

## TRAINING PROGRAM FOR BIOMETHANE PRODUCTION IN UKRAINE

5 INTENSIVE DAYS  
OF LECTURES AND DISCUSSIONS!  
November 28-30 and  
December 11-12, 2023

ROUNDTABLE «FUTURE STEPS  
NEEDED FOR BIOMETHANE  
DEVELOPMENT IN UKRAINE»  
December 15, 2023

## TRAINING FOR BIOMETHANE PRODUCTION IN UKRAINE

Program | 28.11.23 – 12.12.23

### 1. GENERAL OVERVIEW - BIOMETHANE IN EUROPE AND ALL OVER THE WORLD (28.11.2023)

#	Subject	Trainer	Time
1.0	<i>Presentation of course structure, introduction of trainers, general information regarding participants of the program</i>		14:00-14:15
1.1	Status of biomethane development in the world, European plans and obligations for short (2030) and long term (2050) periods	<b>Georgii Geletukha</b>	14:15-15:00
1.2	Biomethane in Ukraine – potential and prospects, market features as part of common European system <b>Case studies</b>	<b>Georgii Geletukha</b>	15:00-15:45
	Coffee break		15:45-16:00
1.3	Modern biomethane technology and synergy with green hydrogen	<b>Yuri Matveev</b>	16:00-16:45
1.4	Best practices in European biogas and biomethane production and their possible implementation in Ukraine <b>Case studies</b>	<b>Yuri Matveev</b>	16:45-17:30
1.5	Q&A session. Open discussion		17:30-18:00

### 2. BIOMETHANE FEEDSTOCK RESOURCES (29.11.2023)

#	Subject	Trainer	Time
2.0	<i>Presentation of 2<sup>nd</sup> day program, introduction of trainers, online test based on 1<sup>st</sup> day presented information</i>		14:00-14:15
2.1	Biogas/biomethane feedstock sourcing and logistic concepts	<b>Petro Kucheruk</b>	14:15-15:00
2.2	Harvesting of crop residues for biogas/biomethane production (collection methods, machinery, logistics, CAPEX, OPEX)	<b>Semen Drahniev</b>	15:00-15:45
	Coffee break		15:45-16:00
2.3	Feedstock pre-treatment, storage and feeding systems <b>Case studies</b>	<b>Semen Drahniev</b> <b>Yevhen Oliinyk</b>	16:00-16:45
2.4	Digester technology, how to match feedstock and digester design? <b>Case studies</b>	<b>Petro Kucheruk</b>	16:45-17:30
2.5	Q&A session. Open discussion		17:30-18:00

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### 3. ANAEROBIC DIGESTION TECHNOLOGIES AND BIOGAS UPGRADING TO BIOMETHANE (30.11.2023)

#	Subject	Trainer	Time
3.0	Presentation of 3 <sup>rd</sup> day program, introduction of trainers, online test based on 2 <sup>nd</sup> day presented information		14:00-14:15
3.1	Digester biology (what happens in the digester, parameters that affect the digestion process, means of monitoring digester health)	<i>Petro Kucheruk</i>	14:15-15:00
3.2	Biogas/biomethane properties and biogas/biomethane plants safety	<i>Petro Kucheruk</i>	15:00-15:45
	Coffee break		15:45-16:00
3.3	Biogas cleaning and upgrading (CO <sub>2</sub> removal) technologies (types of technologies, CAPEX, OPEX) <i>Case studies</i>	<i>Volodymyr Kramar</i>	16:00-16:45
3.4	Digestate management (use of digestate, spreading technology, nutrient recovery from digestate) <i>Case studies</i>	<i>Petro Kucheruk</i>	16:45-17:30
3.5	Q&A session. Open discussion		17:30-18:00

### 4. BIOMETHANE OFFTAKE AGREEMENTS AND USES (11.12.2023)

#	Subject	Trainer	Time
4.0	Presentation of 4 <sup>st</sup> day program, introduction of trainers, online test based on 3 <sup>rd</sup> day presented information		14:00-14:15
4.1	Heat & power production from biogas and biomethane <i>Case studies</i>	<i>Yuri Matveev</i>	14:15-15:00
4.2	Biomethane injection into distribution and transportation NG grid. Adaptation of the NG grid (GDS and GTS) for potential biomethane plant's needs (zoning concept)	<i>Volodymyr Kramar</i>	15:00-15:45
	Coffee break		15:45-16:00
4.3	Biomethane mobility (CNG, LNG for road and marine transport)	<i>Yuri Matveev</i>	16:00-16:45
4.4	Examples of feasibility studies for biogas/biomethane generation and use <i>Case studies</i>	<i>Petro Kucheruk</i>	16:45-17:30
4.5	Q&A session. Open discussion		17:30-18:00

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### 5. CARBON CREDITS AND SUSTAINABILITY AND OTHER COUNTRY EXPERIENCE (12.12.23)

#	Subject	Trainer	Time
5.0	Presentation of 5 <sup>st</sup> day program, introduction of trainers, online test based on 4 <sup>st</sup> day presented information		14:00-14:15
5.1	Explanation of the successful experience in biomethane technology development with other countries	<i>Anna Pastukh</i>	14:15-15:00
5.2	Biomethane production sustainability and GoO system introduction, mitigation of GHG emission (RED II directive). Biomethane production certification and trade with European clients	<i>Anna Pastukh</i>	15:00-15:45
	Coffee break		15:45-16:00
5.3	Development of business models for biomethane production and use including carbon credits and sustainability offsets <i>Case studies</i>	<i>Petro Kucheruk</i> <i>Yevhen Oliinyk</i>	16:00-16:45
5.4	Q&A session, online assessment test. Closure of the training program		16:45-17:30

<p><b>Roundtable discussion</b> among the most active participants, Ukrainian experts and policy makers regarding future steps needed for biomethane development in Ukraine</p>	<p><i>Georgii Geletukha</i> <i>(moderator)</i></p>	<p><i>December</i> <i>15, 2023</i> <i>10:00-12:00</i></p>
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