

ABSTRACT

This research developed a volume monitoring system and pressure control on the production of biogas based on the Internet of Things as its monitoring. The study was conducted for 20 days on a reactor with a fixed dome type measuring ± 5 liters with the method of filling semi-continuous feeding once every 2 days. The substrate used is a mixture of stale rice and water in a ratio of 1: 2. The volume monitored and measured and the controlled pressure are measured using flow sensors and pressure sensors. The average error values of each sensor were 1.67% and 2.25%. The reading data is displayed on the LCD attached to the box or panel box. In addition, data can also be monitored remotely through an Android or web application every 1 minute with a data transmission travel time for one delivery, which is 6 seconds. Every 5 minutes data is sent and stored on the SD-Card as backup storage. The application of the PWM method used is through a fast switching-based ON/OFF valve by setting the delay value on the Arduino by 100ms or the duty cycle value is 10%. This application aims to prevent the gas produced from being wasted much and the pressure obtained can be stabilized at the specified set-point, which is at 0.6604 psi. This pressure control system produces a steady state error value of 3.646%. During control, the biogas produced on average every day is 1.05 liters.

Keywords : *Biogas, Control, Digester, Internet of Things, Monitoring, Pressure*