CASE STUDY

NEWBERG

Standardizing On-Site Hypochlorite Generation Disinfection Technology in Water and Wastewater Treatment Plants Increases Safety and Eases Operations

OVERVIEW

Newberg, Oregon, is located approximately 25 miles southwest of Portland in Yamhill County. Geographically separated from Portland by the surrounding Chehalem Mountains and located in a broad valley created by the Willamette River, Newberg is home to numerous vineyards and is known as the "Napa Valley" of Oregon. Newberg is a fast-growing community of just over 22,500 people with a diverse economic base. Located at an elevation of only 175 feet above sea level and relatively close location to the Pacific Ocean, Newberg enjoys a moderate climate.

The City of Newberg's Operations Division operated and maintains the water and wastewater treatment plants, aquifer water supple, three reservoirs, numerous springs, pump stations and a recycled water system for the municipal golf course. Newberg operates a sand and gravel aquifer just south of the Willamette River. The "raw" water pulled from this source is naturally filtered by the aquifer and pumped over and under the river through pipelines to the water treatment facility for further treatment. The wells at the aquifer provide Newberg with 100% of its water supply. The City maintains three 4-million-gallon (MG) reservoirs in the surrounding hills to provide residents with a three-to-five-day potable water supply.

In late 2005, the City decided to upgrade their water treatment plant disinfection process from gas chlorine to on-site hypochlorite generation (OSHG) to simplify operations and increase operator safety. The plant produced an average of 2.5 million gallons per day (MGD), with a peak capacity of 5 MGD. City leaders were attracted to on-site generation in large part since the dilute (0.8%) sodium hypochlorite is safer to use and store than gas chlorine or concentrated bulk hypochlorite. As a result, they installed a ClorTec® OSHG system at water treatment plant. After many years of operation, the City was ready to upgrade their 20 MGD wastewater treatment plant disinfection process from gas chlorine to another OSHG system to take advantage of the latest technology and safety improvements available on the market. After consulting with their engineers and researching neighboring utilities, they decided on the Microclor® OSHG system by Process Solutions, Incorporated. The latest generation of OSHG systems include a modular design for better resilience and patented vertical cells with

Photo captured by Kayla Carroll

redundant safety features and alarms, making the system safer to operate and easier to perform routine maintenance.

The Microclor® MC-500 (500 pound per day chlorine equivalent) OSHG system was installed in the wastewater treatment plant in early 2016. Space was a concern at the site, but the Microclor® OSHG compact design and small footprint made it easy to customize the design to meet the needs and preferences of the utility. Installation was led by a local manufacturer's representative with support from Process Solutions. The system consisted of three 2,700 gallon hypochlorite storage tanks, a 42-ton brine saturator, and Encore® 700 chemical metering pumps. The overall footprint of the system was roughly 17 feet by 13 feet.

Following the installing of the Microclor® OSHG system at the wastewater treatment plant, the City began looking at upgrading the aging OSHG system at the drinking water treatment plant. Based on their experience with Microclor® OSHG, the choice was clear. City leaders recognized that standardizing equipment between plants made sense from an operations and training perspective. Utilizing the same system meant staff didn't need to learn multiple control and operations parameters and could swap parts between systems, if necessary. The second Microclor® OSHG system, an MC-1000 (1000 pound per day chlorine equivalent) was purchased in 2018 and is in operation.

"This installation and start-up was especially smooth thanks in large part to Whitney Equipment Company, who, in addition to serving as the local PSI Water Technologies representative, also acted as the general contractor on the project. The combined experience and expertise meant a seamless installation". Standardizing on the PSI equipment has helped streamline our operations greatly.

Sean Surcamp, Senior Mechanic, City of Newberg

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