Biogas Plant – Environmental and Responsible POME Management

Raymond Lau
BBC Palm Oil Mill Sdn Bhd
BBC Biogas Sdn Bhd

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Why Environmental and Responsible?

- Preserve the environment by reducing Green House Gas
  - $CH_4 = 25 \times CO_2$ equivalent
- Increase income from sales of Biogas as renewable energy
- Enjoy tax benefit from pioneer status
  - 10 years tax exemption under MIDA scheme
- Ensure clean Final Discharge to watercourse
  - BOD3 <20mg/L
- Turn waste into revenue

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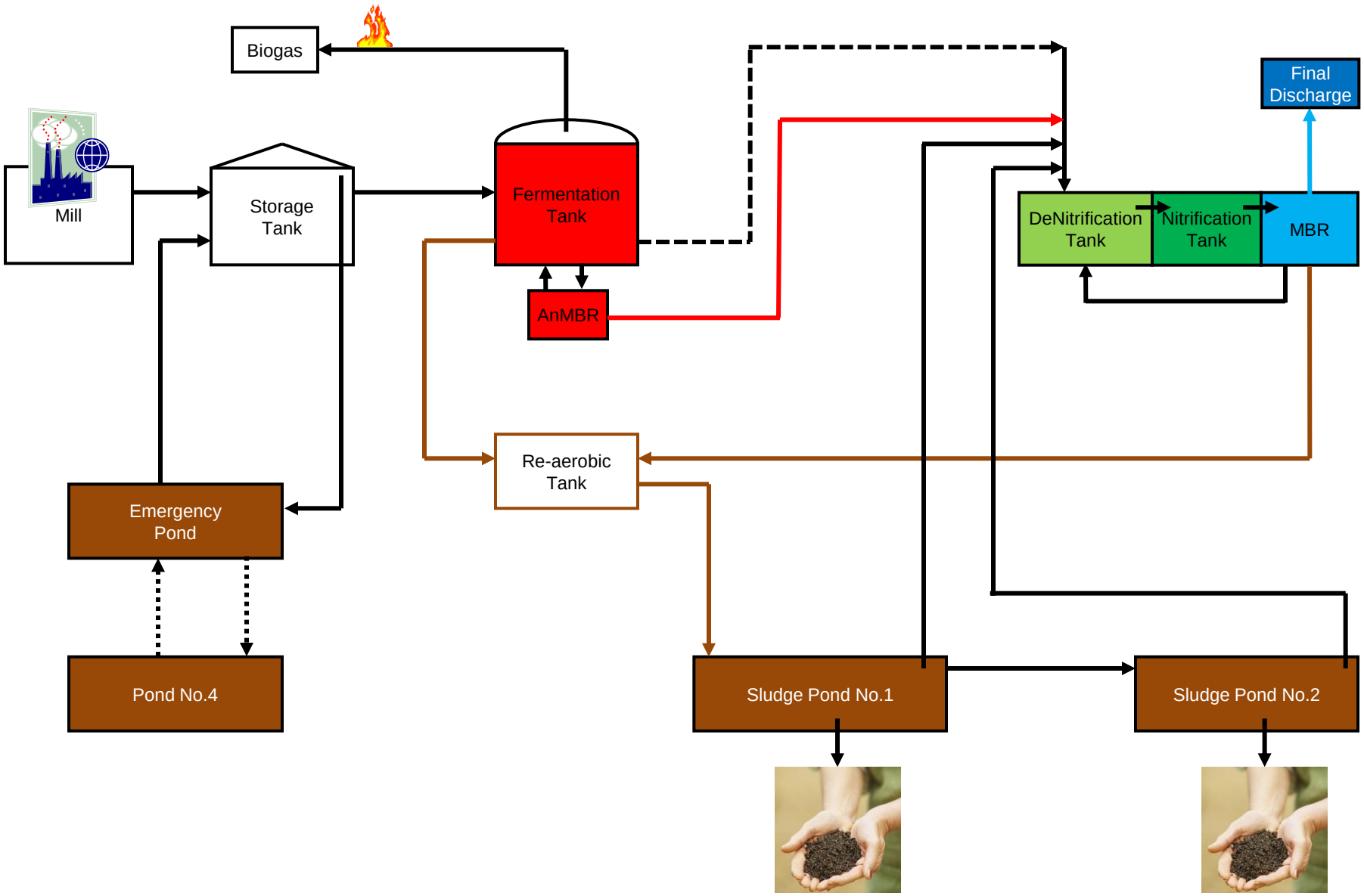
- Conventional 60 MT FFB/hr
  - Raw POME produced = 60 to 70% FFB by weight
  - Process at reduced throughput during low crop season
  - POME = Decanter sludge, sterilizer condensate, hydrocyclone wastewater.
- Sell electricity to BBC Biogas Sdn Bhd
- Pay POME treatment fee to BBC Biogas Sdn Bhd

BBC Biogas Sdn Bhd

- Buy electricity from BBC Palm Oil Mill Sdn Bhd
- Charge BBC Palm Oil Mill Sdn Bhd a service fee for treating POME
- Sell Biogas as energy to diversified downstream activity – clay bricks factory

BBC Biogas - Pros

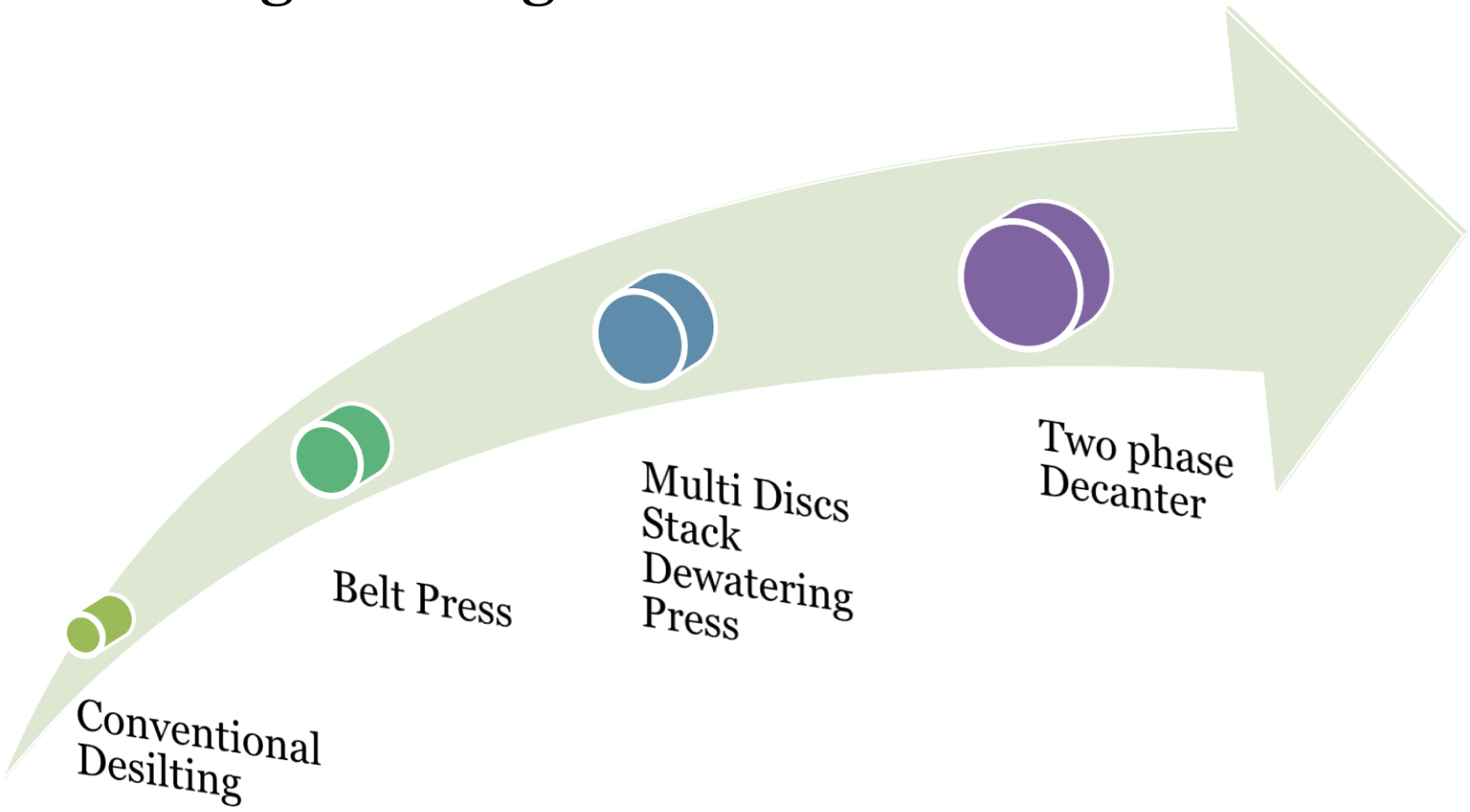
- 30% of the footprint compare to conventional ponding system
- Fermentation tank can treat raw POME with COD that fluctuates from 40,000 to 100,000 ppm . (Designed COD intake is 62,000ppm)
- Thermophilic bacteria at Fermentation Tank is claimed to be 15% more efficient than mesophilic bacteria
- Low retention time of 13 days (1,900 + 8,300 + 160 + 524 + 741 + 532 = 12157m3). Design throughput is 936MT/day.


Biogas
Final Discharge
Mill
Storage Tank
Fermentation Tank
DeNitrification Tank
Nitrification Tank
MBR
AnMBR
Re-aerobic Tank
Emergency Pond
Pond No.4
Sludge Pond No.1
Sludge Pond No.2

BBC Biogas - Cons

- Face difficulties at seeding stage because steam supply was inconsistent during the first few weeks of mill commissioning.
- We have to plan ahead before weekend/ holiday shutdown maintenance due to heat lost at Fermentation Tank and no fresh and hot POME supply from palm oil mill.
- Have to cool down the POME before entering aerobic bacteria compartment (mesophilic) using heat exchanger and cooling tower.
- MBR shall be replaced every 5-10 years
- Sludge from settling ponds shall be taken out
- Consume 350kW electricity.

Dewatering of Sludge



Rooms for Improvement

- Electric consumption
- Insulation of Fermentation Tank
- Dewatering of Sludge from ponds
- Chemical washing of MBR
- Longer life span of MBR
- Foam breaker

Thank you