

BIOGAS SYSTEM FOR PALM OIL MILL EFFLUENT (POME) & DECANTER CAKE

MAIN ADVANTAGES OF OUR 2-STAGES DIGESTION TECHNOLOGIES (CSTR+MCL):

- CSTR is designed for fast installation and use small foot print area.
- Easy of sludge discharge and low risk of sludge sediment at the tank bottom.
- By combining with Modified Covered Lagoon (MCL), total COD removal of our 2-stages digesters can achieve up to 95%.
- It gives the highest biogas production yield compared with other technologies.
- Safe & reliable process design, through fully automated control of biogas and power generation plant.

OUR CSTR TECHNOLOGIES:

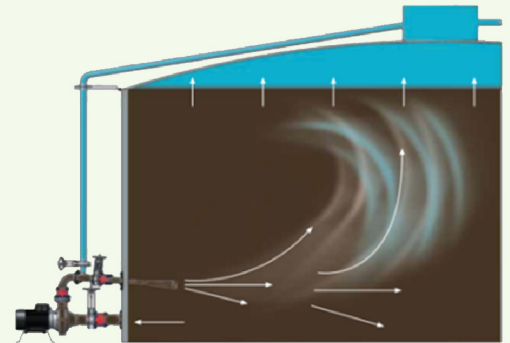
- The tank structure uses Glass-Fused-to-Steel (GFS) or hybrid Epoxy-GFS bolted steel tank, which is the top in class of material technology, easy & time controlled construction.
- Pump GasMix is used to completely circulate substrates for reaching of highest gas production. All components of Pump GasMix system is placed outside the digester, providing less complexity of services and maintenance. Accessibility for routine maintenance and services will not affect the biogas production.
- Double Membrane Gas Storage is used as tank roof and as biogas buffer storage, its design and fabrication is complied with the highest safety codes and European standards.



GFS Bolted Tank &
Double Membrane Gas Storage



CSTR with Pump Gasmix



Pump Gasmix System



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2-Stages Biogas Digester for POME

NO.	Details	Model 1 MW	Model 1.5 MW	Model 2 MW
1	Palm Oil Mill Capacity (ton-FFB/hr)	30	45	60
2	Design Palm Mill Operation (hour/day)	20	20	20
3	Palm FFB Feed (ton/day)	600	900	1,200
4	Wastewater Quantity (m ³ /day)	300	450	600
5	COD (average, estimation) (mg/l)	70,000	70,000	70,000
6	Biogas Plant*			
	● CSTR Tank volume (m ³)	6,946 m ³ (Ø 28.5 m, H 11.2 m @ 1 Unit)	9,247 m ³ (Ø 29 m, H 14 m @ 1 Unit)	13,892 m ³ (Ø 28.5 m, H 11.2 m @ 2 Units)
	● MCL volume (m ³)	6,426 m ³ (30x60x6)	9,516 m ³ (35x70x6)	11,076 m ³ (35x80x6)
7	Total Biogas Production (m ³ /day)	9,870	14,805	19,740
8	Gas Engine Generator (MW)	1.0	1.5	2.0

*Remark: The presented biogas plant model is for reference only. The final detailed design shall be revised and finalized according to each specific project.

Biogas System for POME Total COD Removal Efficiency ≥ 92 % (2-stages)

