

Small community leads Central Florida in potable water reuse implementation

ALTAMONTE SPRINGS' O₃/BAF TREATMENT FACILITY IS THE FIRST OF ITS KIND IN THE STATE

According to recent studies conducted by the Central Florida Water Initiative, groundwater sources alone will not meet future freshwater demands for area residents. To address this looming issue, Central Florida water utilities will need to begin diversifying their water supplies. There are several options water utilities can consider when expanding their drinking water sources, including surface water, groundwater and desalination. One opportunity that is gaining nationwide popularity is potable water reuse.

"The city of Altamonte Springs, located in Seminole County, Florida, was one of the first in the area to attack its water challenges by investigating drinking water reuse."

The municipality implemented a pilot program, funded in large part by a grant provided by the St. Johns River Water Management District (SJRWMD). The pilot called the pureALTA project was designed with two primary goals - to serve as platform for Altamonte Springs' future potable water reuse efforts; and to educate the 45,000 residents about the benefits of potable water reuse.

The pureALTA project

pureALTA is an advanced treatment facility in Altamonte Springs that treats reclaimed water by employing an advanced treatment train that results in municipal drinking water. The city worked with Carollo Engineers and Xylem to develop an ozone-biologically active filtration-based (O₃/BAF) advanced water treatment train that also included ultrafiltration (UF) membranes, granular activated carbon (GAC) filtration, and ultraviolet advanced oxidation (UV AOP).

This solution was chosen over reverse osmosis (RO)-based systems that typically have high capital and operating costs, and the added burden of brine disposal. The pureALTA treatment process begins with



END USER:	City of Altamonte Springs, FL
WORKED WITH:	Carollo and Xylem
ORDER DATE:	2016
COMPLETION:	2016
XYLEM SCOPE:	Design, manufacture, and deliver an Oxelia integrated O ₃ /BAF solution that includes GSO 30 Ozone Generator, XA underdrain, IMS 200 Media Retainer, and YSI NiCaVIS and CarboVIS instrumentation.

reclaimed water, which is then treated to meet or exceed drinking water quality standards without using expensive, energy-consuming RO.

The innovative network of two advanced water treatment processes - Ozone and Biologically Active Filtration - is handled by the Xylem Oxelia integrated O₃/BAF system, featuring a GSO 30 Ozone Generator, XA underdrain, and IMS 200 media retainer technologies.

The Xylem Oxelia system treats approximately 28,000 gallons per day (gpd) and uses an O₃:(TOC+nitrite) ratio to set the ozone dose. The city monitors system performance with Xylem analytics equipment from YSI, including NiCaVIS (upstream of process) and CarboVIS (downstream of process).

Pilot results

The integrated Oxelia process set the tone for the performance of the entire treatment train. The TOC reduction across the system ranges from 25 to 37 percent. More importantly, it operates as successful barrier for the UF membranes. Through one year of operation, the UF did not require any maintenance cleans and only performed a single clean-in-place. This compared to most membrane operations that typically require cleanings every six months.

Another positive outcome is the improvement in UVT average across the Oxelia process - from 71 to 86 percent - which also significantly enhanced the performance of the UV AOP system and reduced the overall operating costs of the UV reactor.

Based on the results of the pureALTA pilot project, the city could build on this success and develop a full-scale system with the potential to create about 5 percent of Altamonte Springs' daily water demands, reducing stress on the aquifer.

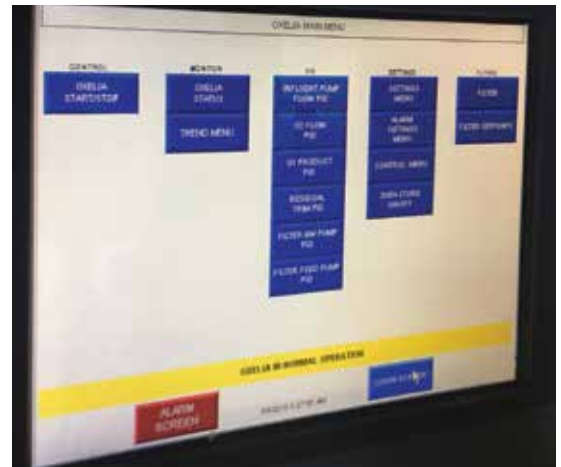
"We may be a smaller city, but our philosophy has always been to think outside the box when it comes to meeting the needs of our residents and to conserve our natural resources," said Frank Martz, Altamonte Springs City Manager.

pureALTA continues to benefit the community

Altamonte Springs frequently conducts educational tours at the pureALTA facility, hosting groups ranging from middle and high school students to water utility personnel from around the country.



Biofiltration column from Leopold, a Xylem Brand that includes XA Underdrain and IMS 200 Media Retainer.



Main Menu for the Oxelia integrated O₃/BAF solution that has several pre-loaded control strategies the Owner can select.



GSO 30 Ozone Generator from Wedeco, a Xylem Brand.

The city has also developed the Altamonte Springs Science Incubator (AS2 I) program which it offers as a hands-on science, technology, engineering and math (S.T.E.M.) learning experience for Seminole County students. The program includes field trips to Lake Lotus Park, the Regional Water Reclamation Facility and its certified environmental laboratory, and the pureALTA project site with discussions of treatment processes, safety, drought and the importance of diverse water supplies.

A toast to Altamonte Springs

Altamonte Springs and the pureALTA project won two prestigious awards. The 2018 International Water Association Project Innovation Awards recognized the city as the only U.S. project with a top award in the Market-Changing Water Technology and Infrastructure category for its forward-thinking applications and solutions to advance clean and safe water goals.

pureALTA also received the 2017 Water Reuse Innovative Project of the Year at the 32nd Annual WaterReuse Symposium. The award recognizes new and innovative solutions for expanding the use of recycled water and the creation of future models that advocate the implementation of water reclamation nationwide.

"We are extremely proud of the hard work and committed efforts from our city staff and partners, and are honored to accept these prestigious awards," added Martz.



Placard at the pureALTA project commemorating their 2017 WaterReuse Innovative Project of the Year award.

Xylem ['zīləm]

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com