

proBIOGAS International

Biogas engineering and operating training with field trips

September 17.–26., 2024

Venue: Stuttgart Hohenheim

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

Wednesday, September 18th – Practical Plant Engineering	
09:00	Pretreatment and pre-storage technology

	<ul style="list-style-type: none"> • Ensilaging and pre-storage technology • Purpose and designing of mixing pit and hydrolysis phase • Pretreatment of difficult substrates • Dealing with high fibre and high nitrogen content
10:30	Coffee break
10:45	Biogas specific building materials <ul style="list-style-type: none"> • Design and suitability • Corrosion and operating conditions • Reliability and installation
12:15	Lunch
13:30	Process and external heat and gas engineering <ul style="list-style-type: none"> • Gas pipeline • Type of heating • Heating of digester
15:00	Coffee break
15:15	Building a bio-waste and food waste plant <ul style="list-style-type: none"> • Building materials • Operational requirements
16:45	Discussion
17:00	End of the day

Thursday, September 19th – Visits

08:15	Biogas plant visit
13:00	Lunch

14:30	Biogas plant visit
18:15	End of the day

Friday, September 20th – Visits

08:15	Biogas plant visit
12:30	Lunch
15:00	Biogas plant visit
18:15	End of the day

Monday, September 23rd – Practical Digester Biology

09:00	Calculation exercises for feasibility and process control <ul style="list-style-type: none"> • Calculating retention time, organic loading rate and digester size • Determining electricity and heat production • Exploring efficiency factors of gas utilization • Discussion of the results
10:30	Coffee break
10:45	Crucial substrate parameters and their impact on plant performance <ul style="list-style-type: none"> • Sampling and analysis methods for agricultural and industrial substrates • Definition of the substrate quality – right and wrong way of analyzing • Impact on planning, design and practical operation • Forecast possibilities on plant process disturbances
12:15	Lunch
13:30	Proper usage of digestate as organic fertilizer in agriculture <ul style="list-style-type: none"> • Fertilizer management • Field application • Digestate processing • Fiber and fertilizer production
15:00	Coffee break
15:15	Digester Biology – an introduction

16:45	Discussion
17:00	End of the day

Tuesday, September 24th – Practical Plant Operation

09:00	Safety features of biogas plants and equipment
10:30	Coffee break
10:45	<i>Pumps and pump technology</i>
12:15	Lunch
13:30	<p>Interactive group and field session – Necessary on site tests and practical interpretation of operating modes on a biogas plant</p> <ul style="list-style-type: none"> • Substrate and digester content sampling • Testing parameters during operation • Practical devices for plant monitoring • Record keeping • Technical and safety evaluation on a biogas plant <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 25th – Practical Plant Operation

09:00	<p>Meet the challenge: How to digest fibrous and N-rich feedstocks</p> <ul style="list-style-type: none"> • Characteristics of the substrates • Causes of an NH₃-inhibition (feedstocks, NH₃-formation, pH, temperature) • Counter measures, case studies and practical examples
10:30	Coffee break
10:45	Process control and process optimization

	<ul style="list-style-type: none"> • Inhibitors in anaerobic processes • Additives (trace elements, enzymes, sulphur binder, buffer) • Process control measures
12:15	Lunch
13:30	Measurement and data recording for optimization, stabilization and enhancement of the biogas process <ul style="list-style-type: none"> • Gas analysis related to the metabolic pathway • Application area for gas analysis devices • Application of further measured variables, controlling and supervisory control
14:30	Coffee break
14:45	Different research activities at the laboratories of the University of Hohenheim <i>Guided tour through the University Biogas Research Labs</i>
15:45	Discussion

Thursday, September 26th –Green Gas, Bio-LNG & Biomethane Mobility

09:00	Green Gas and Bio-LNG
10:30	Coffee break
10:45	Maintenance of biogas upgrading units for sustainable plant operation
12:15	Lunch
13:30	CNG and LNG Mobility
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

