CANDELA™
RESEARCH CENTRE

CERTIFIED ISO 9001 CERTIFIED

CANDELA UV

UV-C Based Submerged Water Disinfection System

Clean Water. Clean Tanks. Better Health.

The Smarter Way to Disinfect Stored Water

Candela UV™ ensures microbiologically safe water in your overhead tank using proven UV-C technology with multi-pass recirculation – chemical-free, maintenance-friendly and built for Indian conditions.

INLET
From Overhead Tank / Pump

CANDELA UV™
Submerged UV Disinfection Device

DISINFECTION
UV-C light (254nm) inactivates 99.99% of bacteria, viruses & pathogens

SAFE WATER OUTLET
To Your Home

- Chemical-Free Disinfection
- 99.99% Pathogen Inactivation
- Multi-Pass Recirculation
- Low Maintenance & Easy Operation
- Energy Efficient & Cost Effective

CANDELA UV

UV-C based submerged water disinfection system for stored water tanks

Submerged UV-C reactor engineered for stored tank water.

Pump-assisted recirculation supports repeated exposure and broader coverage.

Configurable single-unit or modular array installation for villas, schools, hospitals and commercial buildings.

Chemical-free approach: no dosing, no residual taste and lower handling risk.

CANDELA UV

Hidden Water Risk in Homes

A 4-step journey from contamination to illness

Bird-borne contamination may enter overhead tank water.
Stored water reaches household taps for daily activities.
Families may unknowingly use contaminated water for washing and food-related use.
Candela UV™ helps protect stored water before it reaches users.

Protect your family. Protect your health.

CANDELA UV

Hotels & Restaurants

Protect every drop. Protect every customer.

Overhead tank contamination can reach kitchen and wash-area taps.
Guests and staff may use water unknowingly for handwashing and cleaning.
Contaminated water can affect guest health and business reputation.
Candela UV™ supports safe water for hospitality operations.

Clean water. Safe people. Stronger reputation.

CANDELA UV

Hospital Water Risk

From groundwater infiltration to patient infections

Patients can be highly vulnerable to waterborne contamination.
Hospital water is used for bathing, cleaning, drinking and routine care.
Safer stored water supports infection-risk reduction strategies.
Candela UV™ helps protect hospital water and patient safety.

Clean water is critical in healthcare.

CANDELA UV

Spas & Wellness Centers

Clean water is the foundation of wellness

Water is used in pools, jacuzzis, steam, showers and rinsing.
Germs can enter the body through skin contact, inhalation or swallowing water.
Poor water hygiene can cause customer complaints and health concerns.
Candela UV™ supports safer water for wellness environments.

Safe water. Healthy families. Peace of mind.

CANDELA UV

Shopping Mall Food Courts

Protect customers. Protect reputation.

Overhead tank contamination can reach wash basins and food-court taps.
Customers and staff use water before eating and during cleaning operations.
Clean stored water helps reduce illness risk and improve customer confidence.
Candela UV™ supports safer water for high-footfall public facilities.

Safe water. Healthy customers.

CANDELA UV

Farms & Agriculture

Clean water. Healthy animals. Higher productivity.

Contamination in water sources can affect animal health and productivity.
Stored water may be used for drinking, irrigation, washing and equipment cleaning.
Cleaner water can support healthier animals and reduce operational risk.
Candela UV™ provides a scalable stored-water hygiene solution for farms.

Safe water. Healthy animals. Stronger farm. Better future.

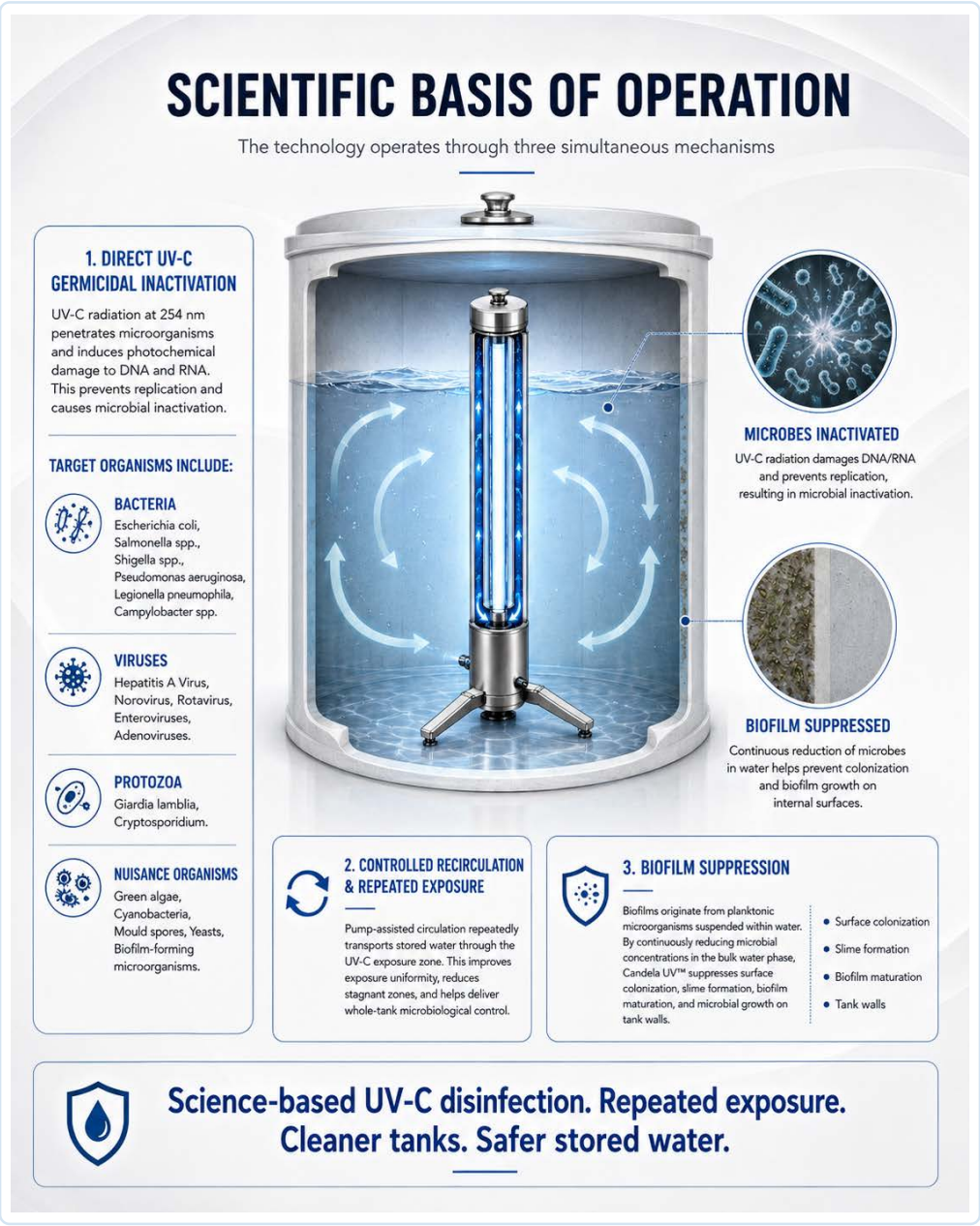
CANDELA UV

Scientific Basis

Three simultaneous mechanisms support stored water hygiene

Direct UV-C germicidal inactivation at 254 nm.
Controlled recirculation creates repeated exposure in the tank volume.
Continuous microbial reduction helps suppress surface colonization and biofilm formation.

Science-based UV-C disinfection. Repeated exposure. Cleaner tanks. Safer stored water.

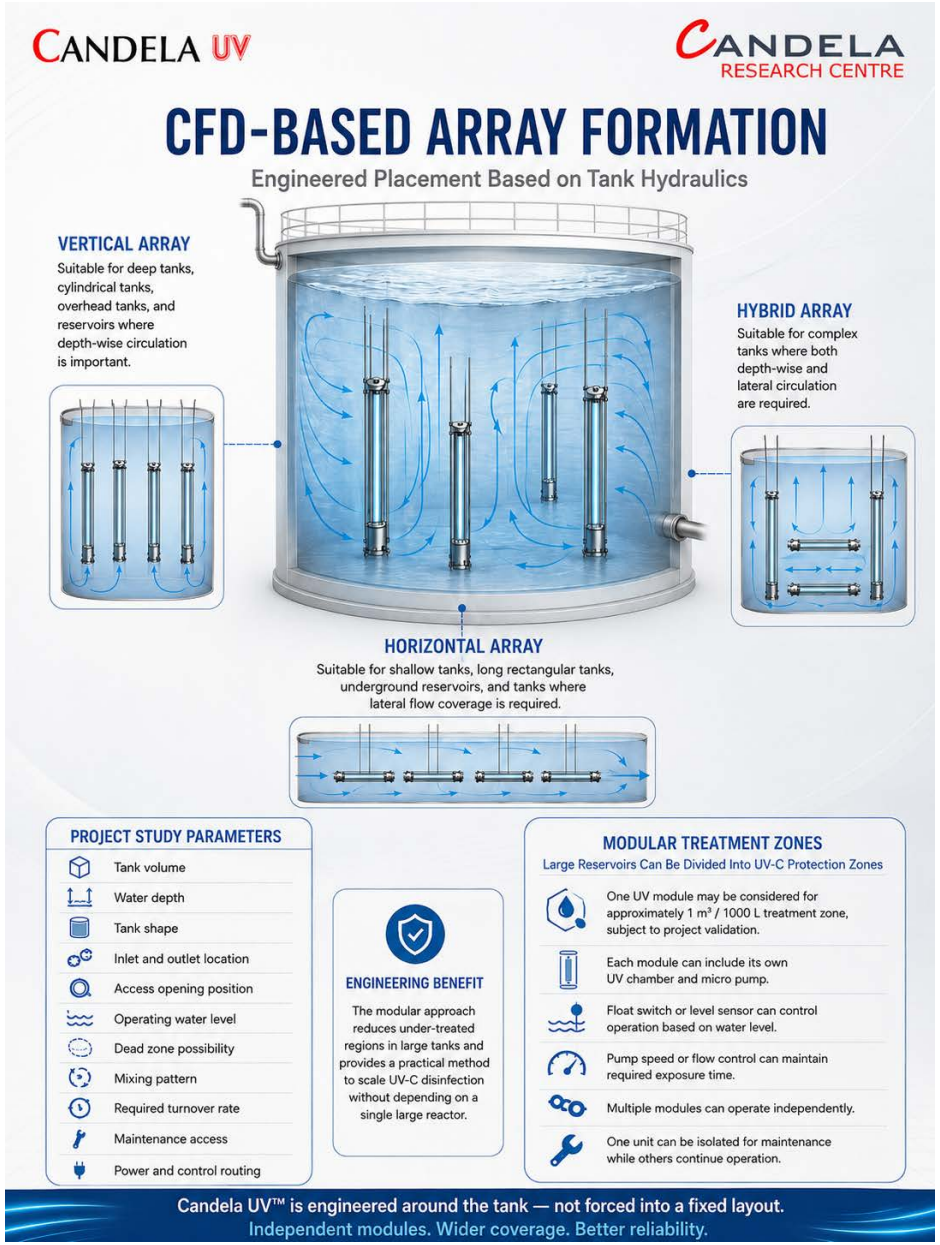


CFD-Based Array Formation

Engineered placement based on tank hydraulics

Vertical arrays for deep tanks and reservoirs.
Horizontal arrays for shallow or long rectangular tanks.
Hybrid arrays for complex tanks requiring depth-wise and lateral circulation.
Modular treatment zones make large reservoirs scalable.

Candela UV™ is engineered around the tank — not forced into a fixed layout.



CANDELA UV

Tank Internal Hygiene Benefit

Beyond water disinfection: supporting cleaner tank surfaces

Longer Cleaning Gaps. No Hard Scrubbing. Longer Tank Life.

Supports tank hygiene management between scheduled cleaning cycles.

Low water levels expose more tank wall area to UV-C radiation near the irradiation zone.

Chemical-free protection helps avoid smell, taste and dosing concerns.

Reduces microbial risk in stored water environments.

Cleaner water begins with a cleaner tank environment.

CANDELA UV

Villa Application

Single-unit installation for small-capacity overhead tanks

Compact single-unit system for villa and home water tanks.
Continuous disinfection for daily domestic water usage.
Chemical-free operation with low maintenance requirements.
Ideal for villas, homes and premium residences.

Safe water. Healthy living.

CANDELA UV

Commercial Buildings

Large-capacity tank with array installation

Multi-module UV arrays for wide hydraulic coverage.
Redundancy improves reliability and continuous operation.
Supports consistent stored water quality across high-use buildings.
Suitable for offices, hotels, malls and large facilities.

Large-capacity tanks benefit from modular array installation.

CANDELA UV

Schools & Campuses

Medium-capacity tank with multi-unit installation

Multi-unit UV array for medium-size institutional tanks.
Designed to reduce dead zones and support consistent performance.
Supports safe drinking and utility water for students and staff.
Ideal for schools, colleges and educational campuses.

Safe water. Healthier futures.

CANDELA UV

Hospitals & Healthcare

High-capacity critical water tanks with array installation

High-volume disinfection for critical-use water storage.
Uniform UV coverage with redundant and reliable modules.
Designed for continuous healthcare water demand.
Ideal for hospitals, clinics and medical centers.

Safe water is critical in healthcare.

CANDELA UV

Design & Safety Framework

Reference standards for UV-C systems used in potable water applications

Reactor philosophy aligns with recognized UV, safety and drinking-water benchmarks.
System incorporates double quartz sleeves, submerged sealing and electrical isolation.
ISO 9001 quality management supports controlled manufacturing and testing.
Reference standards are shown as design and application benchmarks.

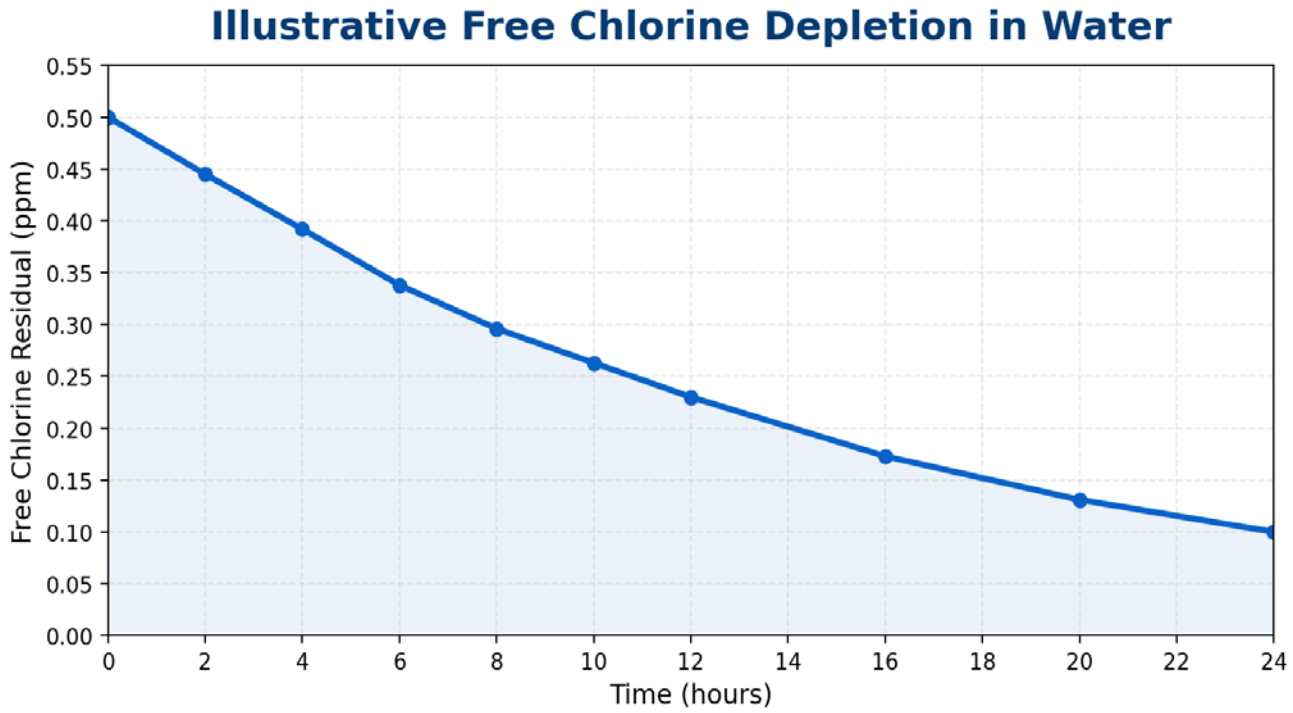
Engineered for safe submerged UV-C disinfection in potable water tanks.

CANDELA UV

FREE CHLORINE DEPLETION UNDER UV-C

Illustrative trend for repeated 254 nm UV-C exposure with continuous recirculation

ILLUSTRATIVE TREND



DESIGN INTERPRETATION

- Starting residual: 0.5 ppm free chlorine
- UV-C exposure may gradually reduce chlorine residual during recirculation
- Actual depletion depends on water quality, organics, temperature and tank conditions

PRACTICAL BENEFIT

Candela UV supports continuous microbial control in stored water while reducing dependency on high chlorine residuals. This can improve taste and odor, lower chemical exposure, and may reduce chlorination by-products while maintaining safer water through UV-C disinfection.

Note: This is an illustrative trend and not a universal measured curve. Validate under actual water quality and operating conditions.

Lower chemical dependency. Cleaner taste. Safer stored water.

CANDELA UV

DIMENSIONS & SPECIFICATIONS

Engineered for performance, reliability and long life in demanding water environments

DIMENSIONAL ENVELOPE

TECHNICAL SPECIFICATIONS

1	Electrical power	**75 W**
2	Useful UV-C output	**25 W**
3	Wavelength	**254 nm**
4	Rated lamp life	**9,000 hours**
5	UV output at EOL	**85%**
6	Temperature range	**-20 °C to 60 °C**
7	Maximum depth	**15 m**

Cleaner water. Safer future. Powered by Candela UV™ technology.

CANDELA UV

UV DOSAGE CALCULATION BASIS

Engineered around germicidal UV dose and repeated exposure

UV Dose = Effective UV Intensity × Exposure Time

CANDELA UV™ BASIS

- Lamp class: 75 W UV-C lamp
- Useful UV-C output: approx. 25 W
- Outer quartz tube: Ø40 mm
- Inner quartz tube: Ø30 mm
- Annular water gap: 5 mm
- Annular chamber volume: approx. 0.44 L
- Recommended villa flow: approx. 6–7 LPM
- Conservative design target: minimum 40 mJ/cm² per pass

PRACTICAL UV DOSE RANGE

Flow	Residence	Conservative	Practical clean-system
6 LPM	4.4 sec	≥44 mJ/cm²	55–95 mJ/cm²
6.6 LPM	4.0 sec	≥40 mJ/cm²	50–88 mJ/cm²
7 LPM	3.8 sec	≈38 mJ/cm²	48–84 mJ/cm²
8 LPM	3.3 sec	≈33 mJ/cm²	42–73 mJ/cm²

Recommended brochure statement

At the recommended villa operating flow of approximately 6 LPM, Candela UV™ provides a conservative calculated UV-C dose of at least 44 mJ/cm² per pass. Under clean-water, low-transmission-loss conditions, practical operating dose is expected to be higher.

Designed to exceed the minimum — engineered to perform in real tank conditions.

CANDELA UV

WATER QUALITY COMPATIBILITY

Mineral scaling and transmission control for reliable UV-C performance

CALCIUM CARBONATE ($CACO_3$)

Up to ~200 ppm

Primary concern

Scaling on quartz sleeves can reduce UV intensity and dose delivery.

Recommended action

Use periodic cleaning; apply softening / anti-scale pretreatment where hardness is high.

Validate by site water test

IRON (FE)

Target <0.3 mg/L

Primary concern

Iron reduces UV transmission and may stain or coat quartz surfaces.

Recommended action

Use iron removal / filtration where values exceed the target.

Validate by site water test

MAGNESIUM (MG)

Up to ~50 ppm

Primary concern

Contributes to total hardness and can support mineral scaling over time.

Recommended action

Control hardness and schedule sleeve cleaning according to site water quality.

Validate by site water test

Guidance values shown are practical design references. Final treatment limits depend on actual water chemistry, UV transmittance, sleeve cleanliness, lamp condition and validation testing.

Control scale. Protect UV transmission. Maintain reliable disinfection performance.

CANDELA UV

APPLICATION & SIZING CHART

Reference guide for selecting Candela UV™ units by storage volume

Design basis

Effective disinfection capacity: 400 L/hour per unit. Daily treatment capacity: 9,600 L/day per unit. Recommended sizing: 1 unit per 2,500 litres.

Tank Capacity (L)	US Gallons	Units	Disinfection Volume (L/day)	Passes/Day
500	132	1	9,600	19.20
1,000	264	1	9,600	9.60
1,500	396	1	9,600	6.40
2,000	528	1	9,600	4.80
2,500	660	1	9,600	3.84
5,000	1,321	2	19,200	3.84
7,500	1,981	3	28,800	3.84
10,000	2,642	4	38,400	3.84
15,000	3,963	6	57,600	3.84
20,000	5,283	8	76,800	3.84
25,000	6,604	10	96,000	3.84
30,000	7,925	12	115,200	3.84

For larger tanks, multiple units can be installed as modular UV-C treatment zones for wider hydraulic coverage and redundancy.

Simple sizing. Modular deployment. Reliable whole-tank recirculation.

CANDELA UV

Clean Water. Clean Tanks. Better Health.

A submerged UV-C platform for stored water disinfection across villas, commercial buildings, schools, hospitals, hospitality, wellness and agriculture.

Thank You

For discussion / dealership / project study

Candela Research Centre Pvt. Ltd.
ISO 9001:2015 Certified Company
www.candelarc.com

CANDELA™ RESEARCH CENTRE