

عنوان مقاله:

Production of Biogas from Dairy Manure and Frying Oil in a Continuous Flow Digestion Equipped with an Automatic Control System

محل انتشار:

مجله تحقیقات بیومکانیسم و بیوانرژی، دوره 1، شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Sahar Khademi - *Department of Mechanical Engineering of Biosystems, Isfahan University of Technology, Isfahan, Iran*

Aminolah Masomi - *Department of Mechanical Engineering of Biosystems, Isfahan University of Technology, Isfahan, Iran*

خلاصه مقاله:

The increase in global energy demand in the face of the depletion of fossil fuel reserves and on the other hand the harmful environmental effects and global warming caused by the consumption of fossil fuels is one of the problems ahead. Therefore, renewable energy sources such as biogas should be developed. In this study, an automatic control system was developed to control the material's temperature and pressure inside a continuous plug flow digester with an approximate volume of ۳۶۰۰ liters. After installing the control system, in four separate periods, the production of biogas and methane for four different types of substrate including a combination of cow manure and water (slurry) with a ratio of ۱: ۱ (treatment ۱), cow manure slurry and ۸% used frying oil (treatment ۲), co-digestion of manure slurry ۱۰% used frying oil (treatment ۳), co-digestion of manure slurry and ۱۲% used frying oil (treatment ۴). At each feeding and discharging, a step used the substrate and the outgoing material to determine the pH level, total solids (TS), volatile solids (VS), ammonia, and organic loading (COD). Also, the amount of gas generated at each digester discharge was recorded from a gas flow meter. Data were analyzed in SAS statistical software. The significant difference of each parameter was evaluated with LSD mean comparison. The results showed that the oil increase had a great influence on the production of biogas and increase the methane content. In addition, the mean comparison of LSD showed a significant difference between the average volumes of biogas produced for four different types of substrate.

کلمات کلیدی:

BioGas, continuous flow digestion, cow manure, frying oil

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1582380>

