International Gas Union

Working Committee 4 – Distribution

Second Meeting

19th – 22nd March 2013

São Paulo, Brazil

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. Catela Pequeno, Jose Francisco Quinta – Portugal Vice Leader SG 4.1
8. Somers, Rory – Ireland Vice Leader SG 4.2
9. Vallender, Steven – United Kingdom Vice Leader SG 4.3

10. Asada, Akiharu – Japan SG 4.3
11. Babazadeh, Behzad – Iran SG 4.3
12. Biederman, Nicholas – United States SG 4.1
13. Chaczykowski, Maciej – Poland SG 4.2
14. Chaintreuil, Benoit – France SG 4.1
15. Charrua de Sousa, Gabriel Nuno – Portugal SG 4.1
16. Cimerman, Franc – Slovenia SG 4.1
17. Drozdowski, Roch – France SG 4.3
18. Dyuzheva, Anna – Russia SG 4.1
19. Hassanine, Ahmed Zine – Algeria SG 4.3
20. Hec, Daniel – MARCOGAZ SG 4.3
21. Herskind, Birgitte – Denmark SG 4.3
22. Hiranuma, Makoto – Japan SG 4.1
23. Jensen, Flemming – Denmark SG 4.2
24. Klimenko, Vladimir – Russian Federation SG 4.2
25. Krisnakri, Wijuck – Thailand SG 4.1
26. Lambregts, Ben – The Netherlands SG 4.3
27. McAll, Rosemary – United Kingdom SG 4.1
28. Piazza Junior, Walter Fernando – Brazil SG 4.1
29. Pulles, Kees – The Netherlands SG 4.3
30. Schicketmüller, Christian – Austria SG 4.2
31. Sheikhbahaie. Mojtaba – Iran SG 4.3
32. Takahashi, Tohru – Japan SG 4.2
33. Toriumi, Ryoichi – Japan SG 4.3
34. Tverskoy, Igor – Russia SG 4.1
35. Warsi, Shoiab – Pakistan SG 4.3

36. Zhur, Anna – Russia, SG 4.1

37. Ceccarini Castilho, Diego – Brazil
38. Domenech, Luis – Brazil
39 Gasparetto, Alex Sandro – Brazil
40. Guimarães, Luis Henrique - Brazil
41. Luiz Silva, Sergio – Brazil

42. Mesquita Villela, João Paulo – Brazil

43. Solomon, Augusto – Brazil

Agenda item 1 - Welcome and Opening

Dietmar Spohn welcomes the participants to the first meeting of IGU WOC 4, thanks **Jose Carlos Broisler Oliver** and **Walter Piazza** for the kind invitation to São Paulo and opens the meeting. **Jose Carlos Broisler Oliver** welcomes the members of IGU WOC 4 in Brazil and briefs them on the hotel's safety and security.

Agenda item 2 - Presentation "Brazilian Gas Association"

Luis Domenech, CEO of Commgas, President of ABÉGAS and member of the IGU Executive Committee, gives an informative presentation about the Brazilian gas association, ABÉGAS.

In total, there are currently 27 gas distribution companies, 22 thereof operative. Abégas was founded in 1990 and is thus a relatively young association. In Brazil, concessions for gas distribution are issued by the respective federal state where the distribution grid is located, whilst gas production and transport are under federal regulation.

Mr. Flosbach asks about the structure of ownership of the gas distribution companies. 4 of the companies are completely private owned, 7 are of mixed state and private property, the remainders are public companies under state control.

As a consequence to the draught in Brazil in 2012 and the resulting lack of hydropower there is a steep increase in gas consumption for power production. The 2nd largest consumer sector is the industry, a market which also shows a good increase. The objective is to nearly double gas sales to industry by 2020.

The CNG market, however, is slightly decreasing, suffering from competition by ethanol and lacking governmental support. The question of Mr**. Drozdowski** about the figures is that the NGV population is approx. 200 000, thereof 140 000 in the São Paulo region.

The residential and commercial market for natural gas in Brazil is only little developed, each of them approx. 3 % of the industrial market. However, the market development started, and Comgas alone enjoys 100 000 new customers per year.

The total consumption of natural gas in 2013 is approx. 70 Million m³ per day, and the objective is a total growth up to 100 Million m³/day in 2020.

Mr. Hec inquires about the discussion between fossil renewable and fossil fuels. **Mr. Domenech** answers that natural gas is regarded as a new way to replace less clean fuels which includes wood, and it is seen as a chance to lower the energy imports to Brazil.

Mr. Krisnakrl asks for the environmental aspects of network enlargement, in particular for the approval procedure. **Mr. Domenech** answers that the regulatory frame for Brazil is similar to that in Europe. New projects must comply with a large number of federal and state regulations. Regarding these conditions, Comgas is nevertheless constructing approx. 1300 km pipeline per year.

Agenda item 3 - Presentation Petrobrás

Mr. Gasparetto gives a presentation about Petrobrás, the largest exploration and production company for natural gas in Brazil, showing the development of the natural gas market supply and demand of the country. Besides on- and predominantly offshore gas developments, the company is also investing in import facilities for LNG. Two LNG terminals being ready and operative, a third terminal will be finished in construction by the end of 2013.

Mr. Vercamer remarks that some international pipelines appear not connected. This is the case for some of the pipelines. However, the hardware is installed, e.g. for the pipeline to Chile.

Mr. Hec asks if there is a South-American gas association. However, this doesn't exist yet. The reason is that particular some countries in the west of South America do not want to cooperate because of political objections.

Agenda item 4 – Presentation Comgás

Mr. Luiz da Silva, Director Vice President of Comgás, gives a presentation about the distribution company in São Paulo state, the "Companhia do Gaís do São Paulo", briefly Comgás. The city of São Paulo in brief figures are:

- 29,6 million inhabitants;
- living in 9,6 million homes;
- driving 10 million vehicles;
- earning 27 % of the Brazilian net social income;
- consuming 36 % of the Brazilian energy.

The company acquires approx. 100 000 new customers per annum. To supply them, it builds between 1200 and 1300 km of new pipelines.

Mr. Jensen asks about the company's safety measures. The approx. 5 000 employees of Comgás and the personnel of contract companies experience professional training on a

regular basis. Once per month the Comgás board holds a meeting with the contractor companies, and a formatted reporting system is installed. in case of incidents, contractors will lose bonus payments they would receive otherwise.

Mr. Spohn thanks the presenters for their information about the Brazilian gas industry.

Agenda item 5 - Adoption of agenda

The agenda is adopted without any amendment.

Mr. Biederman asks for possibilities to install a liaison to IGU PGC F "Research & Development". This shall be discussed under "Any other business".

Agenda item 6 - Brief introduction of Members

Each participant briefly introduces her or himself. **Mr. Spohn** asks each member to forward a recent portrait photo to the secretary in order to place an illustrated members list of the committee onto the working committee's homepage.

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 **New date!**	- 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	25 – 27 Mar. 2014 Brisbane, Australia
5	30 Sept. – 03 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

Mr. Vercamer informs about the third committee meeting. Compared to the original planning, it had to be postponed for a week, now taking place in the second week of October. The location of the meeting will most likely be the hotel Concorde Lafayette, adjacent to the Porte Maillot congress center in the west of central Paris.

Agenda item 7 - Introduction of 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 action plan for the second meeting and is optimistic that sufficient data can be gained within the study group so that no external questionnaire will be required.

The tasks for SG 4.1 are:

- Examination of the development of regulation over the last decade in different countries
  - Access of gases other than natural gas
  - Development of marketing/charging areas
  - Change of energy balancing and transfer options for costs
  - Unbundling of distribution companies
  - Training and qualification of personnel
- Preparation of an “IGU Network Code”

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

Mr. Flosbach introduces the state of progress of study group 4.2. This study group examines the increasing influence of gases other than natural gas accessing distribution networks and how the network operators can cope with such changes in gas quality. Thus, the action of study group 4.2 may be summarized by the following prefaces:

- Increasing diversification of gas quality
  - 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)
- Increasing injection of gases from non-conventional sources in a carbon-free future
  - Biomethane
  - Hydrogen
  - SNG

- Examination of options to secure a stable gas quality

Mr. Flosbach gives a presentation about the work progress details achieved in and after the first meeting of SG 4.2:

- Analysis of the initial status of the diversification of gas quality in selected countries (Europe, Russia, US and other markets would be desirable)
- Opportunities to exploit the gas composition ranges more efficiently incl. recommended measures (hardware, software & system intelligence)
- Development of supra-regional standards to promote the implementation of new & innovative technologies
- Analysis of the individual renewable gases and evaluation of the impact on DNO infrastructures and consumer applications
- Determination of acceptable concentrations of renewable gases for the injection in distribution grids
- Development of a roadmap for the preferred evolutionary steps towards a carbon-free future from the DNO perspective
- Development of marketing concept to illustrate the added value by DNOs into a Carbon-free Future

Some of the ideas are already followed up, as the slide presentation shows. It is embedded into the meeting's slide presentation which can be downloaded from the IGU WOC 4 homepage.

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

Mr. Vercamer introduces the work progress of study group 4.3. This study group is anticipating a group internal questionnaire, but no questionnaire to be forwarded to all IGU members. In his brief presentation, the progress details are given as:

- Definition of high level functionalities of the Smart Gas Grids
- First set of assessment criteria / scoring matrix for functionalities
- Exchanges about national or continental approaches about smart gas grids – first set of examples
- No questionnaire is needed
- SG 4.3 will ask IGU members for national or continental position papers on smart gas grid concepts and examples of smart gas grids projects

For the meeting in São Paulo, the study group made some prefixes:

Three main directions of discussion:

- Smart Gas Grids for the energy provider: a useful tool for facilitating Power to Gas?
- Smart Gas Grids for the DNO: what economic, social (ex: safety), and technical benefits for gas network operators in having a much more automated and interactive Gas grid?

- Smart Gas Grids for the image of Gas industry: how to communicate about smart gas grids (is it the good name?) regarding what is done in electricity

Apply Sao Paulo's motto: *Non ducor, duco* *(I am not behind a leader, I am the leader)*

Also, the presentation of SG 4.3 is embedded in the meeting's presentation slides.

Agenda item 10 - Member's presentation

Mr. Hec gives a presentation prepared by **Anne Prieur-Vernat**, study leader of IGU study group A.3, on life cycle analysis. The presentation is also embedded in the meeting's presentation slides. Basically, SG A.3 is preparing a questionnaire which will be sent to all IGU working committees, IGU PGC A and IGU SG D.4. From the data obtained, a life cycle analysis will be performed based on ISO 14040 and ISO 14044. The data are expected at SG A.3 by the end of June. For detailed information, Mrs. Prieur-Vernat should be contacted: anne.prieur-vernat@gdfsuez.com.

Feldfunk

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 d in the afternoon of the following day in order to collect the results of the study groups.

Agenda item 11 - 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 meeting was used for intensive discussion, with the following results:

- VERY GOOD discussions about TPA and its applicability, law and regulation, real benefits, terminology, etc.
- Evaluation of the "raw material" produced until now
- Discussion of "Case Studies" from:
  - France
  - Japan
  - USA
  - Russia – Transmission
  - Brazil
- "Provisional" definition of TPA
- Defining the next steps & homework
- Clarification of the "Final Product"

In course of the study group meeting, a definition for third party access to distribution networks has been formulated:

"Third party access can be described:

- Customers being able to use a system to deliver gas for their own use or for resale from a source of gas of their choice

- Suppliers or producers being able to use a system to deliver gas for sale to customers"

By the end of May 2013, the members of SG 4.1are asked to provide details for the TPA and its accompanying regulation in their country, but also any other member of IGU WOC 4 is invited to provide such data.

By the end of the meeting, SG 4.1 had postulated its final objectives for this triennium:

- Present different experiences around the world regarding TPA legislation and regulation, stage of implementation and evolution
- Indicate impacts of the cases analyzed
- Identify trends of the TPA around the world
- Prepare a "World Map of TPA"
- Prepare "IGU guidelines" – to be referenced - instead of a "IGU network code" (prescriptive)

In particular the last item is highlighted: the IGU has no legislative power and is not entitled to produce a network code as a technical association could be asked for e.g. by a national government. However, IGU documents are used worldwide as guidance for the gas industry to act as a social responsible entity, and in this spirit SG 4.1 will prepare an IGU guideline on TPA.

Agenda item 12 - 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 has been developing a four-phases-plan of action:

- Phase 1. Analysis.
  - Decreasing public-& governmental acceptance of NG as fossil fuel
  - "Greening" promotes new image of natural gas
  - Chance to contribute to Kyoto target
  - Chance to develop additional gas demand
- Phase 2: Finding new solutions:
  - "New gases"
    - Biogas (only in combination with CHP)
    - Bio methane to grid
    - Hydrogen
    - Synthetic (SNG)
    - Shale gas
  - "New technologies" (SG 4.3)
    - smart appliances
    - smart grids

- Phase 3: Assessment and evaluation
  - Scenario assessment for the introduction of renewable gases
- Phase 4: Plan for implementation
  - Development of action plan
  - Marketing concept
  - ToDo list

Study group 4.2 is already amidst phases 1 and 2:

- Biggest challenge is to manage the increasing complexity and to guarantee the competitiveness of natural gas versus other fuels!
- The increasing demand of electricity storage capacity is a real challenge
- Evaluation of possible impact of new gas mixtures on gas grid infrastructure
- Determination of acceptable concentrations for the injection of renewable gases
- Gas composition ranges, within specifications, have to be exploited

Also, for phase 4 ideas have been collected:

- Standardization of specifications for gas quality in the individual markets (e.g. CEN/TC 234 for Europe)
- Global strategy for research on gas infrastructures need to be implemented (incl. acceptable levels, measures, timeline, etc.)
- Standardization of application technologies in co-operation with the appliance industry in order to develop efficient but flexible applications
- Develop projects (e.g. P2G) to support mature technology implementation
- Co-operation with new market participants (e.g. biogas producers, hydrogen industry, etc.) to ensure gas quality compliance
- Develop an adequate regulatory framework
  - costs need to be included in the regulatory tariff
  - stable investment conditions for producers and DSOs,

with some aspects addressing the gas industry in particular:

- Development of a marketing concept (to be checked by PGC-E)
- Convince decision makers & customers
- Guarantee stable gas quality in line with the specification
- Sharing experiences with new technologies (e.g. P2G)
- Reduction of the overall CO_2 balance
- Promote new appliances in cooperation with industry partners

- Develop gas infrastructures to support renewable gases
- Develop “green” commodity products (consultancy to retail industry)
- Security of supply
    - long term together with shale gas
    - proven reserves exceeding 100 years

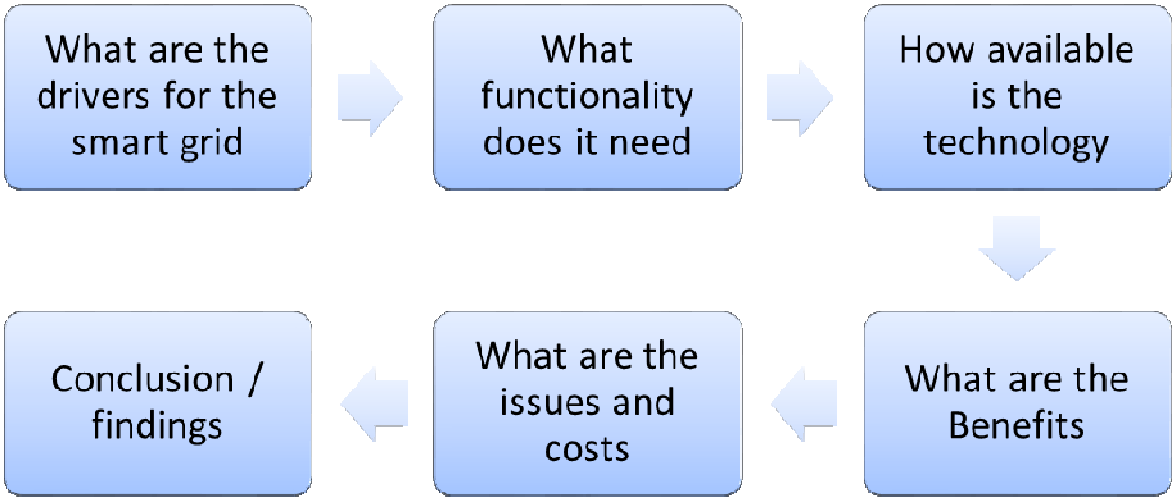
Agenda item 13 - Presentation of results SG 4.3

Deputizing **Mr. Vercamer**, **Mr. Drozdowski** presents the results of the SG 4.3 meeting.

The study group has currently members from 7 countries: Algeria, Denmark, France, Iran, Japan, the Netherlands and Pakistan. The study group started with some definition work to get a common understanding of a "smart grid", including some philosophical excurse about the origin of the expression "smart", the drivers for a smart grid and finally what makes a grid a smart grid. This yields something like the definition of a smart gas grid:

- **Smart Gas Grids**: **gas distribution** and **ICT** sector cooperation.
- To answer society needs improve **efficiency** of DNO core business
- To develop ability of the gas distribution network to **interact** with other networks
- Towards **Smart Energy Networks,** assuring:
    - Security of supply,
    - Sustainability,
    - Affordability,
    - Availability

After defining which elements would contribute to a smart gas grid – the study group identified 12 of them – and how to share the best practices applied, study group 4.3 already outlines the content of its report:



To get there, the following strategy is envisaged:

1. Define the strategy
2. Building block identification
3. Dig into the details / best practices sharing through the dedicated questionnaire
4. Build a technological roadmap
5. Forge a world vision of future of gas distribution networks

Agenda item 14 - Wrap-Up of today's results including keywords for Call for Contributions

Mr. Spohn thanks the presenters of the reports and all the study group members for their contribution. He acknowledges the good progress made in each working group as presented and will present the key issues to the IGU-CC at its next meeting on 9th April 2013 in Seville, Spain. **Mr. Klaas** will prepare the presentation for the IGU-CC.

The members of the committee and the study groups are asked to develop some keywords for the "Call for Contributions" for the 26th World Gas Conference. This will be issued in February 2014. In order to prepare it and also to steer in some way the subjects of contributions forwarded the IGU asks the committees for some keywords for the orientation of the perspective authors. Proposals for the conference program must then be forwarded by 1st September 2014.

Agenda item 15 - Preparation of the Next Meeting

The introduction of the next meeting has already been done by **Mr. Vercamer** under agenda item 6. However, here once more the meeting data:

3rd Meeting of IGU WOC 4

8 – 11 October 2013

Paris /France

at the

Hotel Concorde Lafayette

3, Place du Général König

Agenda item 16 - Any Other Business

- **Contributions for the IGU Newsletter**

Mr. Spohn reminds the members of the committee that also IGU WOC 4 is requested to provide input in shape of articles and/or photos to the IGU Newsletter which is published twice a year. After brief discussion it is decided to produce an article on the work of each study group. The three articles shall be delivered by:

- June 2013: Flosbach/Klaas on SG 4.2 issues
- June 2014: Vercamer/Vallender on SG 4.3 issues
- December 2014: Broisler Oliver on SG 4.1 issues

However, this shall by no means distract any member of IGU WOC 4 to forward a proposal for an article on her or his own on gas distribution issues.

- **Liaisons with other committees**

Upon proposal of **Mr. Biederman**, IGU WOC 4 will apply for an official liaison with IGU PGC F. During the meeting, a number of gaps of knowledge and therefore subjects for gas research work were identified as e.g. third party access including gases other than natural gas, development of a smart gas grid to a smart energy supply system etc... Volunteering to take this position, **Mr. Biederman** is elected unanonimously as perspective liaison officer to IGU PGC F, also because the chairman and secretary of IGU PGC F are based in the U.S.A.

- **EGATEC 2013 in Paris**

Mr. Hec informs about the oncoming European gas research conference EGATEC 2013 which will take place in Paris/France on 30 and 31 May 2013. More information including a detailed conference program is available in the internet at:

Agenda item 17 - End of Meeting

Mr. Spohn thanks the participants of the meeting for the attention and work by contributing to the meetings of both, the study groups and the plenary, thanks again the Brazilian hosts for the perfect organization of the meeting including the evening invitations, and declares the meeting as closed.