DEWATS™ for Public Toilet at Vegetable Market
Kalmeshwar, Maharashtra

PROJECT BRIEF
Kalmeshwar is a town located 25 km away from Nagpur. It has a population of ~30,000. A DEWATS™ has been constructed for a public toilet complex at the new vegetable market. The toilet complex, which has facilities for urinal, bathroom and toilet for both for men and women, is being maintained by a private contractor on pay & use basis.

PROJECT OUTCOMES
- To mitigate health, hygiene and environmental risks caused by the absence of wastewater treatment or its inappropriate disposal
- To meeting effluent treatment standards of the Maharashtra State Pollution Control Board (MSPCB)
- To reuse the treated water for gardening, flushing and washing of the pathways (leading to the toilet)

SYSTEM IN BRIEF
The wastewater streams are channeled from all sources and collected in a common register near the treatment system, which consists of following modules:

- **Settler**: a sedimentation tank for retaining heavier and lighter particles by sedimentation & floatation
- **Anaerobic Baffled Reactor**: ensures anaerobic degradation of suspended and dissolved solids by mixing fresh wastewater with an active sludge blanket
- **Anaerobic Filter**: comprises of a filter bed for treatment of dissolved organic matter. Wastewater comes in contact with the active bacterial mass, which grows on the filter material.
- **Planted Gravel Filter**: a tertiary treatment unit, which helps in the removal of odour and colour of the wastewater by aerobic processes.
- **Collection tank**: is used to store the treated water

SALIENT FEATURES
- **Source**: Public Toilets, Urinals & Bathrooms
- **Design Capacity**: 12 m³/day
- **No.of Users**: 480
- **Peak Flow**: 8 hours
- **Influent quality**: BOD: 350 mg/l COD: 800 mg/l
- **Effluent Quality**: BOD: <20 mg/l COD: <60 mg/l

PROJECT SPECIFICATIONS
- **Funding Agency**: Kalmeshwar Municipal Council
- **Implementing Agency**: CDD Society
- **Construction Cost**: Rs 9.38 Lakhs
- **Start of Construction**: October 2020
- **End of construction**: December 2020
- **Current status**: Commissioned & operational
- **Area per beneficiary**: 0.27 sq.mt
- **Cost per beneficiary**: Rs.2,345/-
- **OpEx per beneficiary**: Rs. 75

MODULES ADOPTED
- **Settler**: Volume: 24.16 m³ Area: 12.08 m²
- **Anaerobic Baffled Reactor + Anaerobic Filter**: Volume: 61.2 m³ Area: 34 m²
- **Planted Gravel Filter**: Volume: 43.44 m³ Area: 72.4 m²
- **Collection Tank**: Volume: 16.72 m³ Area: 13.38 m²
- **Built up area**: 131.86 m²
OPERATION AND MAINTENANCE

The wastewater treatment plant is operated and maintained by a private contractor on pay & use basis. O&M costs are in the range of Rs.25,000 - Rs.30,000 per year.

Operations

- Checking wastewater flow in all units and clearing the blockages (in registers).
- Pumping wastewater from the balancing tank regularly (pumping needs to be done in order to reuse the wastewater as well)

Maintenance

- Removal of sludge in the settler and integrated ABR & AF once in two to three years
- Replacement of filter media (in the filter chambers) once in five years
- Trimming of plants once in six months

REUSE OPTIONS

- The treated wastewater is used for gardening, pathway washing and flushing in the toilets