

Success Story

BREWING AN INNOVATIVE SOLUTION TO DELIVER COMPLIANCE AND SUSTAINABLE ENERGY

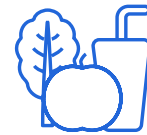
Gradiant's solution ensures discharge compliance while also creating a valuable source of reclaimed water and renewable energy supply from biogas for our client, one of the world's largest brewers. The value engineering approach maximized treatment efficacy, lifetime costs, and system footprint. Coordinating closely with site engineers and operational staff, the project was delivered on time and on budget, making it a model for future delivery across the client's global manufacturing sites.

The Challenge

Brewing exceptional beer is difficult enough, never mind having to deal with the intricacies of wastewater operations and discharge compliance. As one of the largest brewers planned for expansion and business growth, it also had to deal with the complications of increasing treatment capacity and effluent quality to match the output from the brewing process, cleaning operations, pasteurization, and utilities. Specific concerns addressed in Gradiant's solution included high levels of organic constituents, variable flow rates, and increasingly stringent regulatory standards. Finally, given capital budget constraints, it was paramount to find an adaptable and reliable solution that would allow cost-effective operations for expansion.

The Solution

To treat the plant wastewater's complex composition and fluctuating quality, Gradiant created a flowsheet that integrated a series of BioInfinity technologies to reduce the organic content, which included sugars, proteins, and yeast. Varying pH, temperature, and flow rates, coupled with contaminants from cleaning agents and sanitizers, also demanded an adaptable design approach capable of handling the dynamic needs of the wastewater system.



Food & Beverage



Mozambique

Fast Facts

Location:	Mozambique, Africa
End-User:	One of the World's Largest Brewers
Solution:	Wastewater Treatment
Industry:	Food & Beverage
Feedwater Source:	Industrial Wastewater
Technologies:	Bio Infinity's BioConvert Upflow Anaerobic Fluidized Bed (UASB), Membrane BioReactor (MBR)
Capacity:	3,000 m ³ /day
Online Date:	2019
Delivery Model:	Design-Build (DB)



99%
COD Removal

99%
BOD Removal



0
Permit Excursions
After Commissioning

50 m³/hr

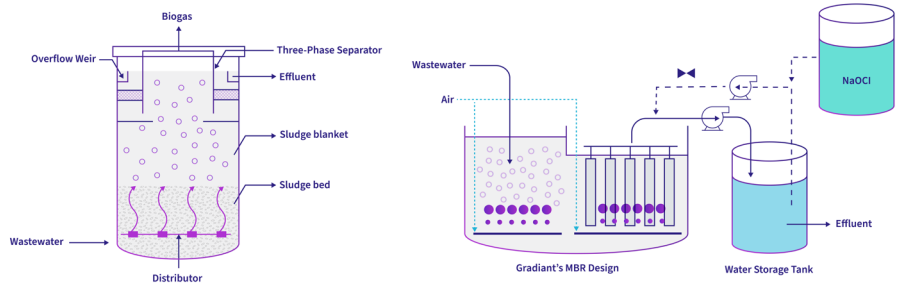
Biogas
Production
from UASB



\$50k
Annual Value
Created from
Biogas

Gradiant integrated several components from our BiInfinity portfolio to accommodate the high organic loading of this wastewater (~13,000 kg/day COD and 6,000 kg/day BOD). The initial treatment step included BioConvert UASB, a high-rate anaerobic treatment process used to remove the bulk of the organic load from the plant. Biogas generated from this process is then captured, stripped, dehumidified, and used for boiler operations, providing a cost-effective, renewable energy source.

Gradiant's MBR technology effectively polishes this treated effluent to meet regulatory requirements and become a water source for possible reuse in utilities and other non-potable applications.



BioConvert UASB

Gradiant's MBR Design

The Benefits

Gradiant's solution was unique - it ensured discharge compliance (specifically BOD and COD) and delivered a high quality effluent for reuse with little to no additional treatment. Informed decisions during the design, construction, and commissioning phases enabled the plant to start up without significant issues and immediately delivered effluent to the required quality for discharge.

The technology selections for this client also offered lower CAPEX and OPEX costs to conventional processes, mainly because BioConvert UASB uses far less energy than aerobic systems since it does not require aeration to remove organics. Also, BioConvert handles process variability well while removing the majority of BOD and COD. Gradiant's MBR design provides a high-quality effluent that can be directly reused as cooling tower makeup or treated further for higher purity applications, such as boiler feedwater.

Learn More at [gradiant.com/industries/food-and-beverage](https://www.gradiant.com/industries/food-and-beverage)

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