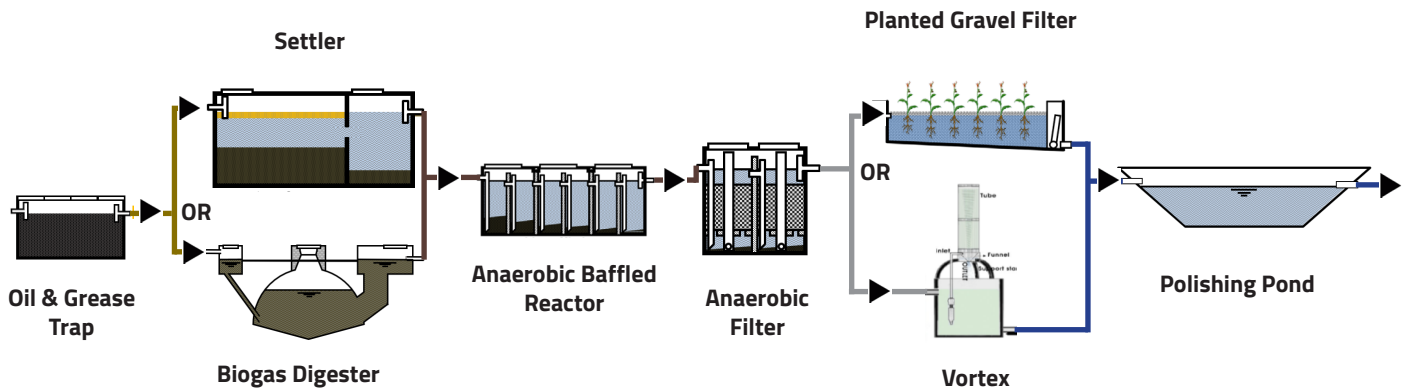


# DEWATS

## Decentralised Wastewater Treatment System

Flow Diagram and Area/Cost Variation

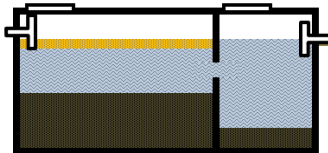


### DEWATS Modules

The right combinations and dimensions of the modules make DEWATS successful

#### Settler

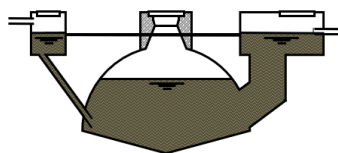
The settler is a closed tank of two or three chambers with 2-3 hours of retention time that traps a significant portion of heavier solids and floating particles while letting the rest pass into the following modules.



- Stage** : Primary Treatment
- Efficiency** : 20-30%
- Maintenance** :
  - Monthly inspection of wastewater flow
  - Monthly removal of scum
  - Removal of sludge- once in 1-2 yrs

#### Biogas Digester

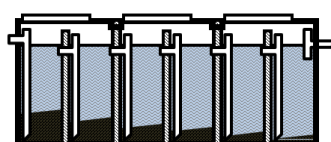
An improvised sedimentation tank as an alternate to the settler is suitable for wastewater with high organic content. It decomposes organic particles by anaerobic digestion and generated bio gas which is used as fuel.



- Stage** : Primary Treatment
- Efficiency** : 50-60%
- Maintenance** :
  - Monthly inspection of WW flow
  - Operation of water trap
  - Removal of sludge- once in 1-2 yrs

#### Anaerobic Baffle Reactor

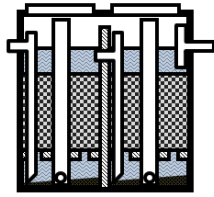
Consists of multiple chambers in series, connected with downtake pipes. The wastewater is made to pass in an up-flow fashion, thereby establishing a contact with sludge blanket formed at the bottom. The combination of sedimentation and anaerobic sludge digestion ensures removal of suspended and colloidal particles.



- Stage** : Secondary Treatment
- Efficiency** : 75 - 90%
- Maintenance** :
  - Monthly inspection of WW flow
  - Desludging every 2-3 yrs

## Anaerobic Filter

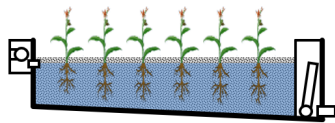
Consists of up-flow chambers connected in series, partially filled with filter media. The biofilm formed on filter media traps and degrades finer suspended organic particles when wastewater passes through it. The filter media can be cinder, gravel, rock aggregates, corrugated pipes, specially designed plastic media etc.



- Stage** : Secondary Treatment
- Efficiency** : 75 - 90%
- Maintenance** :
  - Monthly inspection of ww flow
  - Desludging every 3-5 yrs.
  - Washing of filter media- when treatment efficiency reduces

## Planted Gravel Filter

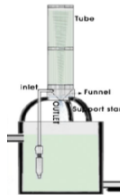
A shallow tank of graded gravel or pebbles and selected species of plants (such as Reed, Canna indica or Cyperus papyrus) to treat remaining pollutants by biological conversion, filtration and surface aeration. It can be integrated into the landscape.



- Stage** : Advanced Secondary/Tertiary Treatment
- Efficiency** : 80 - 95%
- Maintenance** :
  - Monthly removal of weeds from top
  - Trimming of plants once in 3 months

## Vortex

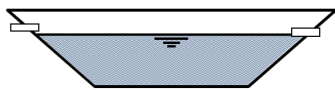
Vortex is a post treatment module used for increasing oxygen levels in anaerobically treated water and for aiding nutrient removal. The water pumped from the tank undergoes a spiral movement inside the vortex which diffuses oxygen and also expels odor. It can be used as an alternative to the planted gravel filter.



- Stage** : Post Treatment
- Efficiency** : 80 - 95%
- Maintenance** :
  - Regular maintenance of pumps
  - Cleaning the apparatus.

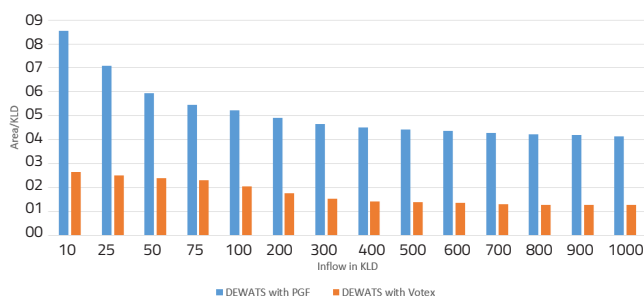
## Polishing Pond

A shallow pond that ensures aerobic treatment where pathogens are removed mainly due to exposure to natural ultraviolet rays in sunlight.



- Stage** : Tertiary/ Post Treatment
- Efficiency** : 95 - 97%
- Maintenance** :
  - Cleaning of pond once in a year

## DEWATS Area variation with Daily Inflow



## DEWATS Cost variation with Daily Inflow

