

Palm Oil Mill Effluent (POME) Biogas Extraction System - Design and Build

Geoplus Enviro Sdn. Bhd. was established in 1992 with the aim of providing engineering solutions for the environment. Our works ranges from rain-water harvesting and storm-water management; ground-water protection, river bank reinforcement or protection; and design and build for biogas/landfill gas for power generation with renewable energy.



Palm Oil Mill Effluent (POME) is a by-product waste from the extraction process of crude palm oil (CPO). Standard practice in palm oil mill operation in handling the POME waste is through biochemical processes. This is done by holding the POME in a storage by earth pond or tanks, apply chemical treatments and engage in either aerobic or anaerobic processes before finally allowing an environmentally safe discharge.

Studies has shown that during the process of digestion biogas is produced which has a high calorific gas consisting of mainly methane (CH₄) and carbon dioxide (CO₂). Biogas application in renewable energy (RE) is gaining traction to diversify the world's energy demand.

Geoplus Enviro Sdn Bhd has designed, built and commissioned a system in Malaysia that extract and capture biogas from POME for RE. With our system, it will also manage the digestion process to upgrade the reduction of the biochemical oxygen demand (BOD) and chemical oxygen demand (COD) to meet the required environmental standards.

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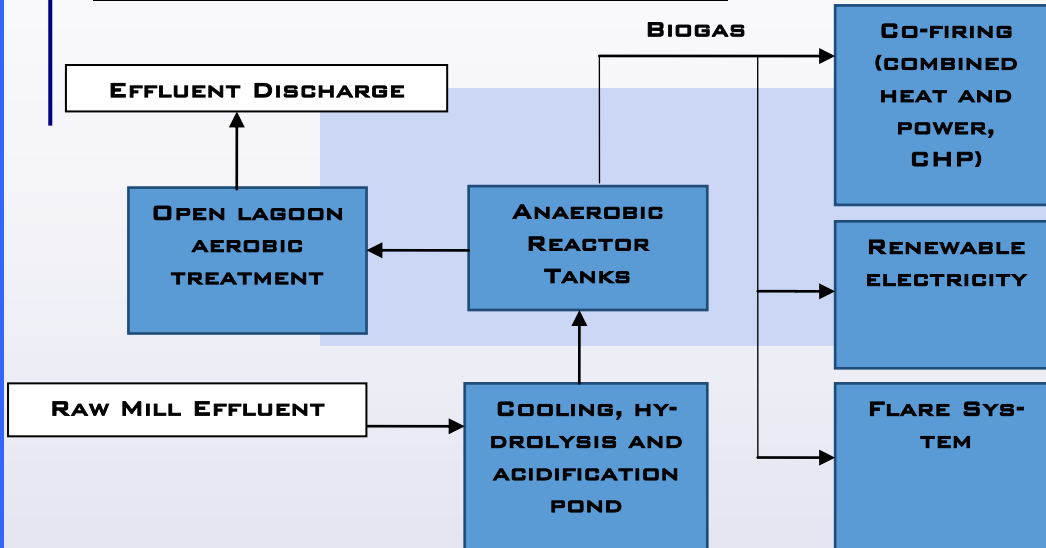
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Tomorrow's Solution, Today's Innovation

BIOGAS PROCESS & THE DESIGN CONCEPT

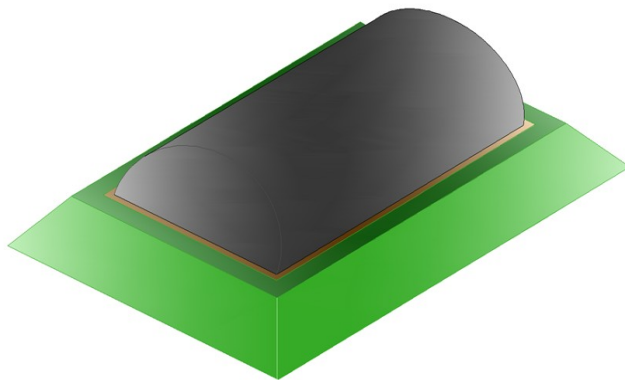


THE POME BIOGAS PROCESS



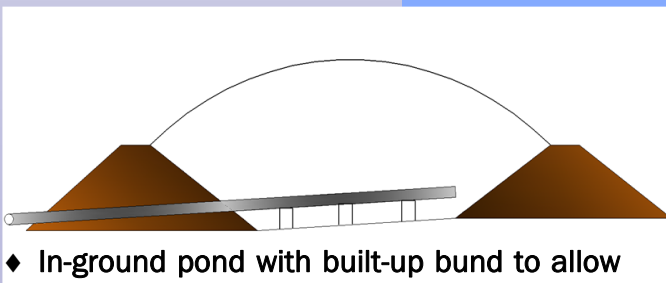
- ◆ POME digestion undergoes a series of processes where acidogenic bacteria will break down these sugar, amino acids and fatty acids into acetic acid, hydrogen and carbon dioxide.
- ◆ Methanogens found in the last step will utilize acetic acid, hydrogen and carbon dioxide to produce methane gas.

THE ANAEROBIC DIGESTER DESIGN



- ◆ Covered-In-Ground Anaerobic Reactor (CIGAR) - in-ground POME pond with total cover for induction of anaerobic process.
- ◆ Floating Cover for Biogas Capture and storage
- ◆ Material : Durable and high strength Mechanical properties with flexibility made from High-Density Polyethylene (HDPE) Geomembrane.

FEATURES



- ◆ In-ground pond with built-up bund to allow for integrated piping system of agitation, POME seeding and required POME fuel system.
- ◆ Earth gradient controlled of sludge management to minimise sludge build up in anaerobic pond.

BENEFITS

- ◆ Fulfilment of MPOB licensing and EPP 5 requirements
- ◆ Certification requirements for RSPO and ISCC for global market
- ◆ Secondary effluent treatment
- ◆ Replacement of biomass and diesel as boiler fuel

