

DEWATS FOR FRIENDS OF CAMPHILL, BANGALORE

PROJECT BRIEF

Friends of Camphill was initiated in February 1993, as a Trust to support mentally challenged persons. The Trust ensures well-being of the inmates and workers at the Trust, addressing their social, medical, psychological and occupational needs in order for them to be self sustaining.

PROJECT OUTCOMES

- Safe disposal of wastewater generated from the institute
- To provide a sustainable solution to the problem of water scarcity
- Provide safely treated water for agriculture and gardening to save the fresh water resources

SYSTEM IN BRIEF

The wastewater streams are channeled from different residential and workshop blocks and connected to the DEWATS, which consists of 4 modules:

Biogas Digester, Anaerobic Baffled Reactor, Planted Gravel Filter and Collection Tank.

Biogas Digester : an airtight sedimentation tank for retaining articles by settling over a specific time frame and generate biogas for reuse.

The Anaerobic Baffle Reactor ensures anaerobic degradation of suspended and dissolved solids by mixing fresh wastewater with an active sludge blanket.

The Planted Gravel Filter is used as a tertiary treatment unit where aerobic and facultative degradation of dissolved organic matter occurs.

The treated water is stored in the collection tank and reused for irrigation.

PROJECT SPECIFICATIONS

Kind of Project: DEWATS for domestic wastewater

Funding Agency: Donor

Supporting Organization: BORDA, L&S Architects

Construction Period: 4 months

Construction Cost: Rs. 5.5 lakhs

Start of Operation: April 2003

Status: Operational

SALIENT FEATURES

Source: Toilets, bathrooms, laundry and kitchen

Design Capacity: 9 m³/d

No. of Users: 40 to 70

Peak Flow: 8 hours

Influent Quality: BOD 93 mg/l ; COD 167.6 mg/l

Effluent quality: BOD -25.15 mg/l ; COD - 79.7mg/l

Designed Efficiency: 95%

Biogas production : 2 to 4 m³/d

MODULES ADOPTED

Biogas Digester

Digester volume: 7 m³

Gas volume: 2 m³

Area of construction: 8 m²

Extension Chamber

Volume: 2 m³

Area of construction: 3.5 m²

Baffle Reactor

Volume: 35 m³

Area of construction: 31 m²

No. of chambers:16

Planted Gravel Filter

Volume: 29 m³

Area of construction: 57 m²

Filter material used : Gravel

Plants used: Reed Juncas, Colocasia

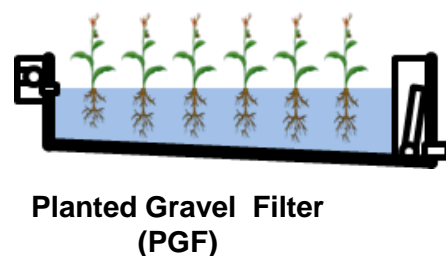
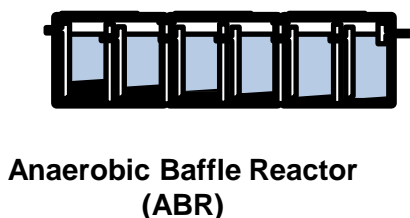
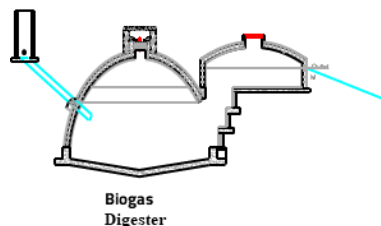
Collection Pond

Volume: 15 m³

Area of construction: 7 m²

Volume: 7 m³

PROCESS FLOW DIAGRAM



OPERATION AND MAINTENANCE

The wastewater treatment plant and the conveyance system is operated and maintained by a trained gardener. A regular schedule is followed for maintenance and involves removal of sludge once a year in the Biogas Digester and once every three years in the Anaerobic Baffle Reactor. The filter media in the planted gravel filter is washed once in five years. The collection tank is cleaned once in a year.

REUSE OPTIONS

- Treated water is reused for gardening.
- Biogas is reused as cooking fuel (2-3 hrs/day)

Learnings:

- Pilot project implemented by BORDDA-CDD for an institution
- First project where performance of DEWATS, especially biogas settler was monitored

TREATED WASTEWATER QUALITY

Sample points	COD mg/l	BOD mg/l	TSS mg/l
Date of Sampling: 16/05/2013			
BR Extension chamber	167.6	93	48
Inlet PGF	200.1	100	115
Collection tank	67.45	34.5	25
PGF Outlet	79.7	25.15	23
Date of Sampling: 05/08/2017			
BR Extension chamber	173	73	55
Inlet PGF	111	35	15
PGF Outlet	75	25	10