

## Conditions of participation

Registration is required in writing per fax or e-mail. After receiving your complete registration, we will send you the confirmation and bill by e-mail. Written cancellations are possible before June 2nd, 2017 for an administration charge of 150 Euro. After June 2nd, 2017 cancellations are billed in full. In case of cancellations even in case of illness we gladly accept a substitute participant. The number of participants is limited, therefore a timely registration is recommended.

The complete price for the biogas course is **1290 EUR**. REA full members: **1050 EUR**.

**All prices plus 19 % VAT.** If there's a VAT registration number of your company available and your country belongs to the EU, we won't have to charge VAT.

### Included are

- Seminar-CD
- Beverages and lunch during the course
- Entrance fees to biogas site

### Not included are

- Travel to seminar and biogas site
- Accommodation
- Further meals and beverages

## Registration form (please provide billing address)

Biogas Training, June 20th-22nd, 2017 - Dundee, UK

Family name ..... First name .....

Company/ Institution .....

VAT Reg.-No. (only required for European companies to issue invoices without VAT) .....

ZIP-code ..... City ..... Country .....

Street/No .....

Tel. .... Fax .....

E-mail ..... www .....

Date ..... Signature .....

I am NOT interested in receiving information from IBBK

## Please send your registration

by Fax to:

**+49 - (0)7954 – 926204**

or E-mail to:

**t.gruszkos@biogas-zentrum.de**

IBBK Fachgruppe Biogas GmbH \* Am Feuersee 6 \* 74592 Kirchberg \* Germany



## International Intensive Biogas Training - Practical Digester Biology -

At the Abertay University, Dundee, UK

June 20<sup>th</sup> – 22<sup>nd</sup>, 2017

The Renewable Energy Association (REA) and the International Biogas and Bioenergy Center of Competence (IBBK Fachgruppe Biogas) are delighted to welcome you for a 3-day long in-depth Biogas Operators & Planners Course at the Abertay University in Dundee. The course will be delivered by biogas experts from Germany and UK with many years of practical experience in the biogas sector.



## Who would benefit from the course?

- Biogas plant operators & staff; farmers planning to operate an AD-facility
- AD developers
- Central & local government officials engaged with AD
- Banks & investment houses, private investors
- Academic institutions

## Program Overview

### Tuesday, 20th June 2017

08:30	Registration
09:00	Welcome to the seminar Lecturers and attendees introduce themselves
09:30	Overview of the Biogas industry in Europe and UK and its future development
10:30	Coffee break
11:00	New substrates and their pretreatment for future biogas plants <ul style="list-style-type: none"> <li>• Macro algae and their challenges</li> <li>• Pyrolysis liquids from low quality biomass</li> <li>• Pretreatment for the improvement of biogas yield</li> </ul>
12:30	Lunch
13:30	Choosing the right substrate and combining it for the optimal digestion input <ul style="list-style-type: none"> <li>• Substrate selection criteria</li> <li>• Calculation of the gas yield according to energy content</li> <li>• Substrate quality and level of contamination</li> <li>• Off farm material from communal and industrial origin</li> </ul>
15:00	Coffee break
15:30	Meet the challenge: How to digest fibrous and N-rich feedstocks <ul style="list-style-type: none"> <li>• Characteristics of the substrates</li> <li>• Causes of an NH<sub>3</sub>-inhibition (feedstocks, NH<sub>3</sub> formation, pH, temperature)</li> <li>• Counter measures</li> <li>• Case studies and practical examples</li> </ul>
17:00	Discussion
17:15	End of the day

### Wednesday, 21st June 2017

9:00	Start up phase & practical measures for monitoring the digestion process <ul style="list-style-type: none"> <li>• Initial phase: seeding, heating and start of the feeding</li> <li>• Testing parameters during operation</li> <li>• Practical devices for on-site monitoring (FOS/TAC, pH, gas analysis)</li> </ul>
10:30	Coffee break
10:45	Process control and process optimisation <ul style="list-style-type: none"> <li>• Inhibitors in anaerobic processes</li> <li>• Additives (Trace elements, enzymes, sulphur binder, buffer)</li> <li>• Process control measures</li> </ul>

12:30	Lunch
13:30	Process requirements of the mono-digestion of chicken manure <ul style="list-style-type: none"> <li>• Quality and consistency of substrate</li> <li>• Specific selection of basic parameters</li> <li>• Possibilities of equipment and self testing for operators</li> <li>• Influence of pretreatment of substrate for the improvement of biogas yield and avoidance of process inhibitions</li> <li>• Practical equipment selection</li> </ul>
15:00	Coffee break
15:30	Interactive group and laboratory session  Necessary laboratory tests & practical interpretation of operating modes using examples from practise <ul style="list-style-type: none"> <li>• Testing parameters during operation</li> <li>• Practical devices for plant monitoring</li> <li>• Record keeping</li> </ul>
17:00	Discussion
17:15	End of the day
18:30	Meet & Greet at Encore Restaurant

### Thursday, 22nd June 2017

09:00	Practical experiences & lessons from operating a bio-/food waste waste plant <ul style="list-style-type: none"> <li>• Specific biological requirements</li> <li>• Operational requirements</li> <li>• Pretreatment and removal of contaminants</li> <li>• Crust and sediment removal from the digester</li> <li>• Fractioning and quality of digestate</li> </ul>
10:30	Coffee break
11:00	Measurement for process optimisation, stabilisation and enhancement of the biogas process <ul style="list-style-type: none"> <li>• Gas analysis related to the metabolic pathway</li> <li>• Application area for gas analysis devices</li> <li>• Application of further measured variables, controlling and supervisory control</li> </ul>
12:30	Questions and answers
13:00	Lunch
14:00	Biogas Plant visit
~ 17.15	Return to Dundee End of the Seminar