



DEWATS FOR ELECTRONIC CITY INDUSTRIAL TOWNSHIP AUTHORITY (ELCITA), ELECTRONIC CITY, BANGALORE

PROJECT BRIEF

Electronic City is an information technology hub in Bangalore, India, located in Anekal taluk. It is one of India's largest electronic/IT industrial parks, spread over 903 acres 11 guntas in Konappana Agrahara and Doddathogur villages in Bangalore. Electronics City (e-city) has been taking many steps towards transforming itself into a sustainable township. ELCITA decided to implement a DEWATS (Decentralized Waste Water Treatment System) to treat the wastewater coming from a portion of the industrial sector, to treat at one location and dispose safely to the nearby municipal sewer line to reduce environmental pollution.

PROJECT OUTCOMES

- Efficient management of wastewater collected from Electronic city, leading to an improved sanitation situation
- Treating wastewater to meet Karnataka Pollution Control Board standards

SYSTEM IN BRIEF

The wastewater streams, from the toilet, bathroom, kitchen and wash area is conveyed in pipe lines to the treatment system, which consists of 5 modules:

- 1. Grease Trap:** pre-treatment module, used to remove oil and grease (Since the considered area had more hotels)
- 2. Settler:** a sedimentation tank for retaining particles by settling over a specific time frame
- 3. The Anaerobic Baffle Reactor:** ensures anaerobic degradation of suspended solids by mixing fresh wastewater with an active sludge blanket
- 4. The Anaerobic Filter:** acts as a fixed bed filter where wastewater is brought into close contact with active bacteria for removal of dissolved organic matter.
- 5. Aeration Tank:** used as a tertiary treatment unit to oxygenate the partially treated wastewater. Aerobic degradation of dissolved organic matter occurs.

SALIENT FEATURES

Source: Toilets, bath, kitchen and wash area
Design Capacity: 9 m³/day
No of Users: 380
Peak flow: 8 hours
Influent quality: BOD: 600mg/l,
COD:1200mg/l

PROJECT SPECIFICATIONS

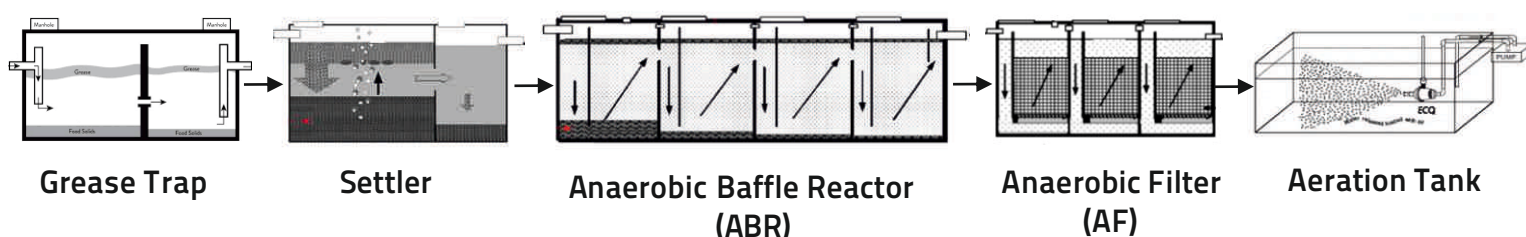
Kind of Project: Township
Funding Agency: Elcita
Implementing Agency: Elcita
Construction Period: 7 months
Construction Cost: Rs. 11 lakhs (proposed)
Start of Operation: October 2018
Current Status: Commissioned
(currently treating around 9KLD of wastewater)

MODULES ADOPTED

Grease Trap
Volume: 0.45 m³
Area of Construction: 1.43 m²
Settler
Volume: 10.8 m³
Area of Construction: 8.39 m²
Anaerobic Baffle reactor
Volume: 7.45 m³
Area of Construction: 7.43 m²
No. of Chambers: 3
Anaerobic Filter
Volume: 11.66 m³
Area of Construction: 9.85 m²
No. of chambers: 3
Aeration Tank
Volume: 7.2 m³
Area of construction: 6.89 m²
Built up area: 34 m²



PROCESS FLOW DIAGRAM



OPERATION AND MAINTENANCE

The wastewater treatment plant is operated and maintained by a trained member.

Regular maintenance:

- Wastewater flow checking in all units
- Oil and grease removal from grease trap
- Clearing the blockages in all chambers (registers)

Periodical maintenance:

- Removal of sludge in Settler and Baffle Reactor chambers once in 2-3 years
- Replacement of filter media in the filter chambers once in three years
- Replace aerators in aeration tank once in 5 years

PERFORMANCE OF DEWATS

REUSE OPTIONS

The treated wastewater is safely being disposed into the nearby sewer.

LEARNINGS

The grease trap was getting clogged with faeces after the initial 2 months of operation and was getting removed continuously instead of oil and grease. In order to solve this problem, the grease trap was modified with a bigger opening at the bottom such that all solid matter would go the following settler (where it gets settled) while the oil and grease can easily be removed from the grease trap.

Sample points	COD mg/l	BOD mg/l	TSS mg/l
Date of sampling 06/02/2020			
ABR In	646	280	735
AF Outlet	128	25	24
Final Effluent	105	10	39



After Construction Used as Parking Lot



Grease Trap