

## CONCORD ENVIRO – WASTE WATER RECOVERY PLANT

Project Name: **GUINNESS NIG PLC WASTE WATER RECOVERY PLANT – BENIN & OGBA BREWERY**

Location: **Benin, Edo State & Ogba Ikeja**

Project Start Date: **April 2021**

Project Completion Date: **Nov 2021**

### Introduction:

Wastewater recovery projects play a vital role in addressing global water scarcity, environmental pollution, and public health concerns. By incorporating sustainable design principles, innovative technologies, and best practices, these projects can significantly minimize their environmental footprint while maximizing economic and social benefits. The treatment plant at Ogba and Benin factory has the following technical parameters:

<i>S/No</i>	<i>Parameter Description</i>	<i>Benin Water Recovery Plant</i>	<i>Ogba Water Recovery Plant</i>
1.	Feed Flow Rate (m3/Day) - PFRO	1600	1300
2.	System Recovery Rate - PFRO	80	80
3.	Feed Salinity (mg/Ltre) - PFRO	2000	945
4.	Connected Electrical Load - PFRO	222	164
5.	Feed Flow Rate(m3/Day) - SPRO	1200	1040
6.	System Recovery Rate - SPRO	90	90
7.	Connected Electrical Load - SPRO	97	75
8.	Feed Flow Rate(m3/Day) - DAF	1685	1370
9.	Connected Electrical Load - DAF	49	38

### Environmental Sustainability

The wastewater recovery projects was able to achieve environmental sustainability through: Water Conservation: Reclaiming wastewater reduces potable water demand, alleviating pressure on water resources. Pollution Reduction: Effective treatment removes pollutants, protecting aquatic ecosystems and human health. Greenhouse Gas Emissions: Energy-efficient operations decrease emissions, contributing to climate change mitigation. Resource Recovery: Valuable resources like water, energy, and nutrients are recovered, reducing waste. Biodiversity Protection: Aquatic life and ecosystems are safeguarded by not having to source for water through other means, maintaining ecological balance.

### Water Recovery Project

Clean water is important for every living organism to withstand life, but due to rapid increase in growth population and industrialization, there is more demand for clean, safe and drinkable water. About 97% of water on the planet is in oceans as salty water which is not good for human consumption or agricultural use, only less than 3% water on planet is available for drinking and agricultural use. Most available water is highly contaminated by effluent from agricultural and industrial activity and cannot be consumed therefore water quality and quantity are the main problems that need to be solved. Removal of contaminants/water pollutants is required as to avoid negative effects on the environment as well as human health.

### Reverse osmosis (RO)

RO is pressure driven technique used to remove dissolved solids and smaller particles; RO is only permeable to water molecules. The applied pressure on RO must be enough so that water can be able to overcome the osmotic pressure. The pore structure of RO membranes is much tighter than UF, they convert hard water to soft water, and they are practically capable of removing all particles, bacteria and organics, it requires less

maintenance. Some disadvantages include the use of high pressure, RO membranes are expensive compared to other membrane processes and are also prone to fouling. In some cases, high level of pre-treatment is required. RO has extremely small pores and able to remove particles smaller than 0.1 nm [48]. Huang and others, reported RO membranes coated with azide functionalized graphene oxide hence created smooth, antibacterial and hydrophilic membrane, which removed Escherichia coli and reduced BSA fouling.

### Membrane Separations

The unique & patented Plate & Tube Technology is one of its kind being offered by Concord Enviro. Membrane filtration-based processes are used for separation of dissolved salts. Water is pumped against the surface of a membrane resulting in separation of dissolved constituents. Distinct advantages of the membrane systems are:

- Simplified Pre-filtrations
- High recovery rates with very low energy costs
- Long membrane life of at least 5 years

### Project Images/ Photograph:



