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Accredited by Institution of Engineers (India) and TCS.

7.1.3
Facilities in the Institution for Waste Management

INDEX

Solid Waste Management

Solid (Metal Scrap) Waste Collection

Solid waste management (Food waste and solid waste management)

Dry and Wet Waste Management


Collection of Dry and Wet Waste

DRY&WET WASTE SVERI	**You Tube Link-:** https://youtu.be/OTbEVbuYfFM	

Dry and Wet Waste Management

DRY&WET WASTE DUMPING-SVERI	You Tube Link-: https://youtu.be/ExWdzbN1ufo	

Research Paper on Biogas Digester

Design optimization of biogas digester for performance improvement and fault minimization

Vidyarani S. Kshirsagar & Prashant M. Pawar

Link for paper: https://doi.org/10.1080/21622515.2018.1466915

Design optimization of biogas digester for performance improvement and fault minimization

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ABSTRACT

The efficiency and fault tolerance of biogas plant depends on the proper mixing of the sludge in the digester. The quality of mixing can be numerically evaluated based on the velocity profile in the digester. Most of the earlier studies have been focused on improving these velocity patterns with the help of impellers, which requires extra energy to drive them. The current study explores a passive approach for improving velocity pattern by providing the static flaps of optimal sizes at optimal locations. The design optimization problem is formulated to maximize the surface and domain velocities in the digester by varying the geometries and locations of flaps. Sufficient surface velocity gives an advantage by preventing the process of scum formation whereas the improved domain velocity improves gas production rate by improving contact between biomass flocks and the substrate. This concept is demonstrated through the numerical results obtained using CFD and optimization tools of COMSOL Multiphysics software.

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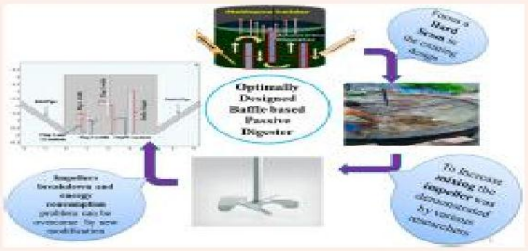
Biogas; computational fluid dynamics (CFD); design modification; mixing; optimization; scum



1. Introduction

Biogas production through anaerobic digestion (AD) process gives methane with relatively good calorific value using simplistic design and processes which make it an attractive source of clean energy [1]. Performance reliability is a major hurdle in making biogas plants popular for domestic applications. The performance reliability of these plants depends on the size of the plant, basic design, operating conditions, type of feed, water to feed ratio etc. This reliability can be improved by minimizing the faults in various subsystems of the biogas plant. These faults can be grouped as faults of various sub-systems viz. structural components, piping, biogas utilization, effluent disposal and biogas production [2]. Amongst these faults of various subsystems, the faults in biogas production system are critical as it takes almost 2-3 months for reestablishing this process after repairing these faults. Two major causes of the failure of biogas production system are thick scum formation and breakdown of anaerobic digestion system [2]. Both these faults are due to improper mixing of biomass and substrate. The effect of the mixing modes on biogas production rate is examined by several researchers [3–5]. Hoffmann et al. [6] has noted

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Liquid Waste Management

LIQUID WASTE MANAGEMENT- SEWAGE TREATMENT PLANT	You Tube Link-: https://youtu.be/PHMqFxIIjZE	