

WATER AND SANITATION

Water And Wastewater Infrastructure

- ❖ Water supply master plans
- ❖ Wastewater master plans
- ❖ Groundwater use planning
- ❖ Storm water networks
- ❖ Sewer reticulation
- ❖ Water treatment
- ❖ Wastewater treatment
- ❖ Dams and river management
- ❖ Hydrology
- ❖ Irrigation & drainage
- ❖ Flood protection
- ❖ Water conveyance tunnels

Water Supply Master Plans

At Vex Engineers Ltd, we work with national governments, counties, and cities to draw comprehensive water supply master plan which is a long-term strategic guide used to design, manage, and upgrade safe, reliable, and climate-resilient water and sanitation infrastructure. It forecasts future population needs, evaluates water sources, and prioritizes capital investments.

Key Components of a Water Master Plan

- **Demand Forecasting:** Predicts future residential, commercial, and industrial water needs over 10-to-30-year horizons.
- **Resource Assessment:** Evaluates available surface water, groundwater reserves, and safe extraction yields.
- **Infrastructure Mapping:** Audits existing treatment plants, storage tanks, transmission mains, and distribution pipelines.
- **Gap & Risk Analysis:** Identifies non-revenue water loss, leakages, climate vulnerabilities, and catchment stress.
- **Capital Investment Plan (CIP):** Outlines phased, prioritized lists of bankable projects, cost estimates, and funding frameworks.

National and Regional Context

- **National Strategy:** Comprehensive frameworks which align multi-catchment water resource development with national economic goals and drought management.

- **County & Regional Execution:** Local water works development agencies and water service providers collaborate to implement localized distribution expansions, reduce leakage, and secure bulk water supplies.

Wastewater Masterplans

At Vex Engineers Ltd. We develop wastewater master plans which are long-term strategic guide for managing community sewage, treatment facilities, and collection pipes. It forecasts population growth, evaluates current asset capacity, prevents environmental contamination, and schedules phased infrastructure upgrades and funding.

Key Components

- **Data Collection:** Gathers operational data on existing sewers, pumping stations, and treatment plants.
- **Growth Forecasting:** Uses local land-use projections and population trends to predict future sewage volumes.
- **System Modeling:** Runs hydraulic computer simulations to find bottlenecks in pipes and treatment capacities under dry and wet weather conditions.
- **Capital Improvement Plan (CIP):** Outlines a prioritized schedule of construction projects, timelines, and cost estimates.
- **Sludge Management:** Plans for handling, treating, and recycling or disposing of leftover solid waste treatment byproducts.

Core Goals

- Ensure compliance with environmental and health regulations.
- Protect local waterways and public health.
- Optimize energy use and long-term operating costs.
- Accommodate urban expansion sustainably

Vex-P Wastewater Treatment System

At Vex Engineers Ltd. We have developed an in-house robust wastewater/sewage treatment system that addresses treatment of liquid effluent from industrial, commercial, institutional, and domestic discharges to minimize degradation of receiving environment.

 VEX ENGINEERS LTD Ojijo Plaza - 2nd Floor, Suite B19 P.O. Box 15044 – 00100 Nairobi. Telefax : 254 – 020 2459263/2249602 Mob: 0722 710 315/ 0733 46 88 60 email: info@vexengineers.com/ vexengineers@gmail.com website: www.vexengineers.com	" VEXPRO WASTEWATER TREATMENT SYSTEM " Effectiveness: <i>effluent parameters: COD $\leq$ 50 mg/l, Nitrogen $\leq$ 2 mg/l, Phosphorus $\leq$ 2 mg/l. pH 6.5-8.5 BOD $\leq$ 5 mg/l</i> Applications: ❖ Domestic ❖ Commercial ❖ Institutions & Hospitals ❖ Industrial ❖ Dairy plants ❖ Municipal ❖ Hydrocarbon handling – petroleum depots & stations
--	--

RAW WASTE TO CLEAN WATER

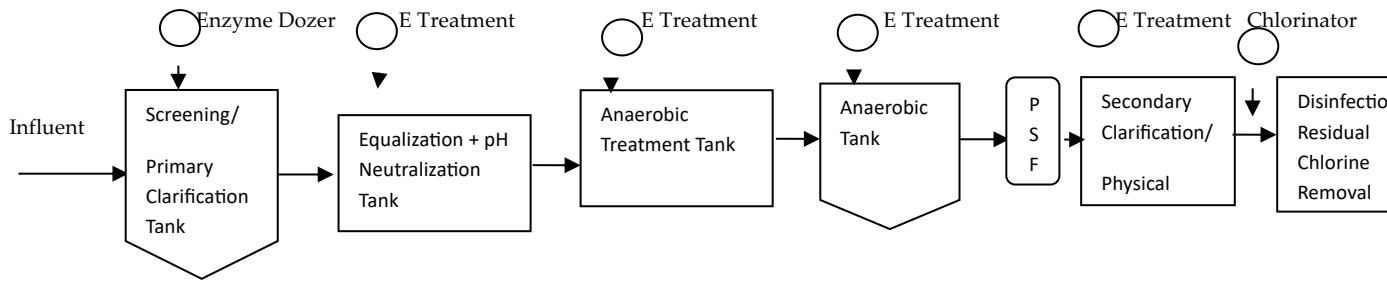
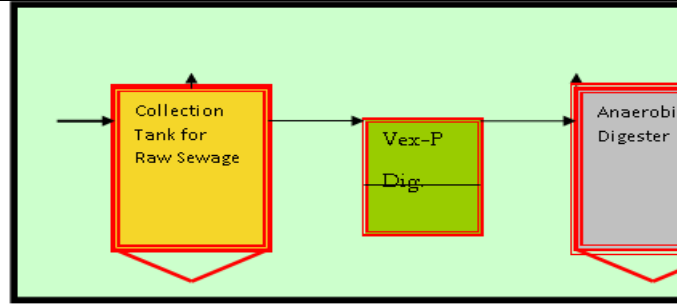


Benefits: *Eco-friendly, Economical, Efficient, Durable, Reliable, Technology Friendly.*

- ❖ Low installation, operational & maintenance cost
- ❖ Non-mechanical
- ❖ No moving parts
- ❖ Completely silent

Process Flow:

- ❖ *Eliminate hazardous chemicals, detergents and toxins*
- ❖ *Eradicate odours, colours and other unwanted water properties*
- ❖ *Effluent recyclable for several uses*
- ❖ *Excellent after sales technical support*



PROJECT PORTFOLIO

Over 150 projects completed since inception in 2010. Over 100,000 people connected to our wastewater systems.

RESIDENTIAL APPLICATION

1. Sawada Villas – Gated Community (84m³/day)



3. KMA Apartments – Mtwapa(300m³/day)





2. West Point Apartments – Kikuyu (150m³/day)



4. One Red Hill – Limuru (150m³/day)





COMMERCIAL APPLICATION

1. African Population Health & Research Centre (APHRC) Campus – Kitisuru, Nairobi (45m³/day)



2. Pili Management Godowns – Mombasa Road, Nairobi (75m³/day)



HOTEL APPLICATION

1. Pride Inn Paradise -Shanzu, Mombasa (300m³/day)



2. Tiwi Beach Resort – Ukunda, Kwale (100m³/day)



3. Ashnil Tented Camp – Maasai Mara (150m³/day)

4. Mararianta Camp – Maasai Mara (150m³/day)

 	   
INSTITUTIONS <i>1. Adventist University of Africa (AUA) – Rongai (200m³/day)</i>	DAIRY PLANTS <i>1. Githunguri -Kiambu (30m³/day)</i>



Industry Concerns

1. Are you facing regulatory ban on your current wastewater disposal system?
2. Is your current wastewater disposal system giving you problems?
3. Are you faced with high maintenance and operational costs with your current wastewater disposal system?
4. Are you developing in an area where there is no sewer system?
5. Are you developing in an area with clay (black cotton) soil or murrum/rocky area where soakage is a problem?

The solution is VEXPRO Wastewater Treatment System

Technical Aspects of Vex-P System

Pre-treatment – this phase consists of a series of filters and meshes for the removal of larger suspended contaminants.

Primary Treatment - Primary treatment removes large solids through clarification or filtration to ensure homogenous feed water.

Secondary Treatment - Secondary treatment is a biological digestion process whereby anaerobic bacterium break down organic matter into a form that is easier to remove from the water.

Tertiary Treatment - this involves disinfection and additional filtration, clarification to remove the final suspended and dissolved solids from the water, leaving it fully compliant with legislated discharge standards.

VexPRO – the application of advanced water treatment technology and is used to remove a wide range of pollutants such as metal ions, suspended solids, colloidal solids, coloured compounds, dissolved solids, fat, oil, diesel, complex organic compounds, bacteria and viruses.

Installation Cost:

Warranty

The cost of installation varies depending on the industry/scheme size and the corresponding VEX-P model. The costs which have been economically estimated include Supply, Installation and Commissioning. Construction of civil works is done by the client and does not form part of the plant cost.	The warranty for the treatment is 1 year (12 Months). However, the system is designed for unclogging and backwashing every 5years after which the treatment units gain their original status hence minimal replacement. The warranty for any mechanical installation shall be subject to the Manufacturers conditions.
Maintenance Vex-P Waste Water Treatment System is maintenance free as the system is not mechanical. However, the following mandatory maintenance checks shall be required: 1. Training of the clients' personnel to run the system 2. Free technical support during the warranty period 3. Continuous disinfection of discharged effluent 4. Monthly check of VEXPRO components 5. Desludging/Exhaustion every five years 6. Filter maintenance every five years.	Service 1. Over 100,000 people connected to our waste water treatment systems 2. Reliable after sales technical support team 3. Available local expertise