



Making Wastewater Treatment Efficient & Affordable



# UP-FLOW COMPACT CONSTRUCTED WETLAND based STP

Shortlisted under CSIR Technology Transfer Commitments-2030



CSIR-NEERI, Nagpur, 1.5 KLD



UCCW based GTP



GVAK, Deolapar, 3 KLD



CSIR-NEERI, Nagpur, 15 KLD



UCCW based STP



CSIR-CSIO, Chandigarh, 25 KLD

100 KLD and 300 KLD at WCL, Majri; 200 KLD (2 Nos) at MCET, Pollachi



Swachh Bharat Mission



AMRUT



Sustainable Development Goals

## Contact

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## Current Scenario

- India generates around 72,000 MLD wastewater from Class I and Class II cities and only 26% gets treated (CPCB Report 2021).
- Increased sewage generation vis à vis, limited treatment capacity necessitates sustainable technologies that are cost effective with low O&M.
- Most of the nature-based sewage treatment units are often associated with large foot print areas or low treatment efficiency.
- Lack of adequate centralised STP essentially needs decentralised, compact, and sustainable technologies that can be useful for a single household to a small community.

## Up-flow Compact Constructed Wetland (UCCW)

Up-flow Compact Constructed Wetland (UCCW) technology is a household and community-level STP that provides efficient and affordable sewage treatment in a single system.

UCCW works on the principle of Up-flow Floating Surface Constructed Wetland (UFSCW) and Up-flow Sub Surface Constructed Wetland (USSCW) which ensures maximum contact of wastewater with media and wetland plants.



Circular Module

UCCW through up-flow manoeuvring provides preliminary, primary, secondary and tertiary treatment including disinfection, all in a single system.

UCCW provides aerobic and anaerobic treatment, as well as suspended and attached growth, in a single system.

Reuse and recycle of treated water in cultivation of fodder, gardening, floriculture, road washing, flushing, rejuvenation of waterbody etc.



Rectangular Module

## Components of UCCW

- Screen cum Oil Removal
- Up-flow Floating Surface Constructed Wetland (UFSCW)
- Up-flow Sub Surface Constructed Wetland (USSCW)
- Up-flow Dual Media Filter (UDMF)
- Disinfection
- Treated Effluent Tank

## Wetland Plant Species

- Canna Indica*
- Colocasia Esculenta*
- Cyperus Involucratus*

## UCCW Performance

Parameters	Raw sewage	Treated Effluent
pH	6.5 – 7.5	6.5-8.5
TSS (mg/L)	120-210	< 5
BOD (mg/L)	200-250	<10
COD (mg/L)	300-350	< 50
Total Nitrogen (mg/L)	20-35	< 10
Total Phosphorus (mg/L)	5-10	< 1
Faecal Coliform (MPN/100mL)	10 <sup>6</sup> – 10 <sup>7</sup>	< 230

## Salient Features UCCW

- All treatment units in a single system
- Least Operation & Maintenance (O&M)
- Minimum requirement of electricity
- Compliance with Discharge Standards
- Compliance of Packaged STP
- Most silent STP
- Compact and easy to fabricate/construction

Material of Construction – FRP upto 25 KLD and RCC above 25 KLD

## Treatment Stages



Inlet UFSCW USSCW UDMF

## Reuse & Recycle



### Patents:

202111055046 (UCCW)  
202311016818 (UFSCW)

### Trade Marks:

6538708 (UCCW)  
6759803 (UFSCW)  
010TM2025 (USSCW)