

UV Water Treatment
Hydro-Optic™ Technology

Chennai, India, Drinking Water Plant Implements a Multi-Barrier Treatment Solution Using Hydro-Optic™ UV Disinfection Technology to Treat Surface Water

A 1.5-million-liters-per-day (MLD) drinking water plant in Chennai, India, operated by Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), implemented a multi-barrier non-chemical treatment process using Atlantium's Hydro-Optic™ (HOD) ultraviolet (UV) technology to effectively treat high algae loads in its lake water source.



In 2018, with the support of the local Indian integrator and channel partner, Yaha Water Systems, CMWSSB selected and installed Atlantium's HOD UV technology as part of its multi-barrier treatment process. The HOD UV technology provides a chemical-free disinfection approach that minimizes the formation of carcinogenic disinfection byproducts (DBPs) and helps to ensure drinking water quality standards and compliance without imparting any negative effects on the treated water.

Source Water

The lake source water in Chennai, Tamil Nadu, has a high organic load. Treatment with traditional chlorine disinfectants, coupled with the naturally high organic load of the lake water, can contribute to the formation of harmful DBPs. As a result, a new disinfection solution was needed, one that would improve water quality while being reliable, maintainable, and sustainable regardless of seasonal fluctuations in water temperature and quality.

As a physical disinfection process, HOD UV provides an environmentally friendly solution that eliminates the reliance on chemical disinfectants and their associated risks (e.g., safety, storage, chain of supply, handling, and formation of carcinogenic DBPs). The HOD UV technology easily inactivates the microorganisms that threaten public health safety including chlorine-resistant pseudomonas, cryptosporidium, and giardia. The technology has a third-party validation for full 4-log virus U.S. EPA compliance using a live Adenovirus, not a surrogate. This is one of many unique attributes of the HOD UV technology compared to competitive UV systems.

Atlantium's HOD UV technology (RZ104 Series) was installed in 2018 and has proven to be an effective solution for the multi-barrier non-chemical treatment approach being implemented at the Chennai drinking water plant.

Treatment Process

In the treatment process, lake water is drawn by pumps that are installed on a specially designed floating pontoon in the lake and then transferred to tanks at the water treatment plant. From there, the algae-laden source water is treated through a lamella clarifier, followed by active media filters, and finally, the HOD UV system. The complete multi-barrier system features a combined, automatic control panel for online monitoring and system operation.

The environmentally friendly treatment scheme at the Chennai drinking water plant has less than 2% water waste and provides results that comply with the IS 10500 Drinking Water Standard (Table 1).

Description	Inlet	Outlet
TSS (ppm)	20-25	< 3
Turbidity (NTU)	30-40	< 2
Results Comply to IS 10500 Drinking Water Standard		

Table 1. Parameters

HOD UV for Chennai

- HOD UV helps eliminate unpleasant taste and odor, reduces DBPs
- HOD UV is third-party validated to U.S. EPA criteria for 5-log microbial and 4-log virus
- HOD UV features integrated system controls and software for operational ease
- HOD UV automatically generates compliance reports
- HOD UV features a space-saving modular design
- HOD UV is easy to maintain and comes with 24/7 factory support
- HOD UV has a proven track record of disinfection efficacy



Algae-laden source water is drawn by pumps installed on floating pontoon in the lake in Chennai.



Top view of floating pontoon in the lake used for source water for the Chennai drinking water plant.



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