

# DEEP TANK AERATION SYSTEM (DTAS) For Sewage Treatment Plant

**Patent No - 282150**



Odorless Clear Treated Sewage

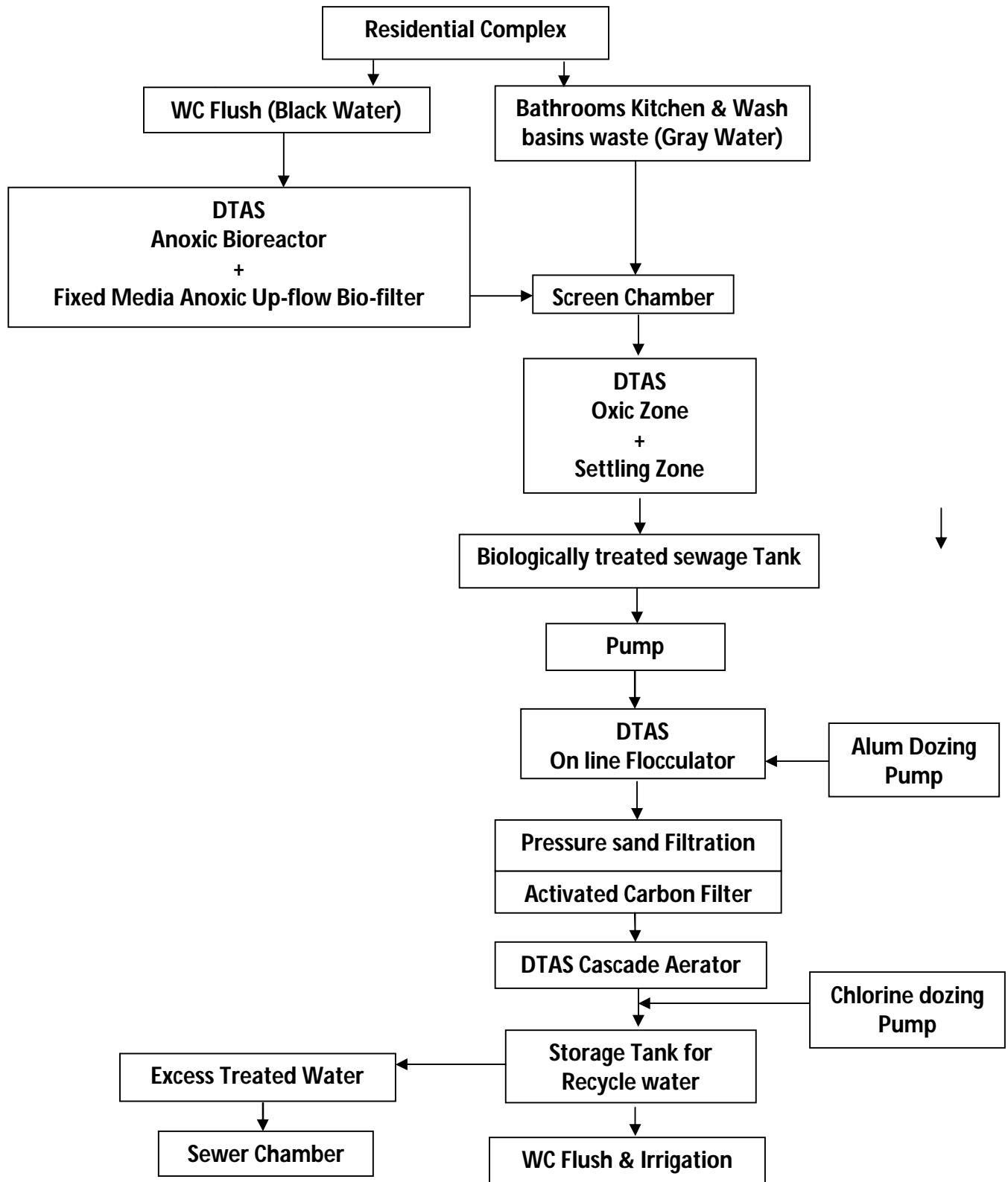
## **DTAS Process for Sewage Treatment Plant**

- Black Water flows to **DTAS Anoxic Bioreactor** by gravity.
- Where settle able suspended solids will be removed & biodegraded.
- Outlet of Anoxic Bioreactor will enter into **DTAS Fixed Media Anoxic Up-flow Bio-filter**
- Sullage will join the Sewage Treatment Plant through screen chamber.
- It will enter into the DTAS Oxidic zone
- Fixed DTAS Aerator of High Oxygen Transfer efficiency is mounted on the top of Aeration zone for aeration and supply oxygen for aerobic treatment.
- Sewage with Mixed Liquor Suspended Solids will enter in the settling zone.
- Settling Zone is fused with Aeration Zone.
- The settled MLSS from the settling zone will be drawn by the specially designed Sludge draw tube provided with Energy efficient Aerator.
- Suspended solids will settled down and clear treated sewage will overflow on weir of settling zone & get collected in the launder.
- The treated sewage then get collected in the Biologically Treated Sewage Storage Tank
- Biologically Treated Sewage will be then pumped to Tertiary Treatment Plant.
- Tertiary Treatment Plant is consists of DTAS Online Flocculator, Sand Filter, Activated Carbon Filter & Alum Dozer.
- Fully treated Sewage will be aerated in Cascade Aerator
- The aerated treated sewage will be chlorinated.
- The chlorinated sewage will get collected in the treated water storage tank.
- A pump will be provided to pump the Treated sewage where ever required.
- Excess biological sludge from Aeration Zone will be disposed off once in month in to raw sewage Chamber.

### ❖ Salient Feature of treatment process

- ✓ It is a specially developed by Prof. R. V. Saraf exclusively for Residential Complexes.
- ✓ It is a patented process of **Viraj Envirozing India Pvt. Ltd.**
- ✓ Pumping of sewage is totally eliminated. Flow is by gravity.
- ✓ Sewage from WC Flush joins the specially designed **DTAS Anoxic Bioreactor** followed by **DTAS Fixed Media Anoxic Up-flow Bio-filte**
- ✓ Treated Sewage & Sullage (from bathrooms & kitchen) will enter Aeration Zone through Screen Chamber
- ✓ It area Foot print is lesser than other Biological Process
- ✓ It has Low energy Foot Print Needs 30 % less energy as compared to conventional process.
- ✓ It operates in extended aeration zone. Therefore waste sludge generation is minimum
- ✓ Excess organic biomass in form of sludge is drained out to septic tank once in week. Therefore additional treatment for sludge is not required.
- ✓ Turbidity, COD & BOD are respectively less than 5 NTU, 50 mg/l & 5 mg/l
- ✓ Treats flow from 20 to 300 m<sup>3</sup>/day
- ✓ Treated Sewage can be used for
  - a. Flushing of WC
  - b. Car washing & Road washing
  - c. Irrigation
- ✓ It saves 30 to 40% of fresh water

### Schematic Diagram of DTAS



### Typical Calculation for 3 modules 50, 100 & 150 m<sup>3</sup>

<b>DEEP TANK AERATION SYSTEM</b>			
Capacity, m3/day	50	100	150
Civil Cost, Rs.	184185	335757	486903
Mechanical & Electrical Cost, Rs.			
VEIPL Aeration System, Rs	115000	115000	165000
VEIPL Tertiary Treatment Plant, Rs	100000	150000	250000
Sludge Pump, Rs	15000	15000	15000
Total, Rs	230000	280000	430000
Area Requirement, m2	11	17	25
Power input			
Aeration, HP	2	2	3
Sludge withdrawal Pump, HP	1	1	1
Tertiary Treatment Plant, HP	1	2	2
Total	4	5	6
KWh per day	44.3	51.8	69.8
Operation Cost,			
Energy cost @ 5/kwh	6638	7763	10463
Chemical Cost	1463	5850	7538
Manpower Cost	6000	6000	6000
Total Operation Cost, Rs/Month	14101	19613	24001
Note: Run Hr. for aerator 24 hrs. Sludge withdrawal Pump 1Hr. & Tertiary Treatment Plant 10 hrs.			

This is typical cost may vary with site condition



**DTAS Unit**



**Tertiary Treatment**



**Cascade Aeration**