Co-funded by the Erasmus+ Programme of the European Union

ADOPTION OF AGRO-INDUSTRIAL TECHNOLOGIES (SUCH AS GASIFICATION OR ANAEROBIC DIGESTION)

CORRESPONDING MODULE 6

Introduction

Producing energy from renewable sources is not only an environmental choice, but also an obligation imposed by the European Union in the form of numerous commitments, international agreements and indicators. The fulfilment of these obligations is possible provided that intensive efforts are made to implement and disseminate the use of renewable energy sources in various sectors of the economy, including agriculture. Farms can become both producers of energy raw materials, producers of energy and consumers of energy.

ADOPTION OF AGRO-INDUSTRIAL TECHNOLOGIES (SUCH AS GASIFICATION OR ANAEROBIC DIGESTION)

CORRESPONDING MODULE 6

Description

General description of the CASE STUDY with information related to the questions already mentioned in section 3 of this document.
Background, types, basic information
Best practices

- A good example is the **biogas plant in Skrzatusz** near Piła. Waste from a distillery located close to the biogas plant is used as substrate. In addition, by-products of fruit processing and slaughterhouse waste from the nearby Piła plant are brought in as substrate. The output of the cogenerator is 525 kW.

- **An agricultural biogas plant in Boleszyn** (Grodziczno municipality, Nowa Město district, Warmian-Masurian Voivodeship) with a capacity of 1.2 MW was built at a family pig farm. The farm produces pigs - 700 sows in a closed cycle + 4,000 fattening pigs and grows maize on arable land - 200 ha own + 500 ha leased. The entire slurry produced on the farm, i.e. 16,000-20,000 tonnes per year, is disposed of in the biogas plant. The biogas plant was built to dispose of slurry in order to relieve the environment of this waste, which until now has been poured onto fields in an unprocessed form. The digestate, which now goes onto the fields instead of slurry, has excellent properties as a fertiliser and does not create an odour nuisance for local residents.

- **Agricultural biogas plant in Siedliszczki**. The dairy in Piaski (Lubelskie Voivodeship) is the source of one of the substrates for the adjacent biogas plant, owned by Wikana Bioenergia Sp. z o.o. The 0.999 MWe biogas plant

Project Number:
2021-1-FR01-KA220-VET-00034605

ADOPTION OF AGRO-INDUSTRIAL TECHNOLOGIES (SUCH AS GASIFICATION OR ANAEROBIC DIGESTION)

CORRESPONDING MODULE 6

has been in operation since 2012, with commissioning taking place in autumn 2011. In addition to whey from the dairy, which is transported to the biogas plant via a pipeline, the plant uses maize silage and also periodically distillery stock. The location of the biogas plant in close proximity to the dairy allows part of the heat generated by the cogeneration equipment to be utilised. Excess heat can be sold for heating purposes to the Piaski estate, and the design of the district heating network is in the process of being agreed with the owners of the properties through which it is to run. The biogas plant in Piaski is an example of how such an installation need not be a nuisance to neighbours. Literally on the other side of the road are residential buildings and farms, and their residents are not disturbed by the biogas plant.

Main objective of the institution implementing the case study and main achievements.
Good to remember information, practical information, links to other CSs.....
.....

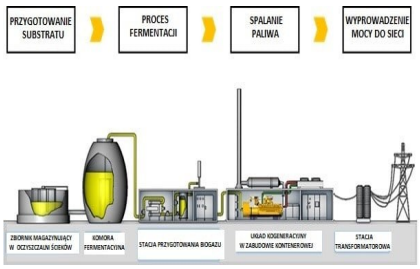

Figure Schematic of the cogeneration process using biogas fuel, source https://eneria.pl/blog/biogazownie-czyli-energia-z-natury/

Advantages and challenges

Electricity production from biogas in Poland constitutes a small percentage of the total electricity production from renewable sources. According to the Central Statistical Office (GUS), the share of biogas in the total production of energy from renewable sources was 1.76% in 2011. Until recently, this was mainly production derived from sewage sludge fermentation and landfill gas recovery, not agricultural biogas plants. The first of the agricultural biogas plants currently operating in Poland was commissioned in 2005, and to date 40 such plants have been commissioned. Earlier implementations of fermentation technology took place in the 1980s, when ten biogas plants were built with designs developed by the Institute for Mechanisation and Electrification of Agriculture in Warsaw. Economic problems of the enterprises where the biogas plants operated (they were State Agricultural Farms) and the period of political transformation led to their closure. The current increase in interest in biogas production, observed both in agriculture and in other branches of the economy where substrates suitable for fermentation are produced, can be treated as a return to the technology rather than the implementation of something completely new. Poland ranks 9th in terms of total biogas production. However, the share of biogas produced in Poland in agricultural biogas plants is steadily increasing.

Biogas production is highly controversial in Poland. On the one hand, there is interest in the construction of installations of various scales, including microbiogas plants, and on the other there are public protests.

SUMMARY
- Threats:
- lack of stable legal solutions
- lack of a clear support system
- lack of social acceptance

- Opportunities
 - legal regulations favouring biogas production
- technology development, including substrate preparation
- gaining additional revenue from waste disposal, sale of digestate
- construction of biogas networks or injection of natural gas into the grid - biogas to power vehicles

Main data

Budget, main dates (investment, start of production, period of raise funding, etc.), location, module name and number, contact data when possible, institution

The Skrzatusz biogas plant, launched in March 2011, was the first in Poland to be designed and built from scratch according to new Polish technology. The CHP plant is an agricultural and recycling biogas plant; it processes substrates from agricultural processing, by-products of food processing (distillery stock, potato pulp, vegetable and fruit waste, sludge from sewage treatment plants, slaughterhouse waste). It also produces liquid from the anaerobic decomposition of municipal waste, the so-called **post-ferment,** which is an excellent organic fertiliser used in agriculture.

Further Information

..... to be completed with links when possible

http://www.polskaniezwykla.pl/web/place/47783,pila-elektrownia-biogazowa-skrzatusz.html

https://www.wwf.pl/sites/default/files/2018-03/Wybrane%20technologie%20OZE%20dr%20Kowalczyk-Jusko.pdf

https://ooidkz.wckp.lodz.pl/sites/default/files/Biogazownie.pdf

http://mae.com.pl/files/poradnik_biogazowy_mae.pdf

ANNEX - STRUCTURE OF MODULE CONTENT TO PREPARE SLIDES

Module Name: The name of the partner: Country:

The name of the module	
Target group involved	
Current information about the topic	
Principles of the specific module	
Basic terms/measures of the module/topic	
Training materials (tasks, case studies, exercises)	
Short description of the materials	
Link of the online resources (film or video resources)	
Specific images (to support the purpose of the resources)	
Duration	
Materials	
No of Learners/Representatives	
Individual or group work	
Step by step guide	