

PROJECT PROPOSAL: ENHANCING COD REMOVAL EFFICIENCY & BIOGAS GENERATION AT CASSAVA STARCH FACTORY

1. Project Information

- Wastewater type: Cassava starch processing wastewater
- Actual capacity: 1,700 m³/day
- Location: Truong Hung Cassava Starch Factory

2. Current Status

Wastewater analysis results at the first time:

Parameter	Unit	Method	Inlet	Outlet (Biogas tank 2)
COD	mg/L	Hach Method 8000	8,270	1,680

➤ Assessment: COD after Biogas tank 2 is still high → COD removal efficiency in Biogas tanks 1 & 2 is not sufficient → Low gas production.



Picture. Current status of biogas tank before using Microbe-Lift microorganisms

(January 2nd, 2025)



Picture. Biogas composition by machine

- **Biogas operation parameters**

Item	Parameter	Unit	Value	Note
Biogas tank 1	Volume	m ³	44,000	
	Flowrate	m ³ /day	1,190	
	HRT	day	36	Normally 20–30 days
Biogas tank 2	Volume	m ³	24,000	
	Flowrate	m ³ /day	510 + 1,190 (from tank 1)	
	HRT	day	14	Normally 20–30 days

- **Objective:**

- Increase COD removal efficiency in Biogas tanks 1 & 2.
- Enhance gas generation in Biogas tank 1.

- **Implementation Plan**

Preparation steps before dosing microbes:

- Remove rainwater accumulated on the Biogas cover (if any).

- Inspect and repair cover tears to avoid gas leakage.
- Operate recirculation pumps in Biogas tanks.
- Recirculate effluent from Biogas tank 2 back to collection pit at 50–100 m³/h to enhance mixing and improve microbial activity.

- **Selected solution:**

- Apply biological treatment using Microbe-Lift technology (Ecological Laboratories, USA).
- Products used: Microbe-Lift BIOGAS & Microbe-Lift SA

- **Optimal Operating Conditions**

- pH: 6.8–7.5
- Temperature: 30–40 °C
- C/N ratio: 25:1 – 30:1

- **Dosing Plan**

Microbe-Lift Biogas dosage (at the first month)

- Week 1: 3 gallons/day.
- Week 2–4: 5 gallons/week.



Picture. Current status of biogas tank after 1 month using Microbe-Lift microorganisms

(Feb, 6th 2025)

Microbe-Lift Biogas and Microbe-Lift SA dosage (maintained in the following months)

- Week 1 – 4: 1 gallon Microbe-Lift Biogas and 0.5 gallon Microbe-Lift SA / day



Paramet	Unit	Method	Inlet	Outlet (Biogas tank 1)	Outlet (Biogas tank
COD	mg/L	Hach Method 8000	8,580	980	759

Picture. Current status of biogas tank using Microbe-Lift microorganisms (April, 8th 2025)



Picture. Current status of biogas tank using Microbe-Lift microorganisms (August, 8th 2025)