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Experimental research of biogas production by using sewage sludge and chicken manure bioloadings with wood biochar additive

Dainius Paliulis, Vitalij Kolodynskiy and Pranas Baltrenas
Vilnius Gediminas Technical University, Lithuania

Bioreactor-special device is used for biogas production from various organic materials under anaerobic conditions. In this research, a batch bioreactor with a mechanical mixer was used for biogas production from sewage sludge and chicken manure bioloadings. The process of anaerobic digestion was mesophilic (35°C). Produced biogas was stored in a gasholder and the concentration of its components was measured with INCA 4000 biogas analyser. Also, a specific additive (pine wood biochar) was applied to prepare bioloadings. The application of wood biochar in bioloading increases the CH₄ concentration in the produced gas by 6-7%. The highest concentrations of CH₄ were found in biogas produced during the decomposition of sewage sludge bioloadings. The maximum CH₄ reached 77.4%. Studies have shown that the application of biochar in bioloadings also reduces average CO₂ and H₂S concentrations in biogas.

Biography

Dainius Paliulis is an assoc prof of Environmental protection in Vilnius Gediminas technical university. Scientists are implementing a project called: "Small-sized bioreactor with three-phase system for biogas production and treatment research and development". This research was funded by a grant (No. S-MIP-17-20) from the Research Council of Lithuania.

vitalij.kolodynskiy@vgtu.lt

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