

Anaerobic Digestion

The course's concept

Anaerobic digestion training courses will enhance managers' comprehension to the technical aspects pertained into the management of anaerobic digestion plant. Details of the process are introduced, as well as the factors that influence start-up, operation and control of the different types of anaerobic digesters, in order to improve plant performance.

Anaerobic digestion Training Courses will provide Solid Waste Managers the necessary qualifications for the improvement the plant performance and enable them to contribute more to improvements in optimising methane yields and profitability

The course is designed and addressed to managers who are and/or will be responsible for the management of anaerobic digesters.

Upon Completion of the training course, trainees will be able to:

- Understand the biochemistry of anaerobic digestion
- Scope and evaluate the requirements of anaerobic digestion
- Critically evaluate factors that influence anaerobic digestion and approaches to optimise anaerobic digestion process
- Describe the key requirements of quality protocols
- Identify and evaluate energy requirements of anaerobic digestion process
- Identify the appropriate digester for various farm conditions, uses and feedstock mixes
- Suggest potential reasons for digester malfunction and identify potential solutions

The structure and contents of the training course

Course Unit 1:	1. Introduction to Anaerobic Digestion
Sub-units	<ul style="list-style-type: none">- The anaerobic digestion process- Applications of Anaerobic Digestion- Products of Anaerobic Digestion- Factors that affect anaerobic Digestion: microbial population, feedstocks, loading rate, mixing, environmental factors (pH, temperature, humidity, etc.)- Feedstocks for Anaerobic Digestion- Biological process for producing biogas- Environmental Benefits and Concerns: Placing Anaerobic Digestion into Context Laboratory Analyses: What and Why
Course description	This course will enhance managers' comprehension to the technical aspects pertained into the management of anaerobic digestion plant. Details of the process are introduced
Course material	biogas HANDBOOK Introduction to Anaerobic Digestion

Course Unit 2:	2. Types of Anaerobic Digester
Sub-units	<ul style="list-style-type: none">• Different processes of producing biogas for each types of digester• Passive Systems• Low rate systems

	<ul style="list-style-type: none"> • High rate systems • High solids anaerobic digestion • Conditions best suited for biogas production for each digester • Advantages and disadvantages of each digester • Choosing a digester
Course description	At the end of this course, trainees will be able to identify the appropriate digester for various farm conditions, uses and feedstock mixes
Course material	Pictures of different plant and plant components

Course Unit 3:	3. Anaerobic Digester Start-up, Operation and Control
Sub-units	<ul style="list-style-type: none"> - The anaerobic digestion process - Start-up - Operation & control - Reasons for digester failure - Implementing safety procedures - Options for Biogas Utilization - Biogas and digestate end use - Combined Heat and Power System Management Utilizing Biogas
Course description	This course will provide Solid Waste Managers the necessary qualifications for the improvement of the plant performance and enable them to contribute more to improvements in optimising methane yields and profitability
Course material	Biogas upgrading and utilization

Course Unit 4:	4. Regulation and economical aspects
Sub-units	<ul style="list-style-type: none"> - Environmental regulations and permits - Discussion of local, national and European regulations and permits - Environmental issues pertaining to anaerobic digestion - Operation and maintenance costs - Product and by-products market
Course description	In this course regulation and economic aspects will be introduced, in order to guarantee a global approach to the plant running.
Course material	https://energypedia.info/wiki/Socio-Cultural_Aspects_of_Biogas_Projects

Requirements for the trainers

Be in one of the following condition:

- Master's degree and at least 5 years of work experience in anaerobic digestion sector
- High school diploma and at least 8 years of work experience in anaerobic digestion sector

Each of members of the teaching staff must have good communication skills

Requirements for the participants

- Basic skills of inorganic chemistry and microbiology
- Basic skills of analytic chemistry
- Sources of law

Instruction on economic/scientific field

Requirements for the training facilities and infrastructures

No specific requirements are requested by national law for the infrastructures (except the ones concerning safety and security). Training Vet Providers accredited by their own Region have to observe specific requirements, in accordance with regional rules concerning the accreditation