

MiPRO Photo for Taste & Odor Removal

Water Treatment Plant Siheung, South Korea

Project Background

The upgrade of the Siheung Water Treatment Plant is part of an infrastructure initiative in South Korea to provide high quality water to high tech industry and consumers. The design capacity of 101.000 m³/d (27 MGD) is anticipated to be extended to 129.000 m³/d (34 MGD) in 2017.

Considering seasonal occurrences of a compound produced by blue algae that influences taste and odor (2-Methylisoborneol, or 2-MIB) and the need for a reliable and efficient barrier against protozoans, UV Advanced Oxidation Processes (AOP) was determined to be the optimal technology for realization of the initiative's objectives.

Subsequent extensive trials benchmarking medium pressure and low pressure UV AOP solutions demonstrated the superior economics of Xylem's low pressure Wedeco MiPRO photo system with its high output lamp technology.

"Wedeco MiPRO photo provides a reliable barrier against taste and odor compounds and microorganisms"

The system was commissioned in 2015 and a full scale performance test was conducted by spiking the water with 2-MIB. The test confirmed the proper sizing and operation of the system as well as the guaranteed energy consumption of the AOP system.



END USER:	K-Water
FLOW RATE:	4419 m ³ /h
UV DOSE:	3500 J/m ²
H ₂ O ₂ DOSE:	5 - 10 ppm
2-MIB REMOVAL:	0.5 LOG



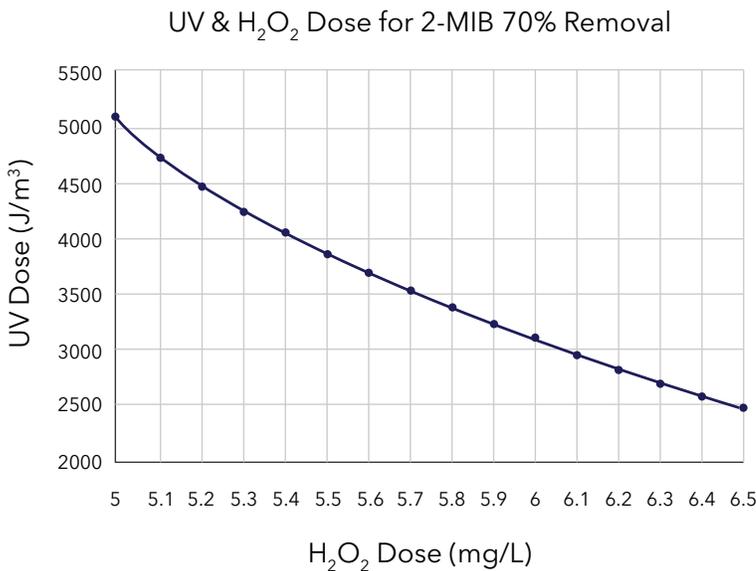
Wedeco UV AOP solution for Siheung WTP

The Siheung WTP UV AOP system consists of three MiPRO photo K-Reactors, each equipped with 168 Ecoray lamps. The staggered lamp arrangement combined with the abilities to shut down single lamp rows and/or dim the lamps by up to 50% allows the operator to apply the exact UV dose needed for 100% compliance regarding both disinfection and taste and odor. Changes in the UV transmittance immediately result in an adjustment of the UV lamp output to assure compliance and to allow significant energy savings.

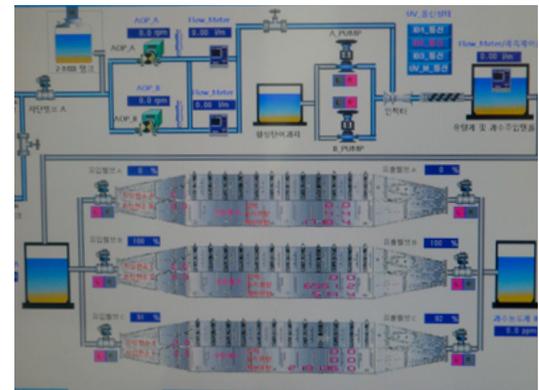
“Real time dose monitoring and control allows significant cost savings”

Conclusion

Wedeco’s novel control approach for UV based AOPs provided for online real-time adjustment of the UV dose, based on the water quality of the influent. Based on the full scale performance test, it was possible to estimate the best balance between UV dose and peroxide dosing to operate the AOP system with the lowest possible operational expenditures.



The Wedeco MiPRO photo K-Reactor has a staggered lamp arrangement for highest flexibility and dose distribution.



Wedeco MiPRO photo systems are equipped with the latest Ecoray lamp technology and dose control to provide reliable and efficient advanced oxidation. Real-time UV dose monitoring and control results in 100% compliance and savings on operational costs.