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Performance monitoring of a fabricated biogas digester fed with pig dung

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A 2.2 cubic metre volume biogas digester was designed, fabricated and tested for its performance using pig dung. The biogas digester was made of high density polyethylene (HDPE) plastic. The use of the plastic material was advantageous because the characteristic of defect such as cracks in the brick structure experience in the fixed dome type of biogas digester made of bricks or cement does not occur in plastic material. After the fabrication, the biogas digester was fed with pig dung to check its performance. The following parameter of the pig dung was examined; total solids, volatile solids, chemical oxygen demand and pH. The biogas composition and production were determined using a gas analyzer and mass flow meter respectively, while the pH of the slurry was measured using a digital pH meter. In the experiment, it was observed that the rate of biogas production from the pig dung increases as the retention time increases and later decreases after days of biodegradation. The optimum biogas yield was 2.30 cubic metre at pH of 6.8 during the 18th to 21st day of the study. Also, the study shows that pig dung is a potential substrate for biogas generation and should be encouraged. In conclusion, the methane yield of the pig dung was 60 %.

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

Yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

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

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

Yes

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