

SEPARATION OF SOLID AND LIQUID COMPONENTS OF *DIGESTATE*

by

Rizki Ramadhani Siregar

ABSTRACT

Cattle manure can be used to produce biogas which can be utilized as an alternative energy and to reduce the greenhouse effect. Byproduct of biogas digester effluent (digestate) form slurry mud which made it so difficult for packaging and transport that needs to be separated into a solid part and the liquid portion. This study aimed at separating the solid and liquid components of digestate.

The study was conducted at the Water and Land Resources Engineering Lab, Department of Agriculture Engineering, the University of Lampung. Experiment was carried out using three methods, namely precipitation (sedimentation), filtration, and mechanical pressing. Parameters to be observed included total solid, solid and liquid fractions after separation, and performance of the separator.

Results showed that digestate has a total solid content of 9.77% and 90.23% water. Solid component contained 0.02% N, P 2.89 ppm, and K 466.01 ppm; while the liquid component contained 0.38% N, P and K 937.51 161.65 ppm ppm. The study also revealed that the sedimentation and filtration methods were ineffective for separation of solid and liquid components of digestate. Digestate separation using precipitation method requires a very long time. Precipitation for 6 months precipitated 5,15% out of the 9.7% total solid. Separation using a filtration was not successful because the filter is clogged soon. Mechanical separation method using a press was capable of separating solid and liquid digestate components effectively. Solid components and liquid digestate successfully separated with a ratio of 64.7% : 33.8% (liquid: solid) with the percentage loss of 1.5%.

Keywords : digestate, sedimentation, filtration, and pressing