Feburary 2015
Domestic Wastewater Treatment Plant Biopipe for STFA Labor Camp in Oman.
A CASE STUDY OF BIOPIPE

Introduction

STFA Investment Holding Group is one of Turkey's oldest conglomerate engage in construction (STFA Construction), energy (ENERYA) and construction equipment (SIF-JCB) sectors.

Sezai Turkes and Feyzi Akkaya founded STFA in 1938. It became a pioneer company in bridge construction in a short period of time with dramatic growth.

In the successful years that followed, STFA has transformed into an integrated company with high engineering capabilities. Marine works, engineering and infrastructure works, water and wastewater transmission lines, oil & gas, energy projects are just some of STFA's areas of focus.

STFA has a strong presence Turkey and is very active in the Middle East and North Africa projects in last decades.

STFA selected Biopipe for treatment of domestic wastewater with the intent to recycle and reuse the treated water for daily irrigation.

Key Data

Project: HotelKhasab to Tibat Coastal Road - Oman

Plant Type: Treatment of domestic wastewater in labor camp.

Project Capacity: 120m³/day – 600 person/day

Use: Recycle wastewater to reuse in agriculture by under < 20 BOD/day mg/lt water.

BIOPIPE TR ENV. TECH.
Bebek Mad. Kucuk Bebek Cad. No:74
Besiktas/Istanbul

www.biopipe.co

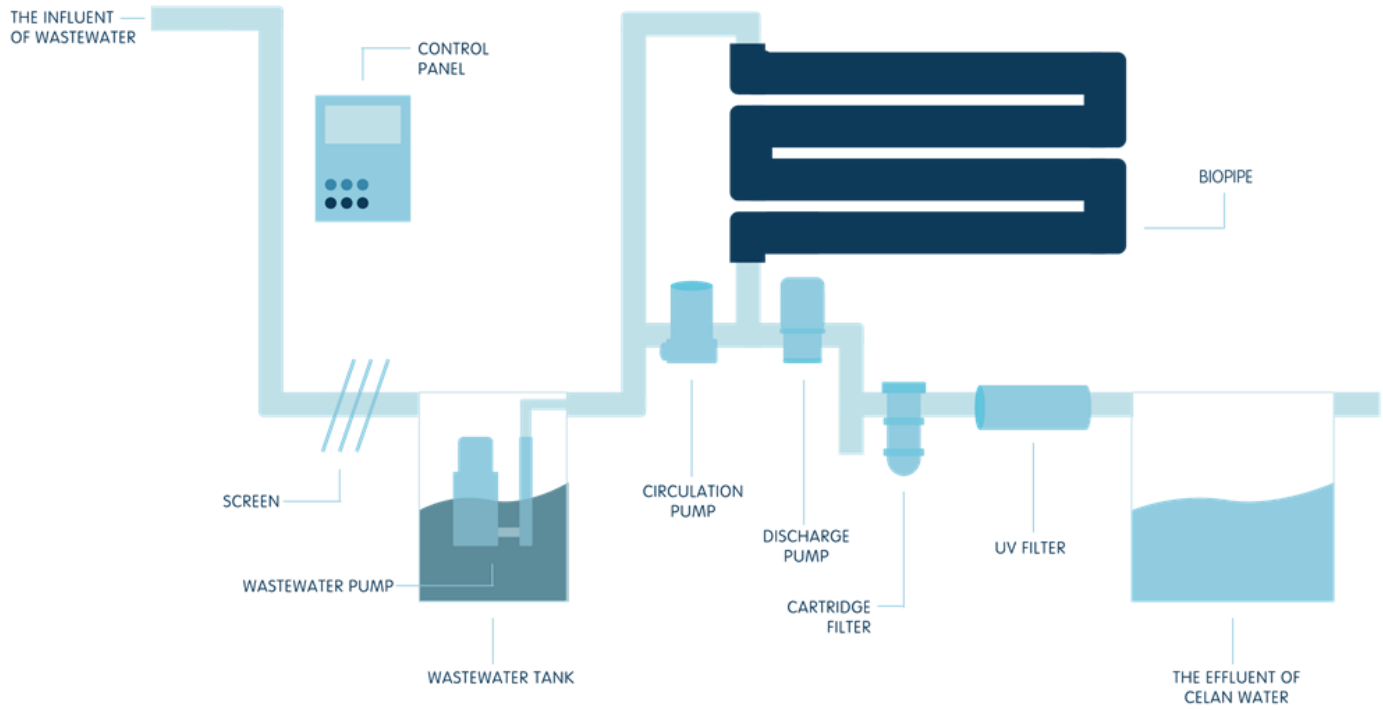
+90 0212 355 61 80

BIOPIPE

Biopipe is the first biological wastewater treatment where the process takes place entirely inside the pipe. With a simple design and effectual treatment, Biopipe works as follows:

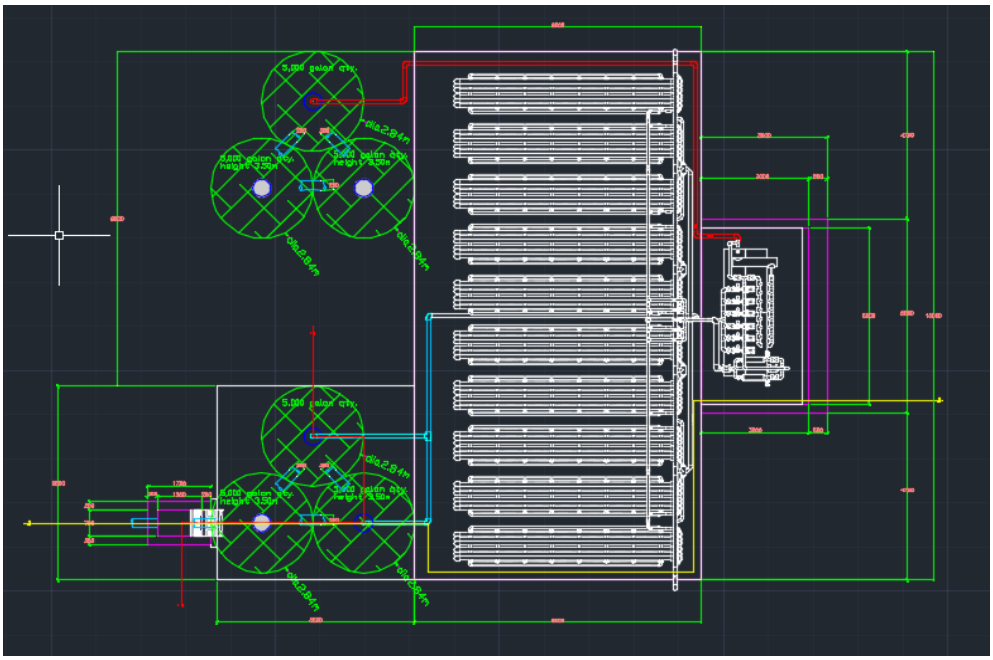
1. An equalization water tank is used to store domestic wastewater with inorganic and organic substances. Screen and sand separator (in some instances) are used before equalization tank.
2. Once wastewater reaches the operational level in the tank, wastewater pump pumps water to circulation pump.
3. When Biopipe becomes full, circulation starts and treatment begins. Biopipe bacteria engage with with pollutants and eliminate them from wastewater during circulation while ‘air is automatically vacuumed by the pressure difference in order to allow aerobic bacteria to grow rapidly and efficiently treat the wastewater.
4. Wastewater then passes through a disc filter (cartridge filter) and an UV filter to complete treatment. The treated water can be used directly or stored in a clean water tank.

Biopipe is a remotely controlled, modular, eco–friendly and sustainable STP. It can scale from a 1m3/ day to a small municipal system.



biopipe

STFA



System Area:

120m²

System Dimensions:

20m x 6m x 2,5m

Wastewater Tank (needed):

80m³

Clean Water Tank (needed):

80m³

biopipe

ENVIRONMENTAL BENEFITS

Thanks to Biopipe bacteria, all organic matter in domestic wastewater are consumed during the circulation period of treatment. Circulation period begins after the wastewater pump pushes water to the circulation pump. At the end of 2 – 4 hours treatment, only clean water is produced. The main benefit is low maintenance, no sludge to remove and discharge and low energy consumption. Additionally there is no sound and odor. The aeration of Biopipe is provided with venturi system instead of blower. This reduces the overall operating cost even further.

In addition, Biopipe is classified to be an innovative wastewater treatment technology that makes the end user achieve one of the requirements for LEED accreditation related to water efficiency and water re-use.

In the region where this project is located, there is infrastructure but project owner was seeking LEED certification. Recycling of black water is far more valuable than simple grey water treatment for LEED purposes.

Biopipe flexible design option allowed the system to be installed in a parking garage and total area equal to two parked cars.

biopipe

Scope of work

Briefly, Biopipe is a biomimetic domestic wastewater treatment system that recycles wastewater into reusable non-potable water.

The key differentiators of Biopipe is zero sludge production, low operating and maintenance cost.

With modularity option of Biopipe, systems can be divided and installed in different camps.

Biopipe is installed in Khasab – Tibat Coastal Road – Labor Camp Project. Biopipe Capacity is 120m³/day.

The scope of work included complete design, engineering service, supply, installation, and commissioning and final performance test.

- Physical Treatment with basket screen
- Biological Treatment on Biopipe support with circulation and discharge pump.
- Discharge of Water under EU standards after pass through disc and UV filter.
- Biopipe Effluent Water Quality is;

BOD: < 20 mg / lt

COD: < 30 mg / lt

TSS: < 10 mg / lt

pH: 6 – 9

With Biopipe, 43,800 tonnes of water was saved and used for irrigating 20000 m². As a result, the payback period was only 7 months

BIOPIPE TREATMENT STAGES

Physical Treatment

In this system, screen option is presented but wastewater flows down from a higher point and catches large inorganic particles are captured

Biological Treatment

As it can be seen in the flow chart, the wastewater pump pumps water to the circulation pump as programmed into the Control Panel. With the circulation pump cycles the wastewater through the pipes where Biopipe bacteria engage consume all the organic matter. This project required BOD level of < 20 mg/l.

Final Stage

Treated water is discharged by the discharge pump. After the pump, any inactive bacteria that detached from biofilm layer are captured by a 100 micron cartridge filter and then treated water passes through UV filter to eliminate pathogens. Discharge standards were easily met.

biopipe