CVT VALORISATION SUD

Energy
Bioethanol production from organic waste

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Technology's description

The production of 2nd and 3rd generation biofuels is still limited. Accordingly, biofuels made from organic waste readily available at negative cost are appealing. The innovative process described below can be integrated into existing AD (Anaerobic Digestion) waste treatment units.

For this process, the waste is placed in an anaerobic reactor with humidity levels above 60% - pH is monitored - the temperature is regulated when necessary - Fermentation is interrupted; partially fermented liquid and solids are separated before a threshold value of pH - Liquid and/or gaseous fractions containing ethanol are recovered.

Bioethanol is concentrated and/or separated using distillation, pervaporation or gas stripping. This innovative process is using an anaerobic fermentation reactor to immerse or spray waste and percolate water (several existing methods can be used). It is equipped with a liquid outlet (lixiviate) and/or an outlet for the gas produced during fermentation. A second anaerobic digester type reactor (incinerator or storage facility) is used to receive the solid waste. This second reactor produces the energy needed for the “Temperature Regulation” and/or “Ethanol Concentration" and/or "Separation” stages.

Advantages

- Robust procedure (no pretreatment, no yeasts or enzyme required)
- Simple integration in existing waste processing systems, energy recovery
- Negative costs with abundant organic waste
- Environmental friendly: contributes to decreasing greenhouse gasses.

Intellectual property

Patent

Development level

Technology validated in lab

1 2 3 4 5 6 7 8 9

Applications

- Waste processing & treatment industries such as biogas recovery or waste incineration.

Technology transfer

- Licensing - co-developments

Source : Irstea