

Wedeco Ozone and Ultraviolet Technology in Lake Pleasant, AZ

Water treatment plant solves taste and odor problems and high toxin levels

Located north of Phoenix, Arizona, Lake Pleasant Regional Park serves as a large outdoor recreational hub for Arizona residents. The lake itself, the second largest reservoir in Arizona, functions as a place to boat and swim while also acting as a water resource for the growing 400,000 households within the municipal boundaries of Peoria.

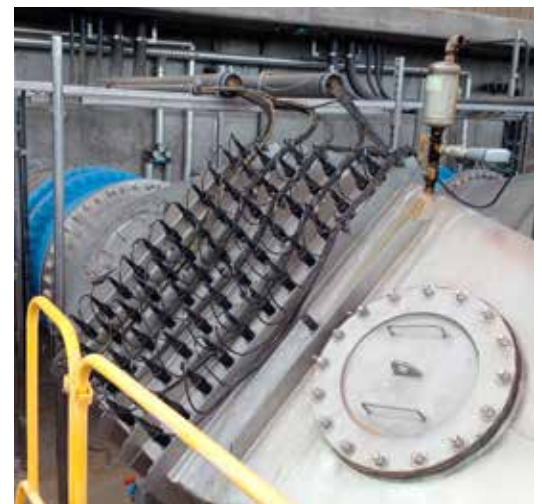
Background

Phoenix is one of the country's fastest growing metropolitan areas and has one of the most arid desert climates. Population growth coupled with increasingly stringent water regulations pushed the city to proactively address future water supply concerns. The decision was made to build the Lake Pleasant Water Treatment Plant (WTP) and include oxidation and disinfection treatment barriers.

Since surface water contains higher concentrations of constituents in comparison to ground water, oxidation and disinfection were essential treatment steps to producing potable water. The equipment would be required to produce high quality water at high volumes, but also minimize the environmental and economic impact.

Over 150 constituents are monitored in the raw water at Lake Pleasant which is comprised of two water sources: the Colorado River via the Central Arizona Project Canal and the Agua Fria River.

The surface water of the lake was prone to taste and odor problems from the presence of algae, decaying vegetation and other odor causing organisms. Additionally, the threat of increased toxin levels through the oxidation of blue-green algae also existed.



Wedeco five row filled K143 Series UV reactor

END USER:	City of Peoria, AZ
CLIENT:	Lake Pleasant WTP
ORDER DATE:	2005
COMPLETION:	2006

Solution

The Lake Pleasant WTP selected ozone technology to oxidize disinfection by-product (DBP) precursors, geosmin, MIB, and viruses; and UV technology for disinfection for Giardia and Cryptosporidium inactivation.

Black & Veatch and McCarthy teamed up as the design build team for the Lake Pleasant WTP expansion and were responsible for soliciting competitive bid proposals from ozone and UV manufacturers. To ensure the most reliable and energy efficient equipment was selected for the project, each manufacturer's proposal was required to include information on the equipment technology and a detailed operation and maintenance analysis which evaluated performance, power, and consumables. After examination of all bidding manufacturers' proposals was completed, Wedeco, a Xylem Brand, was selected. The ozone generation equipment features two PDO evo 7000 units utilizing the Wedeco Effizon electrode technology. The ozone generation system is capable of treating up to 90 million gallons per day (MGD) of water from Lake Pleasant by producing over 1,800 pounds per day of ozone.

In addition to taste and odor removal, the ozone system also supplies the facility with added disinfection credits. Providing another layer of disinfection safety are four Wedeco K143 Series closed vessel UV reactors, each capable of disinfecting 27 MGD. The reactors are equipped with five rows of 12 low-pressure, high-output Ecoray® UV lamps warranted for 14,000 hours of run time.

The core technology of Wedeco's equipment has been designed to optimize oxidation and disinfection performance while effectively minimizing operating costs.

Results

As a result of utilizing Wedeco systems, the site experiences more than 20 percent savings in annual energy costs without jeopardizing performance.

To date, Lake Pleasant WTP is able to control the taste and odor of the water while eliminating harmful bacteria and other substances utilizing ozone and ultraviolet treatment equipment. Wedeco technology has enabled the Lake Pleasant WTP to provide a reliable supply of high quality drinking water that has been treated to meet the EPA's strict Long Term 2 Enhanced Surface Water Treatment Rule and SDWA guidelines.



Four Wedeco K143 Series UV reactors shown in parallel



K143 Series UV power supply remote enclosures



Wedeco PDO evo 7000 skid mounted ozone generator

Xylem, Inc.
14125 South Bridge Circle
Charlotte, NC 28273
Tel 704.409.9700
Fax 704.295.9080
855-XYL-H2O1 (855-995-4661)
www.xylem.com

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