

ABSTRACT

Biogas is one of the fuel that can be used as an alternative energy source. Substrates that can be used in producing biogas is a mixture of tofu waste water and cow manure. Biogas producing various types of gas that can be used as energy sources, one of them is CH_4 . The degree of acidity (pH) is a factor that affects the productivity of methane gas. Substrate as well as a place to live and food source for bacterial need to be controlled optimally. The degree of acidity (pH) of need to be controlled so the productivity of methane can be optimum. The purpose of this study is to set the pH of the substrate mixture of waste of tofu and cattle so the optimal result of productivity methane in reactor can be achieved.

PH has been observed in two identical reactors with different treatments. The reactor is equipped with a methane sensor, temperature sensor, injector CaCO_3 , and the motor stirrer. Characterization of each sensor and actuator have been performed in order to make sure that each sensor can measure the variabel precisely. pH value of subtrate on reactor 1 controlled at 7. While pH value of substrate on reactor 2 is not controlled. The study was conducted for 9 days and observed variables of temperature, pH, and volume of methane produced for each day.

The results showed that controlling the pH value of 7 for each day at reactor 1, cause the productivity of methane is 83.176 ppm with an average productivity of 9241 ppm for each day. While in reactor 2 which pH value of substrate is not controlled, show that the productivity of methane is 22.280 ppm with an average productivity is 3.142 ppm for each day. There is a difference of 60.096 ppm between reactor 1 and reactor 2. It show that by controlling the pH of substrate can increase the productivity of methane.

Keywords-methane, CH_4 , temperature, pH, cattle waste, liquid waste of tofu