

## **ABSTRACT**

*Biomass is a renewable energy source by utilizing the organic waste. This process has three anaerobic fermentation processes, such as hydrolysis, acidogenesis, and methanogenesis. Environmental factors which may affect the biogas production are pH and temperature. This research utilized an anaerobic baffled reactor (ABR) with a total capacity of 15 liters consisting of 2.5 liters of a gas chamber, 8 liters of rice substrate, and 4.5 liters of cow rumen bacteria. The enhancement of temperature conditioning, gas production would also have more result. Volume of total gas which was the most optimum was generated in temperature 40°C was 11100 ml. The most optimum percentage of hydrogen gas in temperature 35 °C was 50.637 % and total solids or soluble particles in the water was 1380 ppm. At a temperature of 35°C in the fermentation was 50.637 % and the number of solids or particles dissolved in the water was 1380 ppm. The temperature of 30°C was the optimum temperature for biogas production with 7.669 % of methane indicated a mesophilic conditioning which as able to withstand the temperature fluctuations  $\pm 1^{\circ}\text{C}$ .*

*Keywords : Biomassa, anaerobic baffled reactor (ABR), conditioning temperature.*