

World's first :

Gas Pipeline Injection of Bio-Methane derived from Palm Oil Mill Effluent (POME)

Kian Hoe Plantation



Background

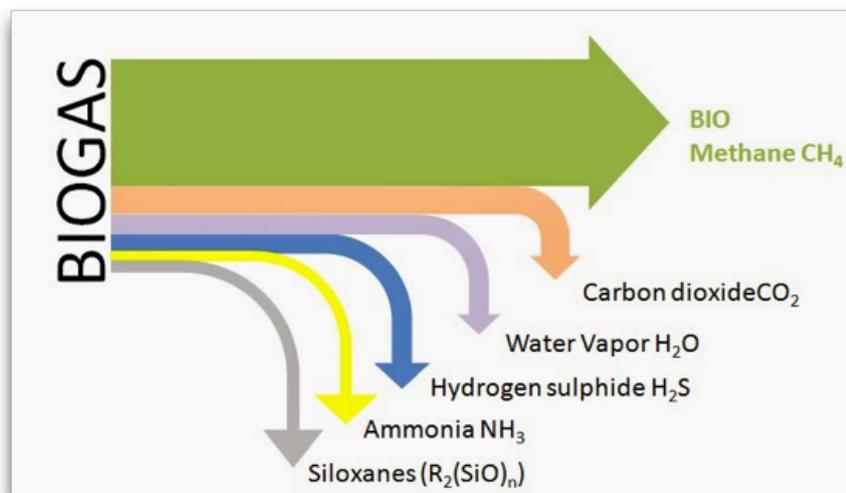
Palm Oil Mill Effluent (POME) is a final liquid discharged from palm oil mill, which flows into series of ponds located nearby for a biological treatment before being released into watercourse. During these series of processes, the degradation of organic compound releases a biogas, which has a methane content as high as 60% while the remaining compositions were made up of carbon dioxides, nitrogen, sulphur and traces of other inert gases. Methane is a harmful gas, knowing as 25 times more harmful than carbon dioxides. For decades, these gases have been slipping into the atmosphere and significantly contribute to the amount of harmful greenhouse gases (GHG) emitted by our country.

Increasing awareness towards sustainable industry, Malaysia Palm Oil Board (MPOB) had drafted a roadmap for reducing the emission from POME. Methane in particular need to be either trap and destruct, or its generation has to be avoided at all cost. However, since significant amount of investment is needed but promising no economic return, less millers are interested to the idea.

Methane in general is a source of energy, having similar characteristics as common natural gas. However, most palm oil is self-powered and need no additional from the biogas. In many cases, exclusively to the mill nearer to the TNB grid, biogas could be used to generate electricity and be injected into national line. However, most of palm oil mills in Malaysia are located far from grid, thus the idea can't be applied.

Coronation Palm Oil Mill: Bio-methane Project

Bio-methane is a terminology refers to a biogas, which has high enough methane content to be used by natural gas users. At source, methane content is only at 60%, and therefore upgrading process is carried out by removing other elements and get a methane content of more than 90%. A process plant doing this is commonly called as methane upgrading plant.



Kian Hoe Plantation owned Coronation Palm Oil Mill has taken another step by building new anaerobic pond equipped with methane trapping system, together with a methane upgrading plant. Its proposed anerobic pond is so far the biggest of its kind in Malaysia, and expected to generate about 3,000m³ of biogas an hour. The methane upgrading plant will then purify the biogas and produces a 95% purity of bio-methane, which is equivalent to natural gas that is used in this country. Apart from bio-methane, generated biogas will partially use to generate power for mill's consumption including wastewater treatment and also to power the methane upgrading plant.

Recently, Kian Hoe had signed a Gas Supply Agreement (GSA) with Gas Malaysia to supply of a minimum of 200,000MMBtu of bio-methane for a period of 15 years. This is going to be a mutual-agreement-green project carried out by both Kian Hoe and Gas Malaysia. Both parties are investing on each part, as Kian Hoe going to develop a RM20 over million biogas and bio-methane facility while Gas Malaysia is investing on the pipeline extension as well as quality checking facilities. Within these 15-years, Gas Malaysia will pay Kian Hoe Plantation based on the amount of bio-methane injected into their pipeline. With this agreement, Kian Hoe will be the first palm oil mill in the world to inject a bio-based methane into any gas pipeline utilities. This gas will then distribute to industries within Kluang area, which are currently Gas Malaysia clients.



This project in total will result Coronation Palm Oil Mill in cutting more than 95% of its greenhouse gases (GHG) emission. The reduction is expected up to 150,000mt of CO₂ equivalent a year. This is also going to be one of the biggest GHG reductions ever in palm oil mill. There is also idea of recover the CO₂ gas stream, but further study on its economic impact is necessary. If it is to be materialized, this project will be able to reduce 99% of its emission. Coronation Palm Oil Mill, as one of the biggest mills in Malaysia is hoping this project will be a new start in becoming more sustainable and setting up new standard for palm oil mill in this country.