

## proBIOGAS International

Biogas engineering and operating training with field trips

September 12.–21., 2023

**Venue:** SHMT – Steinbeis House for Management and Technology  
Filderhauptstr. 142, 70599 Stuttgart

<b>Tuesday, September 12<sup>th</sup> – Practical Plant Engineering</b>	
08:30	<b>Registration</b>
09:00	<b>Welcome to the seminar</b> <i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i>
09:30	<b>Overview of the national and int. Biogas industry and its future development</b> <i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i>
10:30	Coffee break
10:45	<b>Introduction into plant technology</b> <ul style="list-style-type: none"> <li>• Digester types</li> <li>• Prestorage, feed in and pretreatment technology (ensiling, mixing pit, hydrolysis)</li> <li>• Other process technologies</li> <li>• Most common design principles</li> <li>• Shapes &amp; designs of digesters and equipment</li> </ul> <i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i>
12:15	Lunch
13:30	<b>Decision criteria for a biogas plant</b> <i>Katrin KAYSER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i>
15:00	Coffee break
15:15	<b>Planning and designing of stirring and mixing technology for digesters, mixing pits and storages</b> <i>Thomas STEMMER, streisal GmbH</i>
16:45	Discussion
17:00	End of the day

## Wednesday, September 13<sup>th</sup> – Practical Plant Engineering

09:00	<p><b>Pretreatment and pre-storage technology</b></p> <ul style="list-style-type: none"> <li>• Ensilaging and pre-storage technology</li> <li>• Purpose and designing of mixing pit and hydrolysis phase</li> <li>• Pretreatment of difficult substrates</li> <li>• Dealing with high fibre and high nitrogen content</li> </ul> <p><i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i></p>
10:30	Coffee break
10:45	<p><b>Biogas specific building materials</b></p> <ul style="list-style-type: none"> <li>• Design and suitability</li> <li>• Corrosion and operating conditions</li> <li>• Reliability and installation</li> </ul> <p><i>Erwin KÖBERLE, Biogaskontor Köberle GmbH, Obermarchtal</i></p>
12:15	Lunch
13:30	<p><b>Process and external heat and gas engineering</b></p> <ul style="list-style-type: none"> <li>• Gas pipeline</li> <li>• Type of heating</li> <li>• Heating of digester</li> </ul> <p><i>Erwin KÖBERLE, Biogaskontor Köberle GmbH, Obermarchtal</i></p>
15:00	Coffee break
15:15	<p><b>Building a bio-waste and food waste plant</b></p> <ul style="list-style-type: none"> <li>• Building materials</li> <li>• Operational requirements</li> </ul> <p><i>Bernhard NATTERER, Finsterwalder Umwelttechnik GmbH, Bernau, Germany</i></p>
16:45	Discussion
17:00	End of the day

### Thursday, September 14<sup>th</sup> – Visits

08:15	<b>Visit of a biogas plant</b>
13:00	Lunch
14:30	<b>Visit of a biogas plant</b>
18:15	End of the day

### Friday, September 15<sup>th</sup> – Visits

08:15	<b>Visit of a biogas plant</b>
12:30	Lunch
15:00	<b>Visit of a biogas plant</b>
18:15	End of the day

### Monday, September 18<sup>th</sup> – Practical Digester Biology

09:00	<b>Digester Biology – an introduction</b> <i>Dr. Andreas LEMMER, State institute of Agricultural Engineering and Bioenergy, University of Hohenheim</i>
10:30	Coffee break
10:45	<b>Crucial substrate parameters and their impact on plant performance</b> <ul style="list-style-type: none"> <li>• Sampling and analysis methods for agricultural and industrial substrates</li> <li>• Definition of the substrate quality – right and wrong way of analyzing</li> <li>• Impact on planning, design and practical operation</li> <li>• Forecast possibilities on plant process disturbances</li> </ul> <i>Gunther PESTA, CEO, ATRES-Group, Munich, Germany</i>
12:15	Lunch
13:30	<b>Proper usage of digestate as organic fertilizer in agriculture</b> <ul style="list-style-type: none"> <li>• Fertilizer management</li> <li>• Field application</li> <li>• Digestate processing</li> <li>• Fiber and fertilizer production</li> </ul>

	<i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i>
15:00	Coffee break
15:15	<b>Safety features of biogas plants and equipment</b> <i>Katrin KAYSER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i>
16:45	Discussion
17:00	End of the day

## Tuesday, September 19<sup>th</sup> – Practical Plant Operation

09:00	<b>Calculation exercises for feasibility and process control</b> <ul style="list-style-type: none"> <li>• Calculating retention time, organic loading rate and digester size</li> <li>• Determining electricity and heat production</li> <li>• Exploring efficiency factors of gas utilization</li> <li>• Discussion of the results</li> </ul> <i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst, Germany</i>
10:30	Coffee break
10:45	<b>Pumps and pump technology</b> <i>N.N., Pumpenfabrik Wangen GmbH</i>
12:15	Lunch
13:30	<b>Interactive group and field session – Necessary on site tests and practical interpretation of operating modes on a biogas plant</b> <ul style="list-style-type: none"> <li>• Substrate and digester content sampling</li> <li>• Testing parameters during operation</li> <li>• Practical devices for plant monitoring</li> <li>• Record keeping</li> <li>• Technical and safety evaluation on a biogas plant</li> </ul> <i>Katrin KAYSER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst</i> <p>Short travel by coach  Meeting point: parking area in front of “SHMT”  Meeting time: 1:30pm  Departure: 1:45pm</p>
17:00	End of the day

## Wednesday, September 20<sup>th</sup> – Practical Plant Operation

09:00	<p><b>Meet the challenge: How to digest fibrous and N-rich feedstocks</b></p> <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, case studies and practical examples</li> </ul> <p><i>Birgit PFEIFER, Schaumann BioEnergy Consult GmbH, Pinneberg, Germany</i></p>
10:30	Coffee break
10:45	<p><b>Process control and process optimization</b></p> <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> <p><i>Birgit PFEIFER, Schaumann BioEnergy Consult GmbH, Pinneberg, Germany</i></p>
12:15	Lunch
13:30	<p><b>Measurement and data recording for optimization, stabilization and enhancement of the biogas process</b></p> <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> <p><i>Torsten HAUG, Union Instruments GmbH, Germany</i></p>
14:30	Coffee break
14:45	<p><b>Different research activities at the laboratories of the University of Hohenheim</b></p> <p><i>Guided tour through the University Biogas Research Labs</i></p> <p><i>Dr. Andreas LEMMER, State institute of Agricultural Engineering and Bioenergy, University of Hohenheim</i></p>
15:45	Discussion

## Thursday, September 21<sup>st</sup> –Green Gas, Bio-LNG & Biomethane Mobility

09:00	<p><b>Green Gas and Bio-LNG</b></p> <p><i>Alexey MOZGOVOY, Hitachi Zosen Inova Biomethan GmbH</i></p>
10:30	Coffee break
10:45	<p><b>Maintenance of biogas upgrading units for sustainable plant operation</b></p> <p><i>Ulf RICHTER, Richter ECOS GmbH</i></p>

12:15	Lunch
13:30	<b>CNG and LNG Mobility</b> <i>Michael KÖTTNER, IBBK Fachgruppe Biogas GmbH, Kirchberg/Jagst, Germany</i>
15:00	Handout of the certificates and end of the event.

*Program is subject to change*

In cooperation with:

- the State Institute of Agricultural Engineering and Bioenergy, University of Hohenheim, Stuttgart, Germany
- Akademie Schloss Kirchberg, Kirchberg, Germany

