



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Contribution ID: 243

Type: Oral Presentation

Optimization of biogas by co-digestion using a field-scale bath digester

Thursday, 12 July 2012 16:40 (20 minutes)

Abstract content
 (Max 300 words)

Abstract. Biogas technology converts organic wastes into biogas, which consists of about 80% methane. The digester effluent after digestion can be used as manure. Co-digestion of organic wastes involves mixing of various substrates in varying proportions. The investigation was carried out using a field batch biogas digester. Fresh goat manure, horse manure and donkey manure were collected from University of Fort Hare Honeydale farm. The latter substrates were analyzed for total solids (TS), volatile solids (VS), total alkalinity (TA), chemical oxygen demand (COD) and calorific value (CV) before they were co-digested in a bath biogas digester in different mixing ratios. The biogas composition for each sample was analysed using a Non-Dispersive Infrared gas sensor, which detects methane gas up to 100% volume. Preliminary results show that a mixing ratio with 34% goat manure; 33% horse manure; 33% donkey manure produced biogas with the highest methane yield. Therefore, biogas yield was influenced by variations in mixing ratios as well as waste types used.

Apply to be
 consider for a student
 award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
 PhD)?

PhD

Main supervisor (name and email)
and his / her institution

Dr. G. Makaka GMakaka@ufh.ac.za University of Fort Hare

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

YES

Primary author: Mr MUKUMBA, Patrick (University of Fort Hare Physics Department)

Co-authors: Dr MAKAKA, Golden (University of Fort Hare); Dr MAMPHWELI, Sampson (University of Fort Hare)

Presenter: Mr MUKUMBA, Patrick (University of Fort Hare Physics Department)

Session Classification: Applied Physics Forum

Track Classification: Track F - Applied Physics