

# Xylem Wedeco TotalCare Program in American Canyon, California

TotalCare Condition Audit results in energy savings of 80% and improved controls for American Canyon Wastewater Treatment Plant

The American Canyon Wastewater Treatment Plant (WWTP) began operations in October 2002 with then state-of-the-art secondary treatment that featured one of the nation's first uses of tandem membrane bio-reactor/UV disinfection in the process chain. As with many other early membrane bio-reactor treatment plants, this plant had a number of design deficiencies, which became apparent over time as the equipment aged, the utility's customer base expanded, and more stringent environmental regulations were enacted.

## Scope

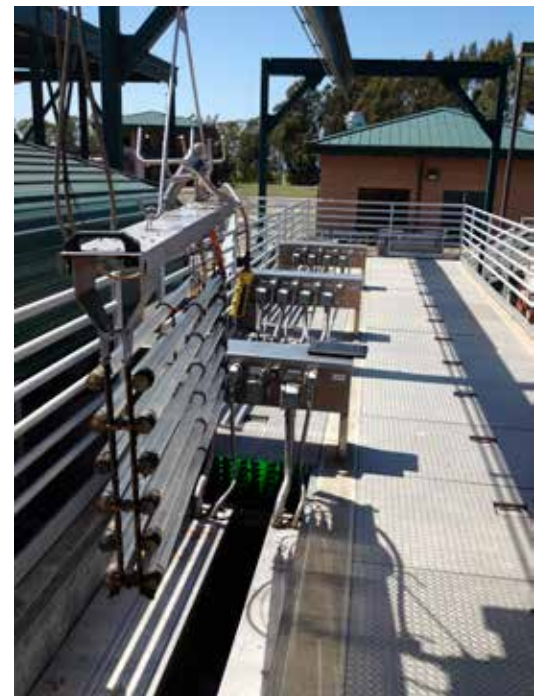
By 2011, power bills for the plant had reached \$27,000 per month (\$324,000 annually), imposing a strain on the municipality's \$5-million wastewater utility fund budget. In an effort to contain costs, the city of American Canyon, located 35 miles northeast of San Francisco in the Napa Valley, took part in the California Wastewater Process Optimization Program (CalPOP) sponsored by Pacific Gas & Electric (PG&E). The program helps wastewater utilities reduce their energy usage through energy efficiency improvements, allowing PG&E to meet growing customer demand.

A CalPOP audit team worked with the WWTP staff, the local office of Carollo Engineers, and a Xylem Wedeco field rep to identify opportunities for energy savings at the plant, including improvements to the existing 144-lamp/single channel Wedeco TAK 55 UV disinfection system, its dose control, and other UV system components that were reaching the end of their expected life.

## Solution

A Condition Audit is one of the services offered through Xylem TotalCare, a comprehensive portfolio of services that ensures equipment from all Xylem will always run at its best.

At the time of the TotalCare Condition Audit, the UV system was operating all three banks of UV lamps in the channel at full power instead of modulating the arrays. Recommendations included a



Site layout at American Canyon WWTP

END USER:	City of American Canyon, California, USA
CLIENT:	American Canyon Wastewater Treatment Plant
ORDER DATE:	2011
COMPLETION:	2011

complete re-lamping with newer, more energy-efficient Wedeco Ecoray® UV lamps and ballasts; a PLC processor enabling monitoring by the plant's SCADA; improved instrumentation; and a transmissivity monitor in the influent channel, along with UV intensity sensors in the dosing zones.

### Result

The recommended upgrades to the Wedeco system were identified through a Xylem TotalCare Condition Audit, an inspection and recommendation program that helps plant operators find ways to lower maintenance costs by identifying inefficiencies in the operation of water and wastewater equipment.

Energy savings from the UV system updates were conservatively projected to reach 50 percent. However, with the upgrades, added modulation, and power use on balanced demand, the Wedeco TAK 55 UV disinfection system now achieves the desired disinfection with only one bank operating at only half power. The result has been up to an 80 percent reduction in energy use.

Data collection for measurement and verification occurred between October 28 and November 13, 2013, revealing estimated annual savings of \$26,511 (314,624 kWh) for the UV system alone. Given the initial UV upgrade cost of \$124,586, the improvements will generate a simple payback within 7.1 years, or 6.2 years when the cash incentive of \$31,915 provided through CalPOP for the UV upgrade is deducted from the capital cost.

In addition to the energy savings, the plant now has full control of its UV system, thanks to the improvements to system processors, sensors, and monitoring equipment.



American Canyon WWTTP ballast cabinet layout

Xylem, Inc.  
14125 South Bridge Circle  
Charlotte, NC 28273  
Tel 704.409.9700  
Fax 704.295.9080  
855-XYL-H2O1 (855-995-4261)  
[www.xyleminc.com](http://www.xyleminc.com)

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