



DEWATS for Indian Institute of Technology, Gandhinagar, Gujarat

PROJECT BRIEF

The design of the new campus for IIT Gandhinagar was driven by three basic conditions – an exceptional aesthetic feel which sets it apart from other campuses; function and convenience that promotes interaction among faculty and students; and resource efficiency such that the campus can achieve GRIHA ratings for buildings. Keeping this in mind, DEWATS was selected as the treatment system of choice for wastewater management on campus. The biggest reasons behind the choice were low maintenance costs, simple operations and maintenance and simplicity of designs. The plant has been operational since November 2015 and it treats 3.5 MLD of wastewater generated by faculty, staff and students in the campus.

PROJECT OUTCOMES

- To meet the regulatory norms of PCB of wastewater treatment and reuse
- To protect the environment from direct pollution
- To treat and reuse the treated wastewater for Toilet flushing, and irrigating the landscape and garden

SYSTEM IN BRIEF

The wastewater from sources is conveyed to treatment unit through sewer network. Treatment system consists of 4 modules:

- Settler - a sedimentation tank for retaining articles by settling, over a specific time frame
- The Anaerobic Baffle Reactor - ensures anaerobic degradation of suspended and dissolved solids by mixing fresh wastewater with an active sludge blanket
- The Anaerobic Filter - comprises of filter bed for treatment of dissolved organic matter. Wastewater comes in contact with active bacterial mass which grows on filter material.
- Planted Gravel Filter: is used as tertiary treatment unit where aerobic and facultative degradation of dissolved organic occurs.

SALIENT FEATURES

Source: Domestic sources from IIT campus

Design Capacity: 600 m³ / day

Peak Flow: 10 hours

Influent Quality: BOD: 300 mg/l
COD: 600 mg/l

Effluent Quality: BOD : <25 mg/l
COD : <60mg/l

Efficiency: BOD – 92%
COD – 90%

PROJECT SPECIFICATIONS

Funding Agency: IIT Gandhinagar

Executed By: Relcon Ind. Ltd. (CPWD, Gandhinagar)

Supporting Agency: CDD Regional Office, Nagpur

Area: 2,623 m²

Construction Period : 11 months

Construction start date: January 2015

Construction end date: November 2015

Current status: Commissioned & operational

Construction Cost: Rs. 2.6 Cr.

Operation Cost: Rs. 1.25 lakhs p.a.

MODULES ADOPTED

Settler (1 unit)

Volume: 422.4 m³

Area of Construction: 215.83 m²

Anaerobic Baffled Reactor + Anaerobic Filter (2 units)

Volume : 560.56 x2 = 1,121.12 m³

Area of Construction : 376.20 x2 = 752.4 m²

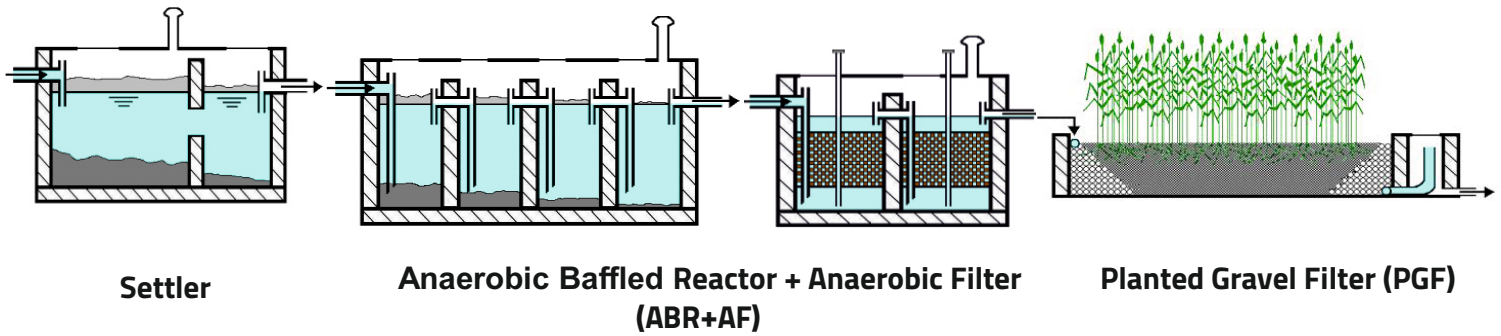
Planted Gravel Filter (4 units)

Volume : 259.20 x4 = 1,036.80 m³

Area of Construction : 446.60 x4 = 1,786.40 m²



PROCESS FLOW DIAGRAM



OPERATION AND MAINTENANCE

The wastewater treatment plant is operated and maintained by IITGN. A regular schedule is followed for maintenance, like periodic check, removal of sludge in baffle reactor. Regular harvesting of plants will be done in the Planted Gravel Filter and the filter media will be washed once every 4-5 years.

LEARNINGS

- Working with premium technical institute like IIT-Gandhinagar gives us scope for innovation and quality consciousness.
- Working with Ralcon India Ltd. & CPWD gave us new insights regarding management of construction work.
- O & M training to client is essential for ensuring effective operation of the plant.

REUSE OPTIONS

Treated wastewater is reused for non-human contact purpose like green area irrigation and with further treatment in toilet flushing.

PERFORMANCE OF DEWATS

Sample points	COD mg/l	BOD mg/l	TSS mg/l
Date of sampling 30/05/2016			
Raw wastewater	82	44	40
ABR+AF outlet	72	37	8
PGF outlet	50	18	6