Preliminary Testing Excercises

Kanku Kenya Ltd had caried out testing on raw effluent samples from Ultravetis East Africa Ltd production process. Treatability analysis was carried out together with parametric testing based on laboratory trials. The results were utilized to provide guidance on the effluent treatment technology design, fabrication, installation, and commissioning exercise. The effluent treatment plant was successfully fabricated, installed and commissioned at Ultravetis East Africa Ltd premises.

Project Requirements

Wastewater treatment for chemical sector using hybrid pre & post treatment with complementary membrane technology for improved wastewater treatment that allows for treated effluent to be compliant with NEMA Fifth Schedule Standards (Sewer Discharge).

Proposed Technology and Current Status

The proposed solution has addressed the treatment of wastewater at Ultravetis East Africa Ltd. Effluent from the manufacturing process is directly received by underground equalization tank for homogenization. Homogenized effluent is then treated by aeration oxidation. Coagulation & flocculation of oxidized effluent is carried out through chemical treatment in the static mixer flocculator. A clarifier undertakes clarification of coagulated effluent. Ultrafiltration membranes are treating clarified effluent. Suspended and organic pollutants from the manufacturing processes have effectively been significantly reduced from the wastewater stream. Treated wastewater which is compliant with NEMA Fifth Schedule Standards (Sewer Discharge) is now being reused for non-critical processes (cleaning, toilets). Table 1 below shows the technology which was proposed and implemented for treatment of effluent at Ultravetis East Africa Ltd and the corresponding current status.

Table 1 Effluent treatment plant proposed technology and current status.

#	Proposed Technology	Current Status
1.	Modular venturi-aeration bioreactor technology	Fabricated, Installed, Operational
2.	Static Mixer Flocculator	Fabricated, Installed, Operational
3.	Clarifier	Fabricated, Installed, Operational
4.	Dewatering & Desludging System	Fabricated, Installed, Operational
5.	Ultrafiltration membrane technology	Fabricated, Installed, Operational
6.	Multi-Storey Platform for effluent treatment plant	Fabricated, Installed, Operational

The photograph below shows samples taken from different stages of the effluent treatment plant.

Figure 1 Samples from different stages of effluent treatment plant.

Table 2 Raw Effluent & Treated Effluent Parameters

#	Item	Unit	Raw Effluent	Treated Effluent
1	pH		6.05	8.00
2	Colour	mgPt/L	2210.00	NIL
3	Total Dissolved Solids	mg/L	765.00	1020.00
4	Total Suspended Solids	mg/L	1350.00	5.00
5	Chemical Oxygen Demand	mg/L	2882.00	78.00
6	Biological Oxygen Demand	mg/L	806.00	37.00

The Table 2 above shows the measured parameters from one of the tests undertaken for raw effluent and treated effluent during current operation.