

Grant agreement no. EIE/06/078/SI2.447511

Project acronym: **Gasification Guide**

Full title of the action: Guideline for safe and eco-friendly biomass gasification

Intelligent Energy – Europe (IEE)

Key action: ALTENER



## MINUTES

### Public “German” Workshop EU-Project Gasification Guide

Date: Thursday 29th January 2009

Venue: Stuttgart, Germany

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BTG biomass technology group BV  
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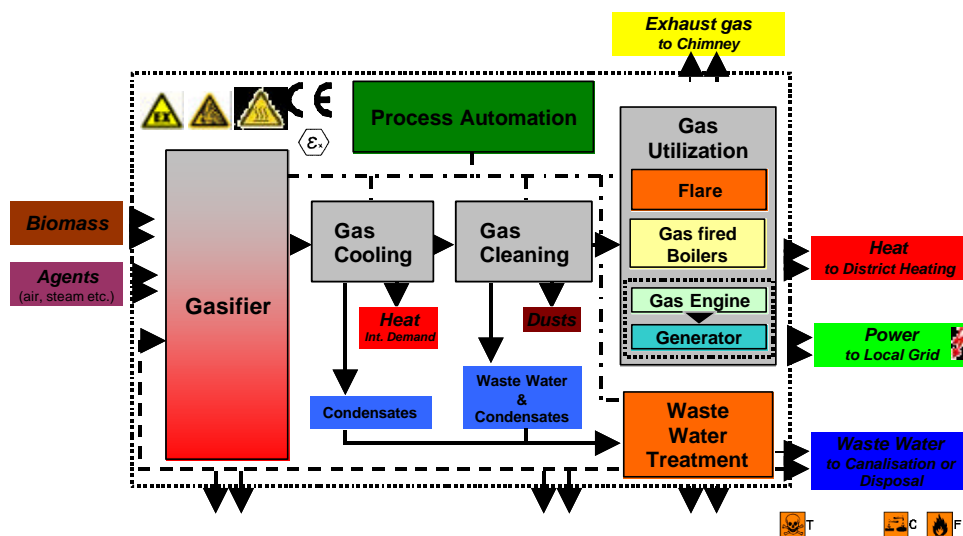
Eberhard Oettel  
Fördergesellschaft Erneuerbare  
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The project is co-funded by the European Commission.

# 1 Introduction

Biomass gasification is considered a promising technology that can contribute significantly to renewable energy. The technology is close to commercialisation but large-scale implementation is hampered by the poor awareness and lack of understanding of Health, Safety and Environment (HSE) issues; authorities tend to impose unrealistic and costly requirements on gasification plants. A broadly accepted HSE guideline would effectively tackle this barrier. The main objective is to accelerate the market uptake of biomass gasification technology by developing a guideline that is accepted by relevant target groups and key market actors. The HSE project will result in a Guideline and a Software Tool for easy and systematic assessment of HSE hazards in biomass gasification plants. This can be used in designing more safe and eco-friendly equipment, in the construction of plants, and in the operation and maintenance procedures. A draft version of the Guideline (in English, French and German) and Software Tool is ready and can be obtained through the website [www.gasification-guide.eu](http://www.gasification-guide.eu).

The whole process chain of a gasification plant has been considered in the risk assessment, the main potential Health & Safety hazards are illustrated in Figure 1.



**Figure 1:** Potential Health & Safety hazards of Biomass Gasification plants

During the Gasification Guide project, several workshops are planned to be held, amongst others a dedicated "German" workshop. This workshop was held on 29<sup>th</sup> January 2009 in Stuttgart, organized by FEE, Fördergesellschaft Erneuerbare Energien e.V. (Society for the Promotion of Renewable Energy) who is subcontracted by the project partner Technical University of Vienna, and was further supported by REECO GmbH, socio of FEE. The public workshop was linked with the "3rd International Conference on Application of Biomass Gasification" (ICABG, 30<sup>th</sup> January 2009, 125 participants, organized by FEE, too) where only manufacturers present their papers who had already delivered plants to their clients. The Gasification Guide Project had been presented already to the 2<sup>nd</sup> ICABG, March 2008, Stuttgart, about 100 attendees) as a highly promising instrument to accelerate

market penetration of biomass gasification (BMG). At the 3<sup>rd</sup> ICAPG Gasification guide not only served as one of the strategic pillars of the whole conference where the operational state-of-the-art of the project, its conclusions and next steps to go had been presented, but in preparation to it FEE asked the speakers to treat in their presentations also aspects of permitting practice and HSE. (see annexed program). Both, the Gasification Guide Workshop and the Conference were embedded into the annual CEP® Clean Energy Power Conference and Exhibition which has been conducted by REECO GmbH, so far in Berlin and Stuttgart.

The workshop aimed to an in-depth intensive exchange of knowledge and experiences between concerned parties. The organisers wanted to:

- provide a platform to technology and market pioneers to pave the path into the European market,
- discuss the drafts of the Gasification Guide, the special software and checklists with experts, manufacturers, operators, experienced in permission planning engineers and representatives from permitting authorities from several countries.
- offer operators - who are ready to take the early risk - opportunities for exchange of know-how,
- give potential investors security and to convince them, time to act has come, now,
- stipulate authorities to improve permitting practice,
- call on related industrial, scientific and social forces to involve themselves into surmounting existing or new obstacles and meet the challenges for a rapid breakthrough to market dissemination,
- reach a consensus on all controversial items in the draft Guideline and the feedback from the audience on these aspects, which could be a useful tool to get those issues clarified.

## **2 Intensive, stepwise preparation of the German GG-Workshop programme and attendees**

The HSE subject is already on the agenda of international networks since early 2000. This back-up support from recognised international experts in biomass gasification was an important reason to the EC to support this project financially. The idea behind the project, the history, the importance and the objective have been presented in earlier events by Mr. Ruedi Bühler from Switzerland, member of the IEA Bioenergy Task 33 on Biomass Gasification. FEE supported the need and called for a joint project. Unfortunately, FEE was not able to participate in the project as a direct contracting party, as a non-profit organisation it was not able to contribute with own financial resources to the expenses.

The lack of awareness of HSE related safety issues is an important barrier for the deployment of biomass gasification technology, but it should not be generalized to all target groups, and manufacturers in particular.

The workshop was carefully prepared.

Preparation already started at the 2<sup>nd</sup> International Conference on Application of Biomass Gasification in 2007, when Mr. Harrie Knoef was invited in his oral presentation on “State-of-the-art of Gasification in the European Union” to call for “Needs for Creating Favourable Conditions”, FEE identified missing, contradictory and not uniform permitting conditions in the European Union, in its Member-States and even in some countries as a severe obstacle for further development of

application of biomass gasification for combined heat and power generation, and Mr. Dr. Reinhard Rauch for Technical University of Vienna in his concluding remarks pointed to improving permitting procedures for acceleration of market penetration of BMG.

It was continued by two extraordinary meetings of the national Task Group of FEE “Gasification of Biomass” with manufacturers of BMG plants and main components. The first was conducted at the Pirna test site of Technical University of Dresden in February 2008. This internal meeting was aimed to inform on the Gasification Guide Project, to ask manufacturers to report on their experiences with permitting processes, and to give an insight into individual solutions of HSE problems, to exchange of experiences between manufacturers-researchers and planning engineers and finally instruct the participants on the machine guideline. The main target, to mobilize the German manufacturers for collaboration in elaboration and discussion of the findings of the Gasification Guide project group could be achieved. The participants could visit the test reactor for the first ever cooling of producer gas by using the fluidised bed gasification technology and combining it with tar cleaning by charcoal from the gasification vessel.

The second in line meeting to the German Gasification Guide workshop was organized as the 4th FEE-meeting of manufacturers in August last year with Stadtwerke Rosenheim GmbH & Co. KG, socio of FEE, for mutual consulting between the EU-Project group and 39 German and international manufacturers and experts. The manufacturers came from Austria, Germany and Switzerland and represented in total 20 different BMG plant technologies. It had been a first intensive exchange of expertise between the GG-PG and manufacturers on the basis of the than draft of the guideline, that could be improved in several point.

Two additional results were:

1 The utility Stadtwerke Rosenheim as an operator of an in-town waste incineration plant with its enormous experiences in permitting processes contributed to the success of the meeting. The utility granted

- 1.1. a checklist for evaluating potential hazards of a BMG plant
- 1.2. a draft of a feasibility study on technical security regarding explosive pressures and boundary concentration of oxygen of an operating BMG plant

2 Several partners with best practice knowledge on measuring agreed to collaborate for jointly finding long-term reliable and cost-effective solutions.

The participants outlines the importance to elaborate not only in Germany but all over the European Union special and uniform rules for HSE and the permitting procedures.

Stadtwerke Rosenheim, Engineering company TOC, also socio of FEE, and FEE agreed to start joint preparations for a training course on permitting procedures, HSE aspects to be offered to manufactures, planning and permitting engineers. They are ready for further cooperation with GG-PG and disseminate the results of the Gasification Guide to the German professionals.

All three achievements might be regarded as hard core indicators for the success. Dipl.-Ing. Ruedi Bühler (CH), Dipl.-Ing. Martin Hauth (AT) and Dr.-Ing. Ulrich Seifert summarized the results in minutes.

### **3 German GG-Workshop programme and attendees**

In the morning session (led by Mr. Eberhard Oettel, DE, and the discussion by Mr. Prof. Dr. Dipl.-Ing. Hermann Hofbauer, AT), the focus was on presenting the draft

Guideline, while the afternoon session (led by Mr. Dr.-Ing. Ulrich Seifert, DE, and Mr. Prof. Björn Kjellström, SE) was dedicated to permitting issues and experiences from existing biomass gasifier plants. The agenda is attached in Annex A. Over 500 persons were invited to the event and 55 people from 8 nationalities attended the workshop, see Annex B.

The workshop was offered in both languages German and English and interpreted vice-versa.

All presentations will be made available from the project website [www.gasification-guide.eu](http://www.gasification-guide.eu)

## Overview of presentations

### 3.1 Presentation of the Latest Version of Gasification Guide

Mr. John Vos, BTG, (NL) presented an overview of the project explaining the work plan and status of the project. An important support to the project team is the external Advisory Group, which contains over 20 international experts from all over the world. The presentation included some major and remarkable results from the case studies and the main dissemination activities completed so far. The project is on schedule and no delays are expected to happen in the remaining period of the project.

### 3.2 Presentation of the Software Tool

On behalf of the Institute of Heat Engineering of Technical University of Graz, Mr. Dipl.-Ing. Thomas Kienberger (AT) presented the software tool “Risk Analyser”, its content and value, operational instruction, possibilities to evaluate hazards and take countermeasures, reporting and documentation. A database of hazards is already integrated and will be extended, furthermore. The software might be downloaded free of charge from the project website [www.gasification-guide.eu](http://www.gasification-guide.eu).

### 3.3 Risk Analysis by Insurance Agencies

Mr. Dipl.-Ing. Ruedi Bühler (CH) introduced a new aspect and tool by presenting the risk analysing procedures of the “Group Risk Engineering” of the Züricher Insurance. Wood gasification plants are included into this tool. It provides key elements for a systematic analysis and evaluation of hazards and its prevention. All hazards are collected in a special list, including, its initiators for happening, the consequences and most important the evaluation for prevention. The insurance agency uses a team of 3 to 4 experts (manufacturers, engineers) plus its leader which in about three working days jointly with the manufacturer check and evaluate the plants.

### 3.4 The need of checklists

Mr. Ir. Harrie Knoef assessed the proposal for checklists for manufacturers, technical advisers, permitting authorities, operators and insurance companies. He offered his version with regard to topics and aspects to be treated, dangers and their descriptions to be included, measures to be taken, to the audience for discussing. The experts concluded that checklists might become helpful means and should be elaborated for every target group because of their peculiarities.

### **3.5 Emissions in the exhaust gas of wood gas engines and possibilities to decrease them**

Mr. Dr.-Ing. Gerhard Schmoeckel (D) of the Bavarian Environment Authority presented not only results from studies but own measurements with several gasification plants. He showed that not only the CO-slip with the exhaust gas and formaldehyde-emissions from engines powered by gasification gas still cause problems but most important the benzole content in the exhaust gases of gas engines is by far too high. He could prove that in any conducted measurement with different gasifiers the benzole values were substantially higher as allowed (factors 2 to 34!) by the German emission limit of 1 mg/m<sup>3</sup>, even in the case of application of oxidation catalysts. This is a very serious problem that has to be tackled by further research & development as benzole might cause cancer. Whilst dust and benzo(a)pyren might not cause problems. Additionally, he pointed out that gasification gas and media, like washing solvents, filter ashes, tar residues, have to be kept in tightly closed vessels during generation, upgrading and transport. He recommended joint efforts of all parties involved.

### **3.6 International experiences in permitting planning of biomass gasification plants, especially with using waste wood**

Mr. Dipl.-Masch.Ing. Hannes Brühlmeier (CH) from Durena AG jointly with Mr. Dipl.-Ing. Oliver Bosshard (CH), Chief Executive Officer of WoodPower AG gave at first an insight in the failed imported technology from the Indian manufacturer Dasagreen and the successful efforts of Swiss companies to rescue this type of thermal gasification as a viable technology. Afterwards, they proved that under today's conditions in Switzerland where no cost- and slight profit covering feed-in tariffs with a guaranteed long term payment are approved legal instruments BMG is only economically viable using waste wood as feedstock. This implies higher resistance or doubts of authorities and general public with regard to emissions, stricter emission limits and control, also with regard to CO and a higher amount of efforts not only for gas cleaning and surveillance but also for getting a permission in comparison to a plant gasifying natural wood.

### **3.7 Automation to increase secure operation and control of Biomass gasification plants**

Mr. Alois Rohrer (CH) from XyloPower AG and ALRO Control Systems pointed out the necessity for both the manufacturer and operator of exact measurement and controlling of the whole plant applying one automatic operational system. This should be important as main parts are delivered by different suppliers. These components are to be adapted to each other to protect personal and machine, to document all processes, to early recognise any dangerous situation and to shut down in emergency the plant in an case of hazardous situation. Any leakage of toxic and explosive gas should be excluded and detected. What dust explosion is concerned it is to be avoided by secure coincidence of three conditional factors (fine dust, oxygen and a source of ignition). He recommended among others protecting all electro-technical appliances against carbon dust, balancing potentials against electrostatic charges, applying components with high protective factors (>IP64), measuring gas

components, residual dust, volumetric throughput, pressure and temperatures, even in bearings.

### **3.8 Real Life Experiences of Manufacturers and Operators of Biomass Gasification Plants at Technical Interfaces**

Mr. Dr.-Ing. Manfred Hülscher (DE) from Qalovis Farmer Automatic Energy GmbH dedicated his presentation to needs to clearly define the operational and technical interfaces not only in the technological process but also between manufacturers, project planning engineers and future plant operator. He raised special attention to the properties and conditions of small scale plants with the conflictive situation of application of mandatory HSE standards and thus financially overloading these projects with already low revenues and a high amount of “not calculated and not profitable” man hours. In future, it should be kept in mind to use not only natural wood as feedstock but also chicken litter, slaughterhouse residues, fermentation residues, to mention only some examples. The permitting rules should be adapted or even elaborated among others with regard to ashes, filter dusts.

Mr. Franz Lunzner (DE) from ASYT GmbH, representing the German BMG plant manufacturer Kuntschar Holzvergasung GmbH, too, demonstrated an example of close cooperation of the future operator, the plant manufacturer and the permitting authority in several cases of permitting processes. He stressed the necessity of cooperation between manufacturer from the planning phase until operation and maintenance of the plant. To its own protection the operator needs exact instruction on the does and not-to-does. This rule implies also to take much care for the feedstock (size, purity, moisture content). It is decisive for the economic success, for operation with less interruptions and for not violating HSE aspects.

One of the most experienced manufacturers worldwide; Mr. Dipl.-Ing. Walter Zerbin (DE) from Imbert GmbH called for a special instruction program for permitting authorities and future operators. He met administrative personal highly professional in permitting procedures, willing to open BMG the market entry but with poor or almost no knowledge on thermal gasification of biomass. He as a manufacturer was obliged to teach them on thermal gasification and its peculiarities in comparison to combustion, pyrolysis and digestion.

The contributions of Mr. Lunzner and Zerbin do not exist in written form.

### **3.9 Summary and Conclusions**

Mr. Harrie Knoef summarised the workshop in a final session. The presentations and draft guideline will be made available on the website as soon as possible by BTG. He emphasized the need to get serious feedback on the document in order to reach consensus on controversial issues and to prepare a final Guideline which is the ultimate goal of the project. To reach a consensus is the main challenging work to be done in the final year of the project.

Some important issues include:

- He mentioned that the IPPC is being updated which might influence the discussion on safety issues and emission limits.

- Plants need to be insured which has consequences for manufacturers and plant owners to consider HSE issues carefully.
- Emission limits could be expressed in amount per energy produced, which makes a reference to the oxygen level redundant.
- The most stringent safety issues are related with leakage alarm systems, safety control systems, shutdown procedures, detectors, etc.
- He expressed again the importance of the HSE project; at least one important objective has been achieved, which is raising awareness among the target groups on the importance of this subject.
- Some participants expressed the fear that a Guideline pre-scribing what needs to be done on HSE safety measures will increase the plant capital costs. This may be true or not, but there was a general consensus that safety is more important. Moreover, the financial viability depends not only on capital costs but also (and perhaps even more) on fuel prices (increasing) and feed-in tariffs, which differ largely between countries.
- As expressed in earlier events, there should be a good balance between economics and security.

All target groups have been invited to use the Guideline and they were asked for feedback; only in this way, an approved final Guideline can be published. The workshop was successful with more than the targeted 50 participants and in particular thanks was given to Mr. Eberhard Oettel of FEE who was the responsible organiser of the workshop.

### 3.10 Outlook

Several manufacturers might be ready to be involved in the case studies of the GG-Project. FEE is ready to contribute convincing its socios (e.g. Spanner R<sup>3</sup> GmbH for a small plant) or partners (e.g. Imbert GmbH for a medium-sized plant) jointly with the coordinator BTG and its contracting party Technical University of Vienna.

All interested participants at the workshop were invited by FEE and the manufacturer to visit the plant of Spanner R<sup>3</sup> GmbH (DE) at Neufahrn at March 2, 2009. This plant is being built on licence of Mr. Bernhard Joos (DE) and was one of the plants that had been tested by the Bavarian Environmental Authority and improved on their recommendations.

Mr. Dipl.-Ing. Herbert Gemperle (CH) from PYROFORCE Engineering GmbH was forced to excuse himself for illness. FEE will organised in the second half of 2009 a visit to the plant of PYROFORCE in Switzerland for manufacturers, only. Interested partners of the GG-project are invited to participate on their own expenses.

Mr. Dipl.-Ing. Martin Fuchs of the Technical University Vienna was given the opportunity at the workshop and the 3<sup>rd</sup> ICABG to call for papers and invite the audience to the International Conference on Polygeneration Strategies 2009 (ICPS,1 – 4 September 2009, Vienna, Austria), where the next public workshop of the GG-project will take place.

FEE and REECO invited to 4th International Conference on Application of Biomass Gasification (ICABG) where the final results of the Gasification Guide Project might

be presented to an international audience. The ICABG will be held during CEP Clean Energy Power form 25 to 27 of February 2010 in Stuttgart, Germany.

#### FEE

- expresses its gratitude to the Technical University of Vienna for the order to organize the “German” workshop,
- appreciates the close cooperation with the Gasification guide project Group, especially its coordinator Biomass Technology Group, -
- is glad that the group had taken up the proposals of FEE for implementing the project some years ago, and
- stresses the need that has been proven in practice and by FEE’s own expertise of networking with manufacturers, researchers, operators and authorities since 1994 to follow the recommendation of the 16<sup>th</sup> European Biomass Conference from Research to Industry and the Market to re-establish a European GasNet at a minimum, or ThermalNet (thermal gasification, pyrolysis and methanation) at the best.

FEE and GG-PG express their thanks to REECO GmbH, which supported the workshop in organisational aspects and invited the Project Group members to the evening reception of the Clean Energy Power 2009.

#### ANNEXES

- Annex 1. Workshop Programme
- Annex 2. Workshop Pictures
- Annex 3 Workshop Participant List



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## Programme

### Public Gasification Guide Workshop in Germany

during CEP – CLEAN ENERGY POWER® 2009  
at the Landesmesse Stuttgart, Germany  
at Thursday, January 29, 2009

**Target Groups:** Manufacturers, operators, investors, permitting authorities, planning engineers, researchers, communities

The workshop is dedicated to the EU-project “Gasification Guide on Health, Security and Environment” for biomass gasification. The guide aims equally to prepare uniform conditions and practise for permitting in the European Union and every single Member State as well as facilitate market penetration of the technology and protection of consumer rights just from the beginning onwards.

The workshop aims to an in-depth intensive exchange of knowledge and experiences between concerned parties. It is organised in conjunction to the 3<sup>rd</sup> International Conference on Application of Biomass Gasification for Combined Heat and Power Generation in line with the 4th FEE-meeting of manufacturers in August last year with Stadtwerke Rosenheim for mutual consulting between the EU-Project group and numerous German and international manufacturers and experts.

**09:00 a.m.**

### Registration

10:00 – 10:15

#### Welcome Address

Prof. Dr.-Ing. Bernd Sankol, Eberhard Oettel  
Fördergesellschaft Erneuerbare Energien e.V., Berlin, Germany

Ir. Harrie Knoef, Ir. John Vos

BTG Biomass Technology Group B.V., Enschede, The Netherlands, Coordinator of EU-Project Gasification Guide

Johann-Georg Röhm, Sandra Bayer-Teixeira  
REECO GmbH, Reutlingen, Germany, Organiser of CEP Clean Energy Power®

10:15 – 12:45

**Substantials**

Chair:

Eberhard Oettel

Fördergesellschaft Erneuerbare Energien e.V.

10:15 – 11:15

**Presentation of the Latest Version of Gasification Guide**

Ir. Harrie Knoef, Ir. John Vos

BTG Biomass Technology Group B.V., Enschede, The Netherlands, Coordinator of EU-Project Gasification Guide

11:15 – 11:45

**Presentation of Software**

Dipl.-Ing. Thomas Kienberger

Institut für Wärmetechnik, Technische Universität Graz (Institute of Thermal Engineering, Technical University of Graz), Austria

11:45 – 12:00

**Risk Analysis by Insurance Agencies**

Dipl.-Ing. Ruedi Bühler

Ingenieurbüro Energie + Umwelt, Maschwanden, Switzerland

12:00 – 12:15

**Presentation of Checklists**

Ir. Harrie Knoef

BTG Biomass Technology Group B.V., Enschede, The Netherlands, Coordinator of EU-Project Gasification Guide

12:15 – 12:45

**Round table**

Chair:

Univ. Prof. Dipl.-Ing. Dr. Hermann Hofbauer

Arbeitsgruppe „Zukunftsfähige Energietechnik“, Institut für Verfahrens-, Umwelttechnik, Technische Biowissenschaften, Technische Universität Wien (Task Group „Sustainable Energy Technology“, Institute of Chemical Engineering, Technical University of Vienna), Austria

12:45 – 14:15

Lunch

13:45 – 15:15

**Permitting**

**(Authorities and Planning Engineers)**

Chair:

Dr.-Ing. Ulrich Seifert  
Fraunhofer-Institut für Umwelt-, Sicherheits- und Energietechnik (UMSICHT),  
Oberhausen (Fraunhofer-Institute for Environmental, Safety and Energy Technology)  
Germany

13:45 – 14:05

Emissions in the Exhaust Gas of Wood Gas Engines and Possibilities to Decrease them

Dr.-Ing. Gerhard Schmoeckel  
Bayerisches Landesamt für Umwelt, München (Bavarian State Agency for Environment), Germany

14:05 – 14:25

Utilisation of Waste Wood as Feedstock for Economic Reasons under Swiss Conditions.

Experiences with Permitting Conditions, Especially with Regard to Environmental Necessities in the Case of the Wood Gasification Plant of WoodPower, Wila,  
Dipl.-Masch.-Ing. FH Hannes Brühlmeier (1), Oliver Bosshard (2)  
(1) Durena AG, Lenzburg, (2) WoodPower AG, Wila, both Switzerland

14:25 - 14:45

Automation to Increase Secure Operation and Control of Biomass Gasification Plants  
Ing. Alois Rohrer  
XyloPower AG, Rudolfstetten, Switzerland

14:45 –15:15

Discussion

15:15 – 15:45

Break

15:45 – 17:15

### **Plant Operation (Operators and Manufacturers)**

Chair:

Prof. Dr. Björn Kjellström  
Luleå tekniska universitet, Luleå (Technical University of Luleå), Sweden

15:45 – 16:00

Real Life Experiences of Manufacturers and Operators of Biomass Gasification Plants at Technical Interfaces

Dr.-Ing. Manfred Hülscher  
Qalovis Farmer Automatic Energy GmbH, Laer, Deutschland

16:00 – 16:15

Operating a biomass combined heat and power plant in conformity with granted permission

Alois Lonzner  
ASYT GmbH, Burgheim, Germany

16:15 – 16:25  
Discussion

16:25 – 16:40  
Experiences of a Swiss Manufacturer in Getting Permits for Biomass Gasification Plants in Austria, Germany and Switzerland  
Dipl.-Ing. Herbert Gemperle  
PYROFORCE Energietechnologie AG, Emmenbrücke, Switzerland

16:40 – 16:55  
Experiences of a German Manufacturer in Getting Permits for Plants in Germany  
Dipl.-Ing. Walter Otto Zerbin  
Imbert GmbH, Weilerswist, Germany

16:55 – 17:05  
Discussion

17:05 – 17:30

### **Conclusions and Next Steps**

Ir. Harrie Knoef, Ir. John Vos  
BTG Biomass Technology Group B.V., Enschede, The Netherlands  
Dr.-Ing. Ulrich Seifert  
Fraunhofer-Institut für Umwelt-, Sicherheits- und Energietechnik (UMSICHT),  
Oberhausen (Fraunhofer-Institute Environment, Security and Energy Technology),  
Germany

Speakers and partners of the Gasification-Guide-Project are invited guests of REECO GmbH to the evening reception at Haus der Wirtschaft.

When? January 29, 2009, 19:30 – 22:00

Where? Haus der Wirtschaft  
Willi-Bleicher-Str. 19  
70174 Stuttgart-Mitte (down-town)

### **Subject to alternations!**

The conference will be held in German and English languages.

Fee: 25,- €

Venue: Landesmesse Stuttgart  
Messeplazza / Flughafenrandstr.  
70629 Stuttgart, Germany

Travelling: [www.cep-expo.de](http://www.cep-expo.de)

Contact: Fördergesellschaft Erneuerbare Energien e.V.  
Eberhard Oettel  
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REECO GmbH  
Sandra Bayer-Teixeira  
[bayer@energie-server.de](mailto:bayer@energie-server.de); Tel. +49-(0)7121-3016-0

### **Registration requested!**

Online form for mandatory registration  
R.L.FEE.Projekte.EU.Gasification Guide. Einladung. Englisch.20090129

[www.cep-expo.de](http://www.cep-expo.de)







## Participants German Workshop "Gasification Guide" January 29, 2009, Clean Energy Power, Stuttgart

FPI.FEE.Projekte.EU.Gasification Guide.Workshop

| Last Name       | First Name  | Title                      | Town               | Country | Institution                                   | Categories     |
|-----------------|-------------|----------------------------|--------------------|---------|---|----------------|
| Allgaier        | Alexander   |                            | Laer               | DE      | Qalovis Farmer Automatic Energy GmbH          | Industry       |
| Anders          | Dietmar     |                            | Sulz               | DE      | Kopf Solarstromtechnik GmbH                   | Industry       |
| Arthen          | Barbara     | Arch. Dipl.-Ing.           | Frankfurt am Main  | DE      | Architekturbüro Barbara Arthen                | Engineering    |
| Bartel          | Olaf        |                            | Reutlingen         | DE      | REECO GmbH                                    | PR-service     |
| Böhning         | Dorith      | Dipl.-Ing.                 | Dresden            | DE      | TU Dresden                                    | Research       |
| Borst           | Mario       |                            | Stuttgart          | DE      | euro engineering AG                           | Engineering    |
| Bosshard        | Oliver      | Dipl.-Ing.                 | Wila               | CH      | Woodpower AG                                  | Industry       |
| Bräkow          | Dieter      | Dipl.-Ing.                 | Eberswalde         | DE      | Biofuels Deutschland GmbH                     | Industry       |
| Brühlmeyer      | Hannes      | Dipl.-Masch.Ing.           | Lenzburg           | CH      | Durena AG                                     | Engineering    |
| Bühler          | Ruedi       | Dipl.-Ing.                 | Maschwanden        | CH      | Ingenieurbüro Energie + Umwelt                | Engineering    |
| Dutzi           | Rebecca     | Dipl.-Ing.                 | Planegg-München    | DE      | Müller-BBM GmbH                               | Engineering    |
| Ferbar-Schmidt  | Simone      | Arch. Dipl.-Ing.           | Offingen           | DE      | Architektur-Energieberatung                   | Engineering    |
| Fuchs           | Michael     | Dipl.-Ing. MBA             | Wien               | AT      | TU Wien                                       | Research       |
| Fürst           | Gerhard     |                            | Burgheim           | DE      | ASYT GmbH                                     | Industry       |
| Gaiffi          | Michael     | Dipl.-Ing.                 | Sulz               | DE      | KOPF Klärschlammverwertungs-GmbH & Co. KG     | Industry       |
| Gemperle        | Herbert     | Dipl.-Ing.                 | Stans              | CH      | PYROFORCE Energietechnologie AG               | Industry       |
| Grimbrandt      | Jan         |                            | Luxemburg          | LU      | Boson Energy SA                               | Industry       |
| Heggemeier      | Friedrich   |                            | Luxemburg          | LU      | Boson Energy SA                               | Industry       |
| Hofbauer        | Hermann     | Univ. Prof. Dipl.-Ing. Dr. | Wien               | AT      | TU Wien                                       | Research       |
| Hülscher        | Manfred     | Dr.-Ing.                   | Laer               | DE      | Qalovis Farmer Automatic Energy GmbH          | Industry       |
| Ivanov          | Ivan        | Prof. Dr.                  | Sofia              | BG      | TU Sofia                                      | Research       |
| Jochmann        | Andreas     | Dipl.-Ing.                 | Vetschau           | DE      | Vattenfall Europe PowerConsult                | Engineering    |
| Kienberger      | Thomas      | Dipl.-Ing.                 | Graz               | AT      | TU Graz                                       | Research       |
| Kjellstrom      | Björn       | Prof. Dr.                  | Trosa              | SE      | Exergetics AB                                 | Industry       |
| Knoef           | Harrie      | Ir.                        | Enschede           | NL      | BTG Biomass Technology Group B.V.             | Engineering    |
| Kulinyi Szekely | Ildiko      |                            | Budapest           | HU      | Ministry of Environment and Water Hungary     | Administration |
| Lunzner         | Franz       |                            | Burgheim           | DE      | ASYT GmbH                                     | Industry       |
| Mayer           | Ursula      |                            | Esslingen          | DE      | Landratsamt Esslingen                         | Administration |
| Mbakwa          | Malcolm     | Dr.                        | Birmingham         | UK      | Mbakwa Co.Ltd.                                | Industry       |
| Naab            | Peter       | Dipl.-Ing.                 | Göppingen          | DE      | EVF GmbH & Co. KG                             | Industry       |
| Nowack          | Anja        |                            | Dessau             | DE      | Umweltbundesamt                               | Administration |
| Oettel          | Eberhard    |                            | Berlin             | DE      | Fördergesellschaft Erneuerbare Energien e.V.  | Association    |
| Opitz           | Cornelia    |                            | Stuttgart          | DE      | Stix Dolmetscher                              | PR-service     |
| Pestak          | Harald      |                            | Esslingen          | DE      | Landratsamt Esslingen                         | Administration |
| Rickert         | Ingo        | Dr.-Ing.                   | Berlin             | DE      | DTG Deutsche Technologie Anwendungen GmbH     | Industry       |
| Rohrer          | Alois       | Ing.                       | Rudolfstetten      | CH      | XyloPower AG                                  | Industry       |
| Sankol          | Bernd       | Prof. Dr.                  | Hamburg            | DE      | HAW Hochschule für Angewandte Wissenschaften  | Research       |
| Schengber       | Petra       | Dipl.-Ing.                 | Markranstädt       | DE      | Dr. Födisch AG                                | Industry       |
| Schmitz         | Winfried    |                            | Pulheim            | DE      | EU Consult GmbH                               | Engineering    |
| Schmöckel       | Gerhard     | Dr.-Ing.                   | Augsburg           | DE      | Bayerisches Landesamt für Umwelt              | Administration |
| Seifert         | Ulrich      | Dr.-Ing.                   | Oberhausen         | DE      | Fraunhofer-UMSICHT                            | Research       |
| Stix            | Susanne     |                            | Stuttgart          | DE      | Stix Dolmetscher                              | PR-service     |
| Stöcklein       | Frank       | Dipl.-Ing.                 | Planegg-München    | DE      | Müller-BBM GmbH                               | Engineering    |
| van der Meijden | Christiaan  |                            | Petten             | NL      | ECN Energy research Centre of the Netherlands | Research       |
| Vos             | John        | Ir.                        | Enschede           | NL      | BTG Biomass Technology Group B.V.             | Engineering    |
| Waller          | Rolf        |                            | Rosenheim          | DE      | Stadtwerke Rosenheim GmbH                     | Utility        |
| Weigel          | Karl        |                            | Adelberg           | DE      |   |                |
| Wullstein       | Karsten     |                            | Bernterode-Schacht | DE      | KD Stahl und Maschinenbau GmbH                | Industry       |
| Zerbin          | Walter Otto | Dipl.-Ing.                 | Weilerswist        | DE      | Imbert GmbH                                   | Industry       |
| Zolynas         | Darius      |                            | Kaunas             | LT      | Baltic Energy Industries                      | Industry       |