



### Abstract

**An Andalusian research group has developed a new biological pre-treatment for organic solid waste management that consists in a new operating procedure that allows increasing the hydrolytic rate and the anaerobic biodegradability of pre-treated waste. Main advantages of this treatment consist in the increase of both the global rate of anaerobic digestion process increases (160%) and the production of biogas (16%). They are looking for licence agreement and technical cooperation.**

### Description

An Andalusian research group has developed a new biological pre-treatment for organic solid waste management. The invention consists in a new operating

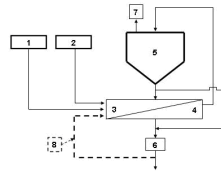
procedure that allows increasing the hydrolytic rate and the anaerobic biodegradability of pre-treated waste.

Treatment of solid waste by means of anaerobic digestion has been gathering momentum for the last few years. Although initially there was a great scepticism about the efficiency of this kind of technology, currently an increasing interest exists in its application what results in the different treatment plants running at full scale at this moment.

This new treatment is possible provided that the hydrolysis step in particulate soluble substrates is considered to be the limiting step of global rate in anaerobic digestion processes.

This pre-treatment consists in blending solid organic waste (e.g. organic fraction of municipal solid waste, hereinafter OFMSW, or other organic solid waste with similar chemicophysical characteristics) with compost as an enzymatic agent.

The operating process consists in blending the organic solid waste, by means of stirring. Next, waste are subjected to a biomethanization process by means of an anaerobic digestion with mature compost for 24 hours at atmospheric pressure and room temperature. Compost, used as an additional biological agent, is produced in the right process as a result, and its addition is carried out through a recirculation of the product obtained from the aerobic composting up to the blending unit located prior to the



anaerobic digesters. The inoculation percentage ranges from 2.5 to 5 % in volume.

### Innovations and advantages of the offer

When organic solid waste (e.g. OFMSW) are subjected to this pre-treatment, several advantages are got as a result, from the point of view both the design and the operation process:

1° Operation.

- a) High organic matter solubility in reaction medium.
- b) Owing to the organic matter solubility got with the pre-treatment, global process rate is then much less influenced by hydrolysis step rate.
- c) The global velocity of the anaerobic digestion process increases (160 % with regard to the same process without the pre-treatment), because of the organic matter increase and the hydrolysis step rate, as a result.

2° Design.

- a) Biomethanization industrial plants could operate to greater organic load rates what implies an increase of the treatment capacity.
- b) Decrease in tangible fixed assets regarding the digester size.
- c) Significant improvement both in methane net production and the methanization rate (16 %).
- d) Methane could be use for electricity production by cogeneration, both for the installation working and the electric-power system.
- e) It is not necessary a great investment for adaptation of the running industrial plants to this new treatment. Just a recirculation of the product resulting from the composting up to the blending unit prior to the digesters is enough.

### Current and Potential Domain of Application

The potential market application is the environmental engineering and biogas production industry all over the world



OTHER INDUSTRIAL TECHNOLOGIES,ENERGY

Technology Offer

A new biological pre-treatment for organic solid waste management

(08 ES 27F4 0IZ4)



**For further information (including IPR status)**

**please contact:**

Susanna Chericoni

Phone: 39 050 931620

Fax: 39 050 931640

Email: s.chericoni@cpr.it