Biogas Quality Improvement Through Purification Process with Adsorption Method

Siti Diah Ayu Febriani, S.Si, M.Si *(minithesis counselor)*

Enggar Faturahman

Study Program of Renewable Energy Technique

Department of Engineering

ABSTRACT

The impurity gas content in biogas is still quite large, this causes a decrease in the calorific value or heat produced, therefore it is necessary to purify the impurity gas content. So that in this purification it is hoped that the methane gas content in the biogas can increase and the impurity gas content such as CO_2 and H_2S can be reduced. Purification in this study using the adsorption method. Adsorption is a physical phenomenon that occurs when gas or liquid molecules come into contact with a solid surface and some of the molecules condense or stick to the solid surface. The purpose of this study was to increase the CH_4 content in biogas by purifying by adsorption using three types of purification media. The results showed that the CH_4 content without the purification process was 61371 ppm. In refining with mahogany charcoal, the CH_4 content is 70715 ppm, purification with limestone CH_4 content is 83173 ppm and purification with grams of iron CH_4 content is 61882 ppm. The content of methane gas in percent without adsorbent is 60%. Purification of limestone has the highest methane gas content of 82%, mahogany charcoal has a methane gas content of 69% and grams of iron of 60.6%. The recommended adsorbent for use in the biogas purification process in this study is limestone because it can increase the CH_4 content from 60% to 82% or an increase of 22%.

Keywords: *biogas, CH_4, adsorption, purification*