agenda item 7 were met. As further results of the meeting, the following was achieved:

Key Inputs until now:

- TPA is clearly associated with:
  - Privatization and liberalization
  - Vertical Integration x Unbundling
  - Open access
  - Intent to increase competition, secure supply and cost & price reduction
  - Requires a very rigorous & comprehensive regulatory framework
  - It takes time to be implemented
  - Not always the intended objectives are achieved
  - Huge variation amongst regions and countries
  - Different stages of implementation
- Examples for all above items
- Future of TPA
  - Inevitable?

The following structure was defined for the study group 4.1 report:

- **Introduction:** terminology, definition, subject of the study, purpose of the report, overview about TPA models,
- **"TPA World Map"** according to the following regions & countries (basically considering the relevance of each one in terms of volumes of gas consumption, strategic position and market maturity):
  - European Union (UE): France, Germany, UK, Italy, Netherland and others
  - Russia
  - North America: mainly US

  - South America
  - East Asia: Japan and South Korea
  - Asia Pacific: Australia, Indonesia, Malaysia, Thailand
  - South Asia: India, Pakistan
  - North Africa: Algeria, Morocco, Tunisia, Egypt
  - Middle East: Saudi Arabia, Oman, Qatar, Emirates
  - Iran, Turkey

- **TPA on Distribution** (for each of the above regions included in the TPA World Map)
  - Model adopted – regulation and legislation
  - Objectives – explicit and implicit
  - What was done
  - Implementation timescale
  - Maturity level
  - Future tendencies
  - What was successful and unsuccessful x critical evaluation (quantitative and qualitative)
- **Description about the different models**
- **Conclusions**
- **"IGU guidelines" of TPA**

Agenda item 13 - Presentation of results SG 4.2

Mr. Flosbach presents the results of the meeting of SG 4.2 (Presentation slides embedded in meeting's general presentation). The study group will also concentrate on case studies based on the experience made in specific countries:

- LNG: France
- Shale gas: United States, Poland
- Change of gas quality: Denmark

Study group 4.2 formulated a new title for its work which should also be used as title for its session at the 26th WGC:

Revolution or evolution in gas quality into a Carbon-free Future

Under this title, the study group will cover the following activities:

- Current developments in respective home markets show an extremely heterogeneous situation regarding gas quality, regulation, political framework and smart gas technologies in the individual markets
- French case shows the benefits and the distribution system robustness for change between pipeline based and LNG-based supplies
- Shale gas (SG) experience report in the USA shows that SG is of course NG but “the devil is in the detail” and efforts technical standards and clear rules; limited impact on DNO infrastructure
- Europe is already “pregnant” in Shale Gas and will expect a first SG baby in Poland - big efforts have been made (48 test drills are completed)
- Danish experience in gas conversion shows the properly switch of variable gas qualities
- Task for WOC 4 members:
  Progressive scenario assessment & evaluation for the introduction of new gases

The frame for the session itself is defined by the following:

Objectives:

- Introduce new gas sources for securing long term competitiveness (greening the gas – CO2 targets, economics)
- Enable the diversification of gas quality through advanced technologies
- Increasing injection of gases from non-conventional sources
- Development of strategies to determine and secure an acceptable gas quality range

Content:

- Different sources of supply due to short term contracts
- Change between pipeline-based and LNG-based supply
- Development of local gas fields (e.g. shale gas)

Agenda item 14 - Presentation of results SG 4.3

Mr. Vercamer presents the results of the SG 4.3 meeting.

The study group report shall cover the following objectives:

- Help DNO managers to build a road map for the network of the future
- Give arguments to face and convince public authorities about the design of future gas networks
- Show that gas can be as smart as electricity and can be in sinergy with the other energies
- Smart is not the target- the target is to identify the best ways for the network of the future
- Highlight some cases where smart gas grids are useful and efficient

The study group has developed a first outline of its report's structure:

1 Introduction: Why a sub Group on SGG? - (1 page)

2 Definition of smart Gas grids - *to be formulated by Daniel HEC* (1 page)

Connection with smart metering, with electricity smart grids etc…

3 Main challenges (5 pages + 10 pages of technological blocks)

- accept new gases
- improve the performance of the DNO for safety, maintenance, reactivity (remote monitoring and surveillance, maintenance and operation memory, customer information, energy balancing,…)
- Remote monitoring : safety & continuity of supply b) customer information c) information management
- bring a support to other energy systems for a more efficient and less expensive energy, local energy storage

4 Feedback – case studies – case for green and efficient networks (10 pages)

5 Summary matrix (2 pages)

6 Perspectives and keys for success (2 pages)

Priorities for the deliverables for the report also have been assigned:

1. **Biogas** – NL
2. **P2G** – FR
3. **Innovative maintenance** – USA (methane sensors, drones, leakage detection), NL (robots, satellites), FR (nanotechnologies), NL (underground / temporary sensors)
4. **Information management** – JP (remote monitoring / control of the gas grid) – IGU (data management) – UK? (information management system – deliver information, process strategy and exploit information/value creation) – CR (remote monitoring, info management, conditional maintenance)
5. **Hardware** (devices to retrieve information and react upon solicitation) – UK, Denmark
6. **NGV –** Pakistan, Algeria
7. **Storage –** gas storage in MP grids (NL)
8. **MicroCogé, Fuel Cells** - JP

9. **Smart metering –** European Commission CBA report / Marcogaz – balancing application? – small developments to mention (smart appliances, smart metering data applications, gas quality / pressure sensors / value added services for end-user)

Agenda item 15 - Wrap-Up of today's results

Mr. Spohn thanks the presenters of the reports and all the study group members for their contribution. He thanks also for the good progress made in each working group.

Mr. Klaas will present the key issues to the IGU-CC at its next meeting on 22nd October 2013 in Beijing, China.

Agenda item 16 - Preparation of the Next Meeting

Mr. Almacellas invites the members and alternate members of IGU WOC 4 to attend the 4th meeting of IGU WOC 4. For the meeting, the following will apply:

4th Meeting of IGU WOC 4

4 – 7 March 2014

Madrid /Spain

at

The Wellington Hotel

Calle Velazquez 8

Agenda item 17 - Any Other Business

- **Contributions for the IGU Newsletter**

Mr. Flosbach delivered in time the first contribution for the IGU newsletter.

Mr. Spohn reminds the members of the other study group leaders to regard the time lines set for the delivery of their articles:

- June 2014: Vercamer/Vallender on SG 4.3 issues
- December 2014: Broisler Oliver on SG 4.1 issues

Agenda item 18 – Information on the progress in preparing the 26th World Gas Conference

Mr. Liens, Chairman IGU-CC, gives a presentation demonstrating the progress in organizing the 26th World Gas Conference which will take place 5th to 9th June 2015 at the Port de Versailles exhibition and conference center in the south of Paris. It also gives a general overview of the outlay of the technical program, reminding at the four columns for the contribution characteristics.

Agenda item 19 – **End of Meeting**

Mr. Spohn thanks the participants for their undivided attention and contributions to the meetings of both, the study groups and the plenary, thanks again the French hosts for the perfect organization of the meeting including the delightful evening invitations, and declares the meeting as closed.