

Treatment Plant Upgrade Includes Conversion to On-Site Sodium Hypochlorite Generation to Ease Operations and Increase Safety

Fairmont, Minnesota, known as the City of Lakes, is located in Martin County in southern Minnesota. Home to over 45 lakes, the region offers outstanding recreational opportunities and is considered a “gem on the prairie”. The city, with a population of eleven thousand people, is located on the shores of Budd Lake, the primary source of drinking water for the residents. The city’s water treatment plant serves a mix of customers including approximately 3,900 residential taps, 500 commercial and 17 industrial customers. The city of Fairmont maintains three water storage tanks and 83 miles of water mains within its distribution system. The largest industrial customer is a soybean oil producer that uses 250,000 to 300,000 gallons per day as process water in their production plant.



Looking to the future, Fairmont city leaders began to investigate upgrading the city’s water treatment plant in 2010. The existing plant had been in operation for well over 70 years and relied on gas chlorine for disinfection. City leaders wanted to upgrade the treatment plant while reducing the risks associated with gas chlorine and simplifying overall plant operations, including reducing the regulatory burden associated with the handling and storage of hazardous materials. The City worked with consulting engineers to come up with a design that increased the plant capacity, provided simplified, cost-effective operations and dramatically reduced the risks associated with gas chlorine. The result was a 31 million dollar state-of-the-art water treatment plant with a capacity of 5.4 million gallons (MG) per day.

In looking at disinfectant systems, the engineers compared the capital and life cycle costs of liquid bulk sodium hypochlorite (industrial strength bleach) to On-Site Sodium Hypochlorite Generation (OSHG). The OSHG systems offered lower lifecycle costs, greater reliability and increased safety over the liquid bulk hypochlorite system. Together with the engineers, the city leaders chose the Microclor® OSHG from Process Solutions (PSI) due to overall operations, system reliability and life cycle cost advantages over other OSHG suppliers.



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The new City of Fairmont Water Treatment Plant opened in 2013. The new plant uses a Microclor® MC-400 system to generate the equivalent of 400 pounds of gas chlorine per day. The Microclor® system uses common salt to produce the sodium chloride brine for the OSHG process. The plant's typical throughput averages around 1.5 million-gallons-per-day (MGD) with a summer peak of 2.1 MGD. Fairmont can dose bleach at multiple points in the system; pre-filter, pre-chlorine contact chamber, and the clearwell. Ammonia is added at the end of the chlorine contact chamber to form chloramines for the secondary disinfectant residual.

Fairmont Water Treatment Plant staff were trained in the start-up and operation of the system. From the beginning, they were pleased with the ease of operations and the responsive field service support from PSI when questions came up. According to Doug Rainforth, Fairmont's Water and Wastewater Superintendent, "Microclor has the absolute, unrivalled best product support team and policy that I have seen in more than 30 years in the business!"

Thanks to Microclor® OSHG by PSI, the City of Fairmont has been able to reduce their regulatory administrative burden and enjoy safe, clean drinking water without the risks associated with gas chlorine.

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Doug Rainforth, Fairmont Water and Wastewater Superintendent