

LightWise Technology from VIQUA

Sleeve Fouling

In many situations, the most common problem affecting ultraviolet (UV) water disinfection is the fouling of the quartz sleeve which surrounds the UV lamp. The rate of sleeve fouling is influenced by water temperature, water flow, and water quality – specifically the concentrations of calcium, magnesium, and iron in the water, which are the most common constituents that lead to sleeve fouling.

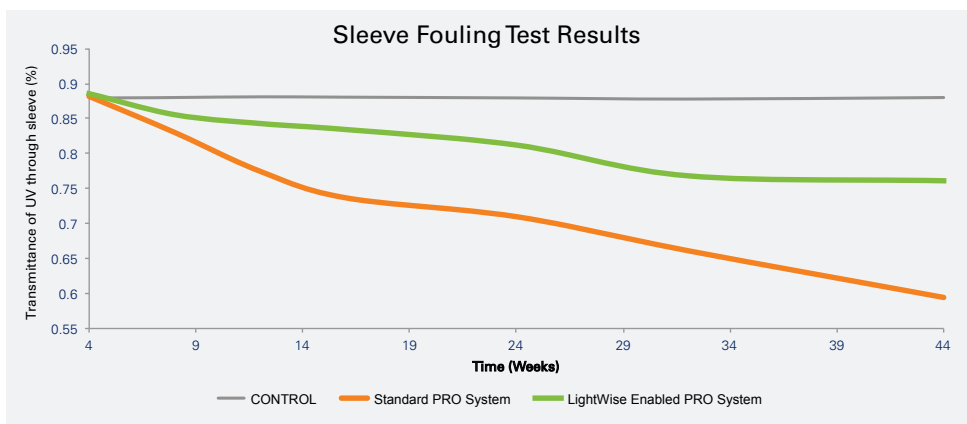
Under no-flow conditions through the UV chamber, the water temperature increases, which causes an accelerated rate of calcium, magnesium, and iron deposits precipitating onto the quartz sleeve. This decreases the level of UV transmittance and eventually requires the sleeve to be cleaned.

While actual water usage may vary significantly in a 24-hour period, conditions of no water flow typically account for as much as 60% of the day. During this time, the UV lamp heats the water, resulting in water temperatures as high as 55°C (131°F) in the chamber and significantly increasing the rate of sleeve fouling.



VIQUA's Solution

VIQUA's new LightWise technology allows the controller to reduce lamp power during periods of no water flow, leading to estimated energy savings of 30%. By adjusting the lamp power, water temperature is maintained below 40°C (104°F), and the rate of sleeve fouling is consequently reduced by as much as 60%. This can more than double the amount of time between sleeve cleaning cycles.



LightWise technology is featured in the VIQUA Pro series – the PRO10, PRO20, and PRO30.

Benefits

Lower maintenance (Up to 60% less maintenance)

- Decrease conditions that contribute to fouling and corresponding maintenance.
- Increase time period between required maintenance
- Eliminate the need for a complicated mechanical sleeve cleaning system

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Sample Maintenance Schedule

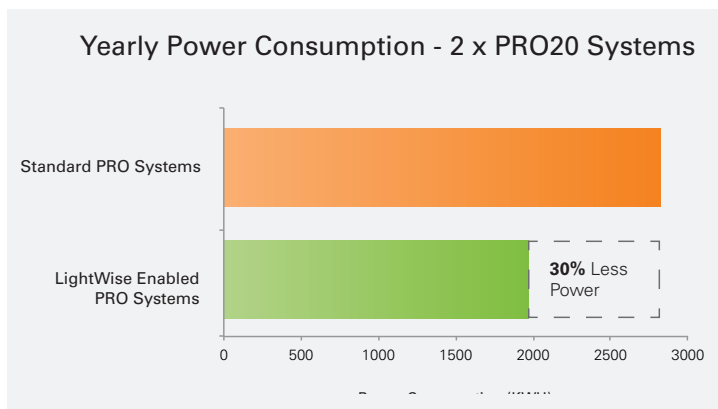
Time (Weeks)	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100
Standard PRO System (UVT)	82%	79%	77%	74%	71%	68%	66%	63%	60%	58%	55%														
LightWise Enabled PRO System (UVT)	84%	83%	82%	81%	79%	78%	77%	76%	74%	73%	72%	71%	69%	68%	67%	66%	64%	63%	62%	61%	59%	58%	57%	56%	55%

Maintenance-Free Period ----- | ----- |

Actual results may vary with water quality

Lower Energy Consumption

- Estimated energy savings of 30% (Typical two unit [PRO20] installation uses 2800 kW/yr)



Lower Operating Temperature

- Water temperature is maintained below 40 degrees Celsius (104 F) in no-flow conditions
- Eliminates the need for hot water purging in no-flow conditions

