

Purification of Biogas Content Using Double Layer Method Tile Adsorbent

Media on Polije Biope

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ABSTRACT

The potential for new and renewable energy in Indonesia is very abundant, one of which is the potential for biomass energy. Biomass energy is generated from natural sources such as plants, and animals. One type of biomass that is often found is biogas. Biogas is produced from fermented in the form of gases that can be burned from organic materials that are processed anaerobically with the help of microorganisms in a container in the form of a digester. The main gas of biogas is in the form of CH₄, but the content of other impurity gases is very high, one of which is CO₂ gas which can reduce the calorific value. So that a step is needed to purify the CH₄ gas content using tile adsorbent media with a double layer method. Tiles contain SiO₂ and Al₂O₃ which are categorized as montmorillonite which can absorb CO₂ gas. The double layer method is a purification process that passes gas in the adsorbent medium through 2 purification tubes. The use of tile adsorbent media in this study used 3 mass variations, namely 250 grams, 300 grams, and 350 grams. This is done to find out the best adsorbent mass and the quality of methane gas in the purification process using the double layer method. Based on the results of the study, data were obtained that the best adsorbent mass for CO₂ gas absorption was the least mass, namely 250 grams, and the quality of methane gas based on the MQ-4 sensor measuring instrument increased by 27.48% in the B1 variation, 23.45% in the B2 variation, and 0.32% in the B3 variation, while according to the readings of the gas chromatography tool, the quality of methane gas decreased this was influenced by the gas flow rate which was directly proportional to the pressure, as well as other factors that can influence is that the double-layer purification tube has not been fully vacuumed.

Keywords: *Biogass, Tile, Double Layer, CO*