



Composting & Anaerobic Digestion
Association of Ireland

Planning for an Anaerobic Digestion Facility

Northern Ireland

Training Course

25 & 26 August

Lough Neagh Discovery Centre

Overview

With the introduction of government incentives, such as ROCs for the production of renewable energy, anaerobic digestion (AD) is now a viable technology that offers huge potential for revenue generation for farmers and waste operators alike.

Anaerobic digestion produces a high energy containing gas, known as biogas, which can be used for green energy production. The technology is simple, yet robust, and well developed across the continent. AD is a new development for Northern Ireland and offers great opportunity for those who wish to enter the renewable energy market.

To facilitate the growth of the sector Cré the Composting and Anaerobic Digestion Association has developed a “Planning for Anaerobic Digestion Facility” training course. The course is a highly intensive 2 day training course targeted specifically at projects in Northern Ireland. The course will give participants a clear understanding of what anaerobic digestion is, basic design criteria, planning & regulatory requirements, grid connection, project economics, financing, and much more. The course includes a visit to an operational anaerobic digestion plant. The course will prepare participants wishing to develop anaerobic digestion plants and allow individuals to up skill in the area of Anaerobic Digestion.

The objective of the course is to educate individuals involved in anaerobic digestion, be it farmers, waste operators, planners, decision makers with all the knowledge to assist them in developing an anaerobic digestion project. The course will not allow participants to design their own plant but will provide them with sufficient knowledge when dealing with technology providers, government agencies, planners, banks, to make well informed decisions.

Anaerobic digestion also offers great potential for revenue generation through gates fees from waste but also to farmers growing energy crops. Anaerobic digestion will particularly appeal to farmers who can diversify from traditional farming practices by facilitating the production of energy crops. Grass is an ideal energy crop for Ireland, due to our mild climate, high dry matter yields and long growing season. The digestate when used as a fertiliser replaces the use of inorganic fertiliser, derived from fossil fuels, reducing costs for farmers.

Intended For

- ▶ **Farmers** – wishing to develop their own projects will now learn steps involved in getting a project off the ground. How to access their feedstock for biogas potential and if the project is economical.
- ▶ **Project Developers** – for use in development of anaerobic digestion projects. The principles described in the course are designed to assist developers understand the basics of plant design and potential “red tape” that could slow down projects.
- ▶ **Waste Industry** – wishing to develop their own projects will now learn steps involved in getting a project off the ground. How to access their feedstock for biogas potential and if the project is economical
- ▶ **Planners and Decision Makers**- for use in understanding basic principles of anaerobic digestion plants. As planners and decision makers will gain a better understanding of what is required for successful plants, they will be better equipped to support planning applications for anaerobic digestion facility projects.
- ▶ **Consultants and Designers**- for use in designing and assisting clients with the development of their anaerobic digestion projects.
- ▶ **Regulators and Enforcement Agencies**- for use in understanding basic principles of anaerobic digestion plants, which will assist them in their role as regulators of anaerobic digestion facilities.
- ▶ **Individuals** – Who wish to gain an understanding of anaerobic digestion
- ▶ **Investor and Financial Instructions** – Will provide an understanding of the potential project risks and how to properly access the economics of anaerobic digestion projects.



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Programme

Introduction and Overview

- Participants will have an understanding of who Cré are and the role Cré play in the development of anaerobic digestion.
- Overview of current development of anaerobic digestion facilities and number of facility built/operational
- What anaerobic digestion is, definitions and units used
- Basic understating of biology and biogas

Biology and Biogas

- Participants will understand digester biology and what process parameters are important to maintain biogas production
- How the biology works in a digester to produce biogas
- Why different feedstocks give different biogas yields. Importance of dry matter contents, volatile organic solids and methane yields

Biogas Technology and Plant Layout

- Participants will be able to select a suitable technology for different feedstocks
- Understand the differences in technology types, the key components of a wet anaerobic digestion system will be entered into in more detail
- The components of a biogas plant and the roll these features play in biogas production
- Why specific materials are necessary in the construction of a plant
- Participants will learn about health and safety on a biogas plant

Biogas Utilisation Technologies

- Participants will understand the basics of biogas utilisation and combined heat and power engines
- Understand the difference between gas engines and dual fuel engines
- Overview of different technologies for upgrading of biogas into biomethane
- What are the steps required in gaining a generation licence and time lines

Grid Connection

- Participants will be able to access engine sizing and grid connection requirements
- Participants will gain an understanding of equipment necessary for grid connection
- Participants will learn about grid connection application process and associated costs

Project Appraisal and Finance

- Participants will go through economic modelling and cash flows to access the rates and returns of an anaerobic digestion project.
- Will provide participants with sufficient information so they can access their own projects
- Will go into detail on assumptions that must be made when modelling, how to calculate electricity from feedstock, parasitic loads, electricity, heat & digestate sales and the operational costs
- The course will not be able to provide economics for each participants as project needs vary case by case, but the course will provide participants with a good foundation so that they know what questions to ask technology providers
- Participants will learn how best to raise finance for their projects

Planning and Regulations for a Biogas project

- Participants will learn about all the regulatory requirements for their project from animal by-product regulations through to planning and permits
- Pas 110 and Quality Protocols.
- This is high level overview so participants are aware of the requirements for their project

Visit to Anaerobic Digestion Plant

A half-day tour to an the AFBI Anaerobic Digestion plant will be provided. There will be sufficient time to ask the operator questions about how they developed the plant. The anaerobic digester at Agri-Food and Bioscience Institute at Hillsborough was construction between September 2007 and March 2008. The digester has been operating for over two years using cow slurries.



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Schedule

Day 1			
Start	Finish	Class	Speaker
09:00	09:45	Introduction and Overview	John Brennan, Cré
09:45	10:45	Biology, Biogas and feedstock	John Brennan, Cré
10:45	11:15	Break	
11:15	11:45	Group Exercise	
11:45	12:45	Biogas Technology, Plant Layout and Design Basics	To be Confirmed
12:45	13:15	Group Exercise	
13:15	14:15	Lunch	
14:15	15:00	Biogas Utilisation Technologies	CHP provider
15:00	16:00	Planning and Regulations for a Biogas project	Peter O'Connor, SLR Consulting
16:00	16:30	Break	
16:30	17:00	ABP Regulations	Percy Foster, Cré
17:00	17:30	Operation and Health and Safety	To Be confirmed.

Day 2			
Start	Finish	Class	Speaker
08:30	09:00	Overnight Thoughts and review of Previous Day	
09:00	10:00	Project Appraisal and Finance	John Brennan, Cré /Investment Advisor
10:00	10:30	Group exercise	
10:30	11:00	Break	
11:00	12:30	Grid Connection	Rory Mullan, IGS
12:30	13:00	PAS 110 and Quality Protocols	Dr Ian Garner, WRAP
13:00	14:00	Lunch	
14:00	17:00	Site Visit	AFBI Operator



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Training Requirement

As anaerobic digestion is a new development in Northern Ireland, there is a need for training. As part of Cré's mission statement, Cré are committed to educating and providing training to its members. To ensure members receive the highest standard of training, Cré is developing a training course to meet the "Planning Stage" of development of an anaerobic digestion facility.

Currently the majority of anaerobic digestion projects are going through the planning stages, be it initial concept, economic assessment or through the planning process. Cré have aimed this course at individuals planning to develop anaerobic digestion projects. The course is a two day intensive training programme with a site visit to an operational anaerobic digestion plant producing electricity. The course is designed to provide individuals with a complete overview of all the requirements for developing a project. Participants will have a full understanding of how to plan for an anaerobic digestion facility from feedstock appraisal through to planning and grid connection.

Methodology

The course is delivered by a team of approved tutors who have extensive national and international experience in the field of anaerobic digestion. Copies of all presentations will be provided to everyone, as well as hand-outs with more detailed information. It will be taught in a classroom and there will be a site visit to an operational AD plant.

This course is the Northern Ireland version of the Cré Course "Planning for Anaerobic Digestion Facility". A tailored Republic of Ireland version of the course is also available.

Duration

The course will last two consecutive days.

Class Size

In order to facilitate a good discussion, the class sizes are being kept small. The maximum number of people on a course is 25.

Cost

- The cost for course includes all presentations, coffee breaks, lunches and bus to the AD facility.
- The cost per person is £430 for Cré members and £530 for non-members.
- There is no VAT charged on training.
- Additional people from a company will get a reduced rate of 10%.

Location

The course will be held in the Lough Neagh Discovery, Co. Armagh

Course Dates

A provisional time for the course would be the week starting the 25th & 26th August 2011. If there are not a sufficient number of people who express an interest in the course it may be cancelled.

Further Details & Booking

If interested in attending the course please email John Brennan **Email: john@cre.ie** or **Tel: 00 353 (0)86 8129260** with the attached **booking form completed**. This event will be offered to Cré members on a first come first served basis, any remaining places will be offered to non-Cré members.

Cré

Is a non-for profit organisation representing the Composting and Anaerobic Digestion sector in Ireland. One part of our Mission Statement is to provide training and education to our members and members of the public. If you or your company are interested in become a member, or would like to learn more about the benefits of becoming a member please email John Brennan **Email: john@cre.ie** or **Tel: 00 353 (0)86 8129260**.