

## The Separation efficiency of livestock manure biogas by Membrane

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**ABSTRACT:** *In this study, biogas generated from the anaerobic digestion of animal manure was purified and separated and the hollow fiber membrane was prepared by the phase separation of cellulose triacetate (CTA) method to separate the biogas. The product was used in the experiment because the separation of gas by using a gas permeation rate of the hollow fiber membrane was produced. A hollow fiber gas separation membrane module using the hollow fiber membrane in the test was produced and biogas generated in the anaerobic digester was purified using a gas separation membrane module. The separation and purification of the resulting biogas was generated from the livestock manure. The isolation and purification of the resulting biogas was CH<sub>4</sub> 94.2 %, CO<sub>2</sub> 92.0 % and recovery efficiency was CH<sub>4</sub> 102.1 %, CO<sub>2</sub> 83.5 %. Siloxane 0.1 PPM or less, H<sub>2</sub>S 3 PPM or less were fed, Dewpoint -20<sup>0</sup> C below by controlling the biogas supplied to the gas separation membrane module at this time and the operating pressure of the gas separation membrane module was 4~7Bar, in the range of temperature is 15~45<sup>0</sup>C. Therefore, it was separated in a high concentration of CO<sub>2</sub> 92.0 % CH<sub>4</sub> 94.2 %, compared to the composition of the biogas (CH<sub>4</sub> 68 %, CO<sub>2</sub> 28 %, O<sub>2</sub> 0.6 %, H<sub>2</sub>S 1 PPM or less, Balance 2.7 %) before carrying out the separation and purification test of biogas produced in the study using the gas separation membrane module. In addition, the CH<sub>4</sub> and CO<sub>2</sub> transfer efficiency was maximized and saved in the stainless steel tank.*

**Keywords :** *Cellulose triacetate, CO<sub>2</sub>, CH<sub>4</sub>, separation, purification, transfer efficiency*

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