***Modification of Multilevel Hydrogen Sulfide (H2S) Gas Purification Equipment for Biogas at* Inti Indosawit Subur Buatan Satu *Inc.*(PT Inti Indosawit Subur Buatan Satu)**

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ABSTRACT

Indonesia is a country that is very rich with natural resources, which includes natural gas, the usage of natural gas and natural gas-fuelled electrical conversion machine, as time goes by, the availability of the natural resources kept decreasing, and to anticipate this issue is with renewable energy, specifically Biogas. Biogas is a gas that is produced from a process of decomposing organic matter by microorganisms in anaerobic state. Palm Oil Mill Effluent or POME is an oily liquid waste and non-toxic matter that came from palm oil production. Even though it is non-toxic, this liquid waste can cause an environmental disaster, due to the fact that it is discarded to open waters and, releases a massive amount of methane gas and other lethal gasses that causes greenhouse gas emissions resulted approximately as much as 16.000 Nm^3 with H_2S level of 2700 ppm–3000 ppm. Equipment modification became one of the choices to optimize the decrease of H_2S levels on biogas, the suggested modification is by creating a small-scale level H_2S gas reduction equipment that follows the existing equipment principles and will become the example for large-scale application in the company. Based on the equipment testing results, the average data is obtained from the results of varying liquid permeate volume into three. The variation of liquid permeate volume showed the data of reduction levels of H_2S, for H_2S from 126 ppm to 65 ppm or 49% by using a volume of 1.5 litres of liquid permeate, 167 ppm to 56 ppm or 66% by using a volume of 2 litres of liquid permeate, and 211 ppm to 50 ppm or 76% by using a volume of 2.5 litres of liquid permeate. The data showed that the decrease of H_2S levels are more noticeable on the usage of liquid permeate as much as 2.5 litres.

***Key words**: POME, biogas, H_2S, permeate*