

Disinfection



Municipal



Singapore

Post RO Disinfection for Reclaimed Water, PUB Singapore

Delivering sustainable water supply in Singapore

With limited land to collect and store rainwater, Singapore faced droughts, floods, and water pollution in the early years of nation-building. These challenges inspired PUB, a leading water company in Southeast Asia, to strategize and seek innovative ideas, develop capabilities, and secure a sustainable supply of water. Today, Singapore has a robust, diversified, and sustainable water supply from four sources, aptly named the “Four National Taps”, comprising water from local catchments, imported water, desalination, and ultra-clean high-grade water that is recycled from treated used water).

Adding to the country’s water supply is an innovative reclaimed water initiative: From waste to tap water. The process recycles treated used water into ultra-clean, high-grade reclaimed water, cushioning its water supply against dry weather and moving Singapore towards water sustainability. There are currently five plants in operation.

The Challenge

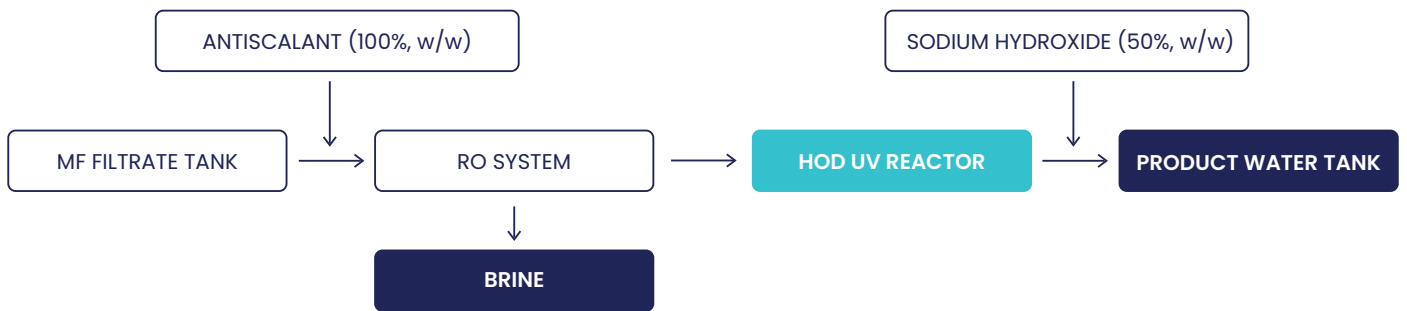
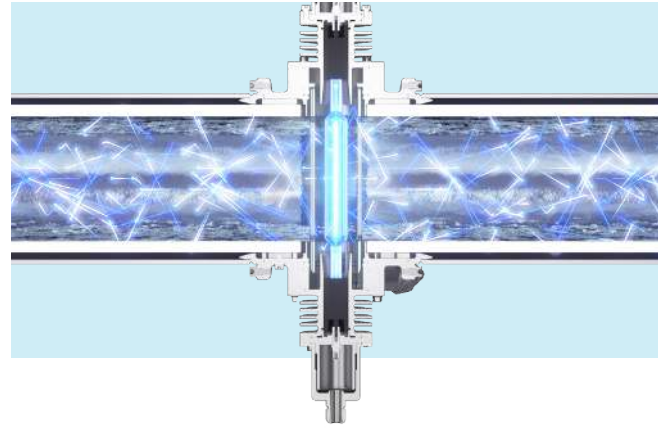
The Kranji NEWater Factory was undergoing redevelopment to expand its treatment capacity and implement a disinfection solution for a flow rate of 1240m³/hr. The goal was to install a 3rd party validated UV disinfection system that will deliver 90 mJ/cm² in

the defined water conditions. The project, managed by Ace Water in Singapore, included a four-stage multistep treatment starting with strainers, followed by microfiltration, reverse osmosis, and UV. After the RO stage, the water had already reached high-grade quality. The goal of the final stage, UV treatment, was to deliver validated post-RO disinfection. Capable of killing both bacteria and viruses, HOD™ (Hydro-Optic Disinfection) UV acted as an additional safety measure to guarantee the purity of the water.

The Solution

Three RZ Series systems were installed after the RO systems. Atlantium HOD UV systems deliver effective disinfection. This is achieved by combining ultraviolet water disinfection technology with hydraulic and optic principles. The HOD UV system features the unique Total Internal Reflection (TIR) technology that recycles UV light energy, ensures homogenous UV dose distribution, provides superior power (kW) efficiency compared to traditional UV, and achieves unprecedented micro-organism inactivation.

Parameter	RO Permeate	UV Disinfection
Component Description	Pipe	UV
Number of Duty Units	1	2 (+1 standby)
Unit Capacity	947 m ³ /hr	474 m ³ /hr
Total Capacity	947 m ³ /hr	947 m ³ /hr
Dose		60-90 mj/cm ²



Results

The plant's 14-day test plan was based on a production output of 22,730 m³/day or other continuous daily flow. The goal set for UV disinfection was a Heterotrophic Plate Count (HPC) of less than 5 cfu/ml for the disinfected permeate. UV effluent was collected twice, on days 7 and 14. The HPC on both days was < 1 cfu/mL, indicating that the UV systems are functioning well. Atlantium's HOD UV not only met but exceeded the disinfection goals.



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About us

For more than two decades, Atlantium Technologies has helped to ensure water safety with its innovative HOD™ (Hydro-Optic Disinfection) UV technology and novel approach to performance, monitoring, and control. Atlantium's superior, environmentally friendly water treatment solutions ensure stable, efficient, and dependable production.

With thousands of full-scale installations for leading brands in various industries globally, we're committed to consistently meeting our customers' water quality needs, ensuring pure results.

