

WEDECO Reuse UV Solution in Clovis, CA

City develops new sustainable water supply using “first of its kind” closed vessel UV installation

Project Background

Clovis is a city with a population of around 97,000 in Fresno County, California. The city is 6.5 miles northeast of downtown Fresno.

Until the early 1970's, groundwater was the sole source of water for the residents of Clovis. As growth occurred in new developing areas, many wells began drying up as groundwater levels dropped. The city turned to Fresno Irrigation District for access to surface water.

In 2001, Clovis City Council approved construction of a new state-of-the-art water reuse facility due to projected water balance needs. The facility began operation in 2009.

The goals for the facility are to:

- Reduce reliance on groundwater sources from 28 to 18% of total consumption
- Create a tertiary treatment system with multi-stage treatment and filtration
- Treat wastewater to high quality reuse standard
- Use recycled water for irrigation and recreation (estimated to account for 5% of the city's demand by 2010 and 13% by 2020)

These goals are aligned with the philosophy that every drop of recycled water used for irrigation or industrial purposes is a drop of precious drinking water saved.

“Clovis is the first closed vessel low pressure, high intensity UV installation in accordance with NWRI protocol in the world.”

The design capacity of the facility are 5.6 MGD (883 m³/h), implemented in phases of 2.8 MGD (442 m³/h) each. The high quality treatment water is produced to meet the requirements of California's stringent Title-22 regulations.

The selected treatment process includes a membrane bioreactor (MBR), ultraviolet (UV) disinfection system and a two-stage solids reduction process, all with automated control and remote monitoring. As the UV disinfection step is right after the MBR, a closed vessel UV system was preferred to avoid interrupting pressure.



END USER: City of Clovis Water Reuse Facility

UV DESIGN PEAK FLOW CAPACITY: 6.4 MGD (1009 m³/hr)

ULTRAVIOLET TRANSMITTANCE (UVT): 65%

TOTAL COLIFORM: <2.2 MPN/100ml

TARGET REDUCTION OF POLIOVIRUS: 5 log

DESIGN UV DOSE: 80 mJ/cm² NWRI dose

XYLEM SCOPE: 8 LBX 1000 UV Disinfection Units
(6 duty, 2 standby)

The recycled water system includes over 25 miles of pipeline and three pump stations that move the water to and from the treatment facility.

WEDECO's UV Solution in Clovis, CA

UV was selected for disinfection as it provides pure and safe chemical-free water without any toxic by-products. During the selective bidding process, both medium and low pressure high output lamp systems were considered based on capital and projected ten year life-cycle costs. WEDECO's low-pressure, high output UV system was selected due to highly efficient lamp technology that consumes roughly one-third the energy of medium pressure lamp systems and additionally provides the benefit of longer lamp life, higher sustainability and environmental friendliness.

WEDECO's ultraviolet equipment was shipped on-site and started up in December of 2008, one year after construction began. Since commissioning the WEDECO LBX, units have performed according to expectations and the plant is in full compliance with California Title-22 standards.

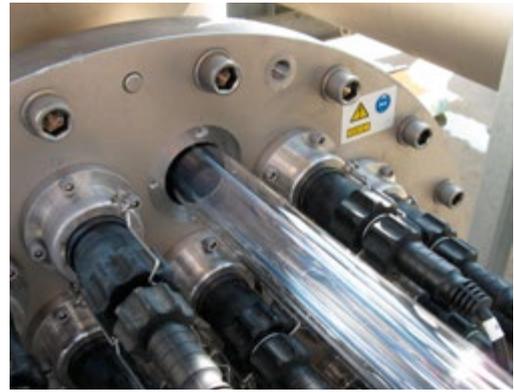
“Clovis, California chose the WEDECO LBX because of cost savings, efficiency and superior customer value.”

WEDECO's long experience with Sensor-based 'dose pacing' offers additional energy savings. The OptiDose™ Control ensures the required dosage is applied while conserving power and lamp life.

The Clovis facility required low maintenance UV equipment with minimal operator involvement. Energy consumption is continuously minimized at all operating conditions with OptiDose™, WEDECO's proven intelligent dose control. Meanwhile, the LBX automatic sleeve wiping system maintains maximum sleeve transmittance for peak efficiency. By keeping the sleeves clean, the system uses less energy and lowers operational costs. The superior effectiveness of the WEDECO mechanical cleaning system has been proven with a long-term study.

At its maximum capacity, the Clovis Water Reuse Facility will be able to produce over two billion gallons (or 6,200 acre-feet or 7.7 billion liters) of water per year. This amount of recycled water is equivalent to the total water used by 14,000 homes every year.

“The City of Clovis Water Reuse Facility is a great representation of the commitment the City has shown to the environment and its citizens, and it is a great model for other communities who are grappling with issues of surface and/or groundwater shortages,” says Steve Patterson, P.E., CH2M HILL Principal Project Manager.



The WEDECO LBX Series is optimized for maximum disinfection performance at low UV transmittance. The LBX automatic sleeve wiping system maintains maximum sleeve transmittance resulting in peak efficiency. By keeping the sleeves clean, the system uses less energy and lowers operational costs.



Each reactor is equipped with an internationally recognized ÖNORM compliant UV sensor which allows for active monitoring of UV performance. The sensors enable the automatic control mode to adjust UV lamp output to the actual level needed to meet the required 80 mJ/cm² NWRI dose using minimum energy.



One of four trains (three duty and one standby) in the system. Each train is designed to disinfect one to two million gallons (< 7,570 m³) of water per day to the stringent California Title-22 water reuse standard.

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