WOG
WATER • OIL • GAS

SUSTAINABLE WASTEWATER TREATMENT & BIOGAS GENERATION

Beverage Manufacturing Industry

SWIPE

PROJECT OVERVIEW

A leading manufacturer and distributor of popular beverages partnered with WOG Group to implement a high-efficiency Wastewater Treatment Plant (WWTP) integrated with a Biogas Generation System.

THE PROJECT AIMED TO:

- Treat 350 m^3/day of high-strength wastewater from production processes.
- Minimize environmental impact.
- Reduce operational costs.
- Support broader sustainability goals.

CLIENT OVERVIEW

The client is one of the largest beverage and food manufacturing & distribution companies in the Caribbean, representing globally recognized brands.

KEY SUSTAINABILITY INITIATIVES INCLUDED:

- Reducing water consumption.
- Optimizing energy usage.
- Minimizing carbon footprint.
- Investing in cutting-edge wastewater treatment technologies for regulatory compliance & sustainability enhancement.

CHALLENGES

1. HIGH ORGANIC LOAD IN WASTEWATER

- Effluent had a Chemical Oxygen Demand (COD) of 6000 ppm and Biological Oxygen Demand (BOD) of 2000 ppm.
- Required efficient treatment to meet discharge standards.

2. STRINGENT ENVIRONMENTAL REGULATIONS

- Necessitated reducing pollutant levels to comply with environmental standards.

3. NEED FOR CARBON FOOTPRINT REDUCTION

- Aimed to integrate renewable energy solutions to reduce the carbon footprint and energy costs.

4. EFFICIENT ENERGY UTILIZATION

- Needed to minimize operational energy consumption by utilizing biogas generated during treatment.

SOLUTIONS IMPLEMENTED

1. ANAEROBIC DIGESTION WITH BIOGAS GENERATION

- Installed an Anaerobic Digester to treat high-strength organic wastewater.
- Produced 27,000 Nm^3/day of biogas with 70% methane.
- Utilized 18,900 Nm^3/day of methane as a renewable energy source.

2. PRE-TREATMENT USING CLARIFIERS & FLASH MIXERS

- Used clarifiers and flash mixers to remove suspended solids.
- Reduced the load on downstream units, improving overall treatment efficiency.

3. TERTIARY TREATMENT FOR POLISHING EFFLUENT

- Polished treated effluent through advanced tertiary treatment.
- Achieved pollutant levels compliant with stringent discharge standards.

4. BIOGAS UTILIZATION FOR ENERGY SAVINGS

- Captured and converted biogas into energy.
- Achieved electricity savings of 1800 kW/day.
- Reduced reliance on conventional energy sources.

RESULTS ACHIEVED

1. SIGNIFICANT REDUCTION IN POLLUTANT LEVELS

- COD reduced from 6000 ppm to < 100 ppm.
- BOD reduced from 2000 ppm to < 30 ppm.
- Suspended Solids (SS) reduced from 500 ppm to < 50 ppm.

2. BIOGAS GENERATION AND RENEWABLE ENERGY UTILIZATION

- 27,000 Nm^3/day of biogas generated.
- 18,900 Nm^3/day of methane production.
- 1800 kW/day energy savings achieved.

3. SIGNIFICANT CARBON FOOTPRINT REDUCTION

- Project contributed to a carbon footprint reduction of 1629 kg/day.

4. 72% ORGANIC LOAD REDUCTION

- System achieved 72% reduction in organic load, ensuring high-efficiency wastewater treatment.

IMPACT DELIVERED

1. COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

- Consistent achievement of stringent discharge standards.

2. SUSTAINABLE OPERATIONS AND CARBON REDUCTION

- Integrated biogas generation enhanced sustainability & lowered the carbon footprint.

3. COST SAVINGS THROUGH ENERGY EFFICIENCY

- Substantial operational cost reductions through renewable energy utilization.

4. ENVIRONMENTAL STEWARDSHIP & LONG-TERM SUSTAINABILITY

- Reinforced commitment to environmental protection and long-term sustainability goals.

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