

ABSTRACT

Considering of the energy needs and minimize global warming to occurs, need to develop non-polluting and renewable energy. Biomass is a renewable energy that can be obtain from the organic matters. Process of organic matters into biomass can produced variety of gas that can be rewarding such as Hydrogen. Hydrogen has a high combustion and environment friendly because it only produced vaporized water as emission.

The methods used in this research is anaerobic fermentation. this process do not use additional bacteria or enzymes, only use pre-treatment phase before fermentation begin for 5 days straight. The mixture is mashed using a mixer. The instrument used in this research is anaerobic digester made by PVC plastic with the total volume is 1,5 liter. During the fermentation process temperature will be kept on 35 degrees Celsius, with thermistor as thermal sensor where it kept inside the reactor and controlled by micro controller.

The variations used to determine the highest hydrogen product between the substrate and water are 1: 2, 1: 1 and 2: 1. From the research conducted the highest yield of hydrogen product is obtained with the ratio of substrate and water 1: 2.. Produces hydrogen at 5% of the total output volume of 450ml. This shows that water content affects the amount of hydrogen production because water supports the homogeneity level between substrate and microorganism.

Keywords: biomass, hydrogen, fermentation, anaerobic digester.