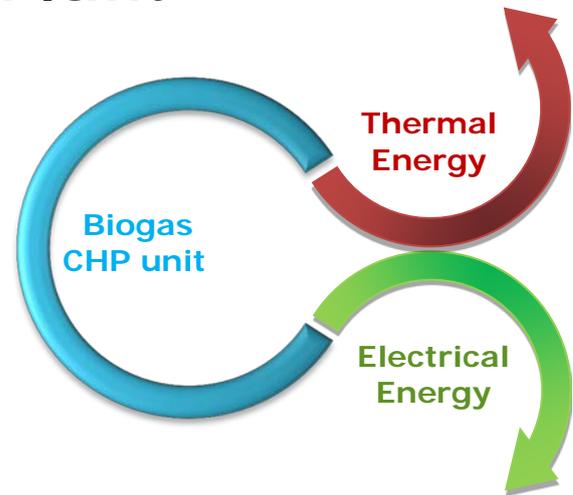


Anaerobic Digestion BIOGAS Cogeneration Plant

BIO System is a cogeneration plant (CHP) able to produce electrical energy and thermal energy from anaerobic digestion biogas.

The anaerobic digestion process takes place inside a digester supplied by an input matrix consisting of waste from livestock, agricultural crops, agri-food industry waste or other organic material.



BIO System allow to:

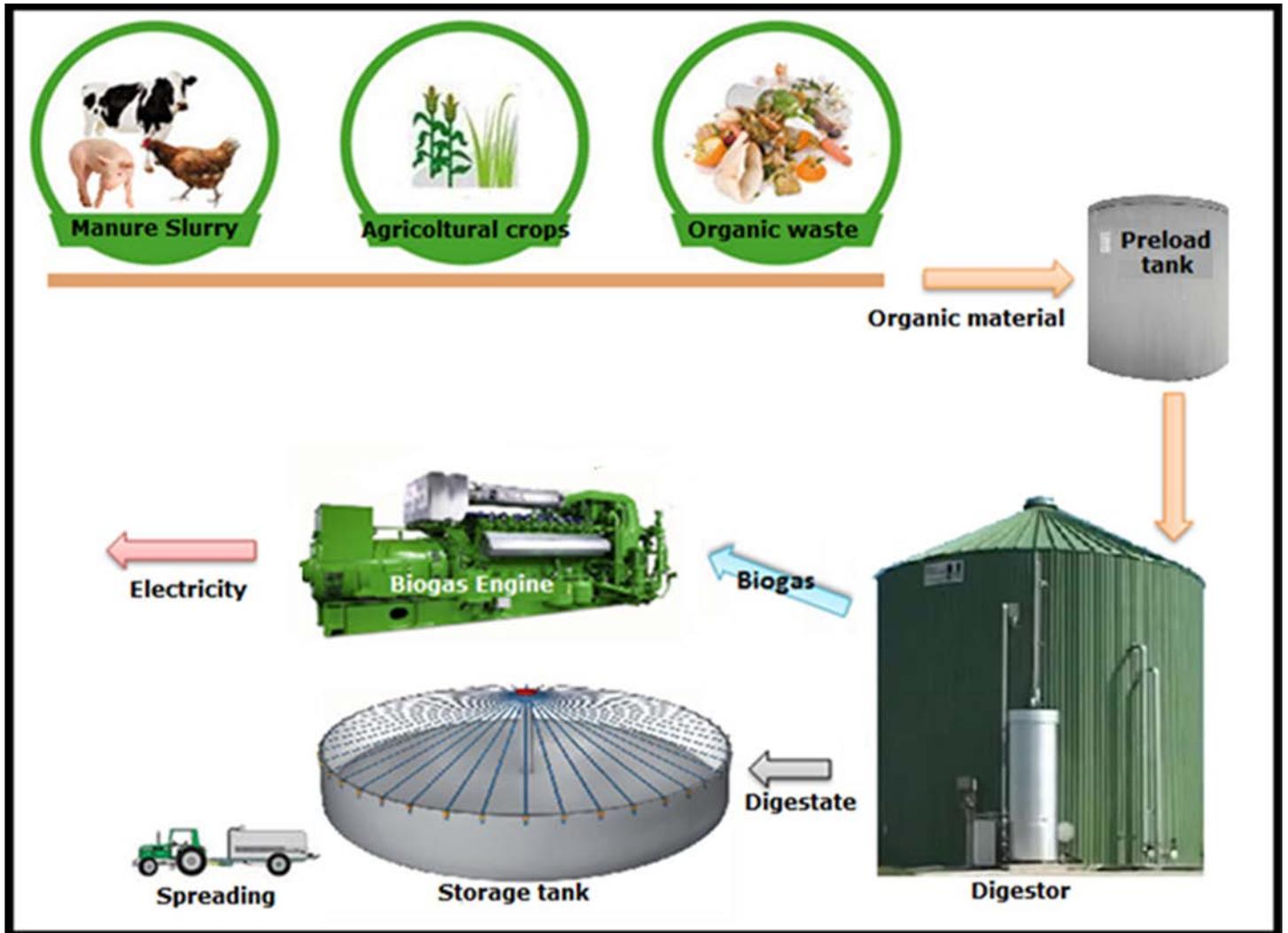
- energy production from **renewable sources**;
- agronomic and economic enhancing of **slurry, manure and organic waste**;
- direct production of **electricity**;
- direct production of **heat**.

BIO System includes:

- a **preload tank** to homogenize the input biomass;
- a **digester** to develop the anaerobic digestion process, in mesophilic environment;
- a **storage tank** with eventual digestate treatment plant;
- a biogas **treatment and compression system**;
- a modified eight-cycle **engine**;
- electrical **alternator**;
- a biomass **heating system**;
- an emergency **torch**;
- **sensors** and **main control switchboard**.

The plant size depends on the amount of raw material available.

General functional diagram



BIO System is based on consolidated technological solutions, fully integrated, thanks to the close partnership established with leading companies.

BIO System includes pre-assembled components, so the execution time on site is limited to the minimum necessary for concrete works and digestors' construction.

BIO System uses the most modern technologies for the control, also remotely, of the anaerobic digestion process and the entire plant, through an easy to use interface.



Biomass preparation

The biomass preparation occurs in a circular tank made of reinforced concrete, heated and provided with mechanical systems of handling of the raw material.

In this way the hydrolysis step is spread in a separate environment from fermentation, optimizing the methane's growth, increasing the methane yield in the various substrates and reducing the retention times.

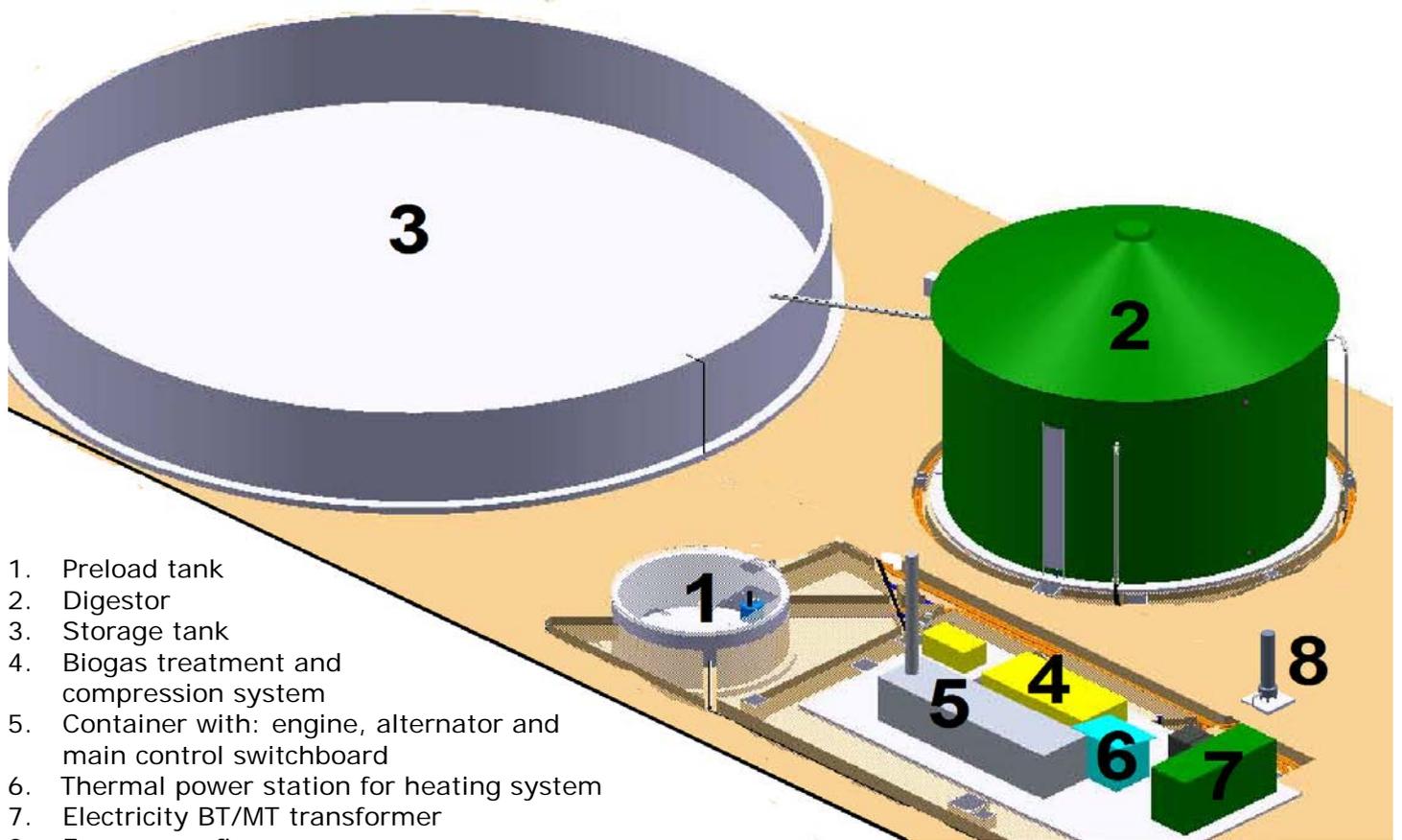
Anaerobic digestion process

The anaerobic digestion process takes place under controlled conditions inside digestors, designed paying particular attention to the needs of microorganisms dwelling in it: with an aspect ratio of 1:1, to get as close as possible to those of the rumen of a cow.

Digestors are made of multilayer coils of steel: the outer layer is made of electronically galvanized steel and the inner layer is made of a titanium alloy (stainless 1.4571 - called "Verinox"), particularly resistant to chemical and mechanical.



General plant scheme



1. Preload tank
2. Digester
3. Storage tank
4. Biogas treatment and compression system
5. Container with: engine, alternator and main control switchboard
6. Thermal power station for heating system
7. Electricity BT/MT transformer
8. Emergency flare

