Aecomix - Anaerobic digestion systems for sludge and waste

Applications

Nijhuis Water Technology, designs and supplies sludge and waste digestion systems, the Aecomix. Under anaerobic circumstances all kind of organic wastes and substances are digested into biogas and a digestate. The feed into the process could consist of:

- High load liquid organic wastes
- Food factory solid wastes
- Sludges from your waste water treatment plant

Advantages and characteristics

- Energy in a biogas plant is carbon neutral
- Biogas and energy can be produced 24/7
- Low dependence on energy from the public net and import from other countries
- Energy generation is not directly depending on wind, water and sun conditions
- Biogas can be stored

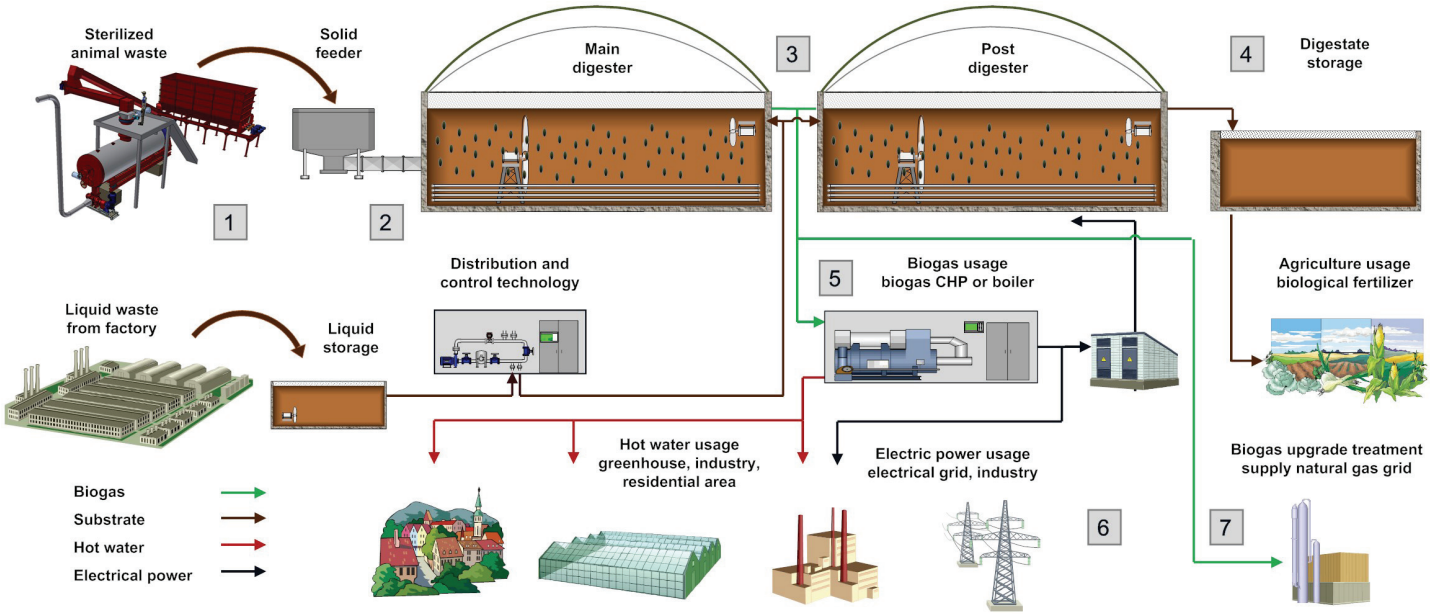
Design considerations

Depending on the available raw materials, we will design the optimal system. This system can include the following steps:

- Raw material storage
- Raw material preparation like sterilization, pasteurization, maceration
- Balancing and mixing of the raw materials
- Digester including mixing system
- Biogas conditioning and usage
- Digested solids separation and processing
- Digestate treatment

Nijhuis Water Technology b.v. | info@nijhuis-water.com
Tel : +31 (0) 315 655 466 | www.nijhuis-water.com

Aecomix - Anaerobic digestion systems for sludge and waste



Technical description

1. **Raw material storage and preparation**
   a. solids materials: storage bunkers or containers
   b. liquid materials: storage tanks
   c. preparation

   The required storage capacity is depending on the raw materials available for your plant. Based on the nature of the raw materials a preparation step will be required (sterilization, pasteurization, maceration).

2. **Digester feeding systems**

   Solids materials are periodically fed to a bunker where the solid materials are pretreated and mixed before the are automatically transferred to the digester. Liquid materials are automatically pumped into the digester system.

3. **Digester and optional post digester**
   a. Under anaerobic conditions the feed materials are digested / fermetated to create biogas with around 50-60% methane and 40-50% carbondioxide. To create an optimal amount of biogas and a stable system, the reactor is designed to operate at 38°C. The digester tank is equipped with a mixing and heating system.
   b. For high loaded systems a post digester can be added to the design. In the post-digester the process continuous and the additional gas can be extracted.

4. **Digestate storage**

   The fermentation residues from the digester and optional post digester is called digestate.

5. **Combined Power and Heat (CHP) unit**

   A CHP unit is a motor that drives a generator to electricity and heat out of the created biogas. Energy can be used for operating the biogas plant and can be sent to the public network. The heat will be used to maintain the temperature in digester tanks and can be distributed for other purposes like heating of greenhouses, living areas, industry.

6. **Electricity power supply**

   For the larger biogas plant the created energy needs to be transformed from 400V to 10,000V before connecting to the public network. For smaller plants this is not applicable.

7. **Upgrading of biogas to natural gas**

   Instead of point 5 and 6 there is an option to upgrade the biogas to natural gas. Carbon dioxide has to be extracted from the biogas, before feeding the gas to the public natural gas network.