

Accepted Manuscript

Title: Bio-waste selection and blending for the optimal production of power and fuels via Anaerobic digestion

Authors: Borja Hernández, Erick León, Mariano Martín

PII: S0263-8762(17)30142-9

DOI: <http://dx.doi.org/doi:10.1016/j.cherd.2017.03.009>

Reference: CHERD 2607

To appear in:

Received date: 12-12-2016

Revised date: 9-3-2017

Accepted date: 10-3-2017

Please cite this article as: Hernández, Borja, León, Erick, Martín, Mariano, Bio-waste selection and blending for the optimal production of power and fuels via Anaerobic digestion. *Chemical Engineering Research and Design* <http://dx.doi.org/10.1016/j.cherd.2017.03.009>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Bio-waste selection and blending for the optimal production of power and fuels via Anaerobic digestion

Borja Hernández, Erick León, Mariano Martín¹

^a Departamento de Ingeniería Química. Universidad de Salamanca. Pza. Caídos 1-5, 37008 Salamanca (Spain)

¹ Contact autor: mariano.m3@usal.es

Corresponding author: Professor Mariano Martín
Univ Salamanca
Dept. of Chem. Engn. and Text.
Plz. Caídos 1-5
37008 Salamanca
Spain
Phone: +34923294479
E-mail: mariano.m3@usal.es

Highlights

- -Wastes can be a source for fuels and chemicals via biogas
- -Mathematical formulation is developed to select the optimal waste blend
- -Chemicals production suggests biogas compositions of 50% methane and 47% CO₂.
- -Digestate economics is key for selecting the appropriate waste or mixture.
- -Sludge, cattle slurry and urban food waste are the preferred sources.

Abstract.

In this work we select the optimal organic waste or waste blend for the production of chemicals, including DME, methanol, ethanol and FT fuels, and as drop-in fuel via biogas dry or hybrid reforming. Detailed models for biogas production and processing are used to compute the optimal mixture of biomass wastes among cattle and pig slurry, cattle and pig manure, sludge, urban food waste and urban green waste to be digested to obtain the required biogas. Even though the H₂ to CO ratio required by each chemical is different, the biogas composition suggested is similar, 50% methane, 47% CO₂. As a source of energy, 70% methane content is targeted. The

Download English Version:

<https://daneshyari.com/en/article/4987033>

Download Persian Version:

<https://daneshyari.com/article/4987033>

[Daneshyari.com](https://daneshyari.com)