Mountain Regional Water District Deploys Next Generation On-Site Hypochlorite and Tank Mixing Technology to Meet Expanding Water Management Needs

The Mountain Regional Water District is a Special Service District of the county that was established by the Summit County Commission in 2000 to regionalize water service by consolidating several public and private water companies. Since its creation, numerous small water companies and developments have joined this regional public water company, helping to resolve water shortage and quality problems in Utah's Snyderville Basin. Located in the heart of western Summit County, and in the second driest state in the nation, the District covers an area of 39.3 square miles surrounding the resort town of Park City, with a vast vertical extent ranging from 6,100 feet of elevation to nearly 9,500 feet, providing water to approximately 3,000 residential customers, over 300 commercial, industrial and institutional customers and more than 400 irrigation customer ERC's, including 2 golf courses, and more than 30 recreation connections. The District remains not only committed to ensuring the quality of the water within their service area, but also takes conservation of it water resources seriously and continually makes efforts to improve the water treatment process and protect the environment.

This focus on technology, the environment, and sustainability was instrumental in the District's award of an interest-free loan from the EPA and the State of Utah reserved for water entities that are actively developing "Green" water projects; meaning they can demonstrate a measurable reduction in energy, power, and other resources that can adversely impact the environment. Mountain Regional Water Special Service District turned to Process Solutions, Inc. (PSI), a UGSI Solutions company, in 2012 for cutting-edge process solutions to meet these objectives. The awarded funding was partially used to upgrade the chlorine generator (on-site liquid hypochlorite) at the District's 4.5 million gallon per day membrane filtration Signal Hill Water Treatment Plant (WTP) (also known as the Lost Creek Canyon WTP), significantly improving safety and operational efficiency. PSI's MicrOclor™ On-Site Hypochlorite Generation (OSHG) MC-100, which uses salt to make chlorine disinfectant with the addition of electrical power, was selected over all other options, including a direct replacement of the legacy OSHG system. The simple design and enhanced safety features of the MicrOclor™ OSHG system's modular design was attractive to the District. Their older, less efficient OSHG system had reached the end of its useful life and needed replacement. Ancilliary components such as the brine and hypochlorite tanks as well as metering pump, however, were in a condition that did not require replacement. The District was able to purchase the MicrOclor™ OSHG skid as a stand-alone item and, without the assistance of a contractor, installed the unit in place and completed all connections, thereby saving substantial installation costs.

> *"The simplicity of the MicrOclor™ OSHG system never ceases to impress me. Based on my prior experience with on-site hypochlorite generation, I never knew a system could be so easy to operate and maintain. The Tank Shark™ tank mixing system gets the job done with the same simplicity and elegance of the on-site unit. I would also add that I am very impressed with the consistency that our chlorine residual is maintained in the tank. The Tank Shark mixer has made our dosing spot on always. Love it."*
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> **Leo Williams, Mountain Regional Water SSD Operations Superintendent**

100 ppd MicrOclor™ OSHG System

Unlike the District's former OSHG system, the MicrOclor™ OSHG system does not require daily analysis of the brine solution for salinity content with the system adjusting power in real time to adjust for normal salinity variability. The new OSHG system cells are configured in a vertical format with a recirculation loop on each cell that allows for optimized brine utilization and passive release of the hydrogen gas from each cell. The system actively dilutes and vents the hydrogen gas byproduct from the hypochlorite storage tank, removing the ability to contain and pressurize

the gas, thus eliminating any hazard of combustion and increasing operator safety. The MicrOclor™ system provided lower operating costs, enhanced safety features and a reassuring warranty with the savings in operating costs helping fund the agency's loan.

Enhanced Reservoir Mixing and Management

Mountain Regional Water Special Service District also selected PSI's Tank Shark™ Reservoir Management System to improve operations. Reservoir stratification and a lack of homogenous disinfectant concentrations are common complexities that confront utility operators in their water storage systems. Constructed with NSF-approved materials, the Tank Shark™ mixing system is deployed without electrical cables or motors within the reservoir itself – making operations and maintenance much easier than competing alternatives. The compact Tank Shark™ system uses an innovative nozzle that produces 75-500 gpm upward flow, creating sufficient mixing energy to ensure a homogeneous mix, easy chlorine and chloramine management thereby retarding of DBP formation in reservoirs ranging in capacity from 50,000 gallons to 50,000,000 gallons. The District's 850,000 gallon reservoir is managed today using a single Tank Shark™ mixing system. Water quality is continuously analyzed for chlorine residual using a sample line connected to the Tank Shark™ system. When the residual falls below the pre-determined set point, chlorine (sodium hypochlorite) from the MicrOclor™ OSHG is injected into the 15 gpm upward flow of water for dilution and mixing within the tank volume. Weighing less than 50 lbs, the Tank Shark™ mixing system was provided with a collapsible base to facilitate easy installation, which the District accomplished themselves, without the use of divers or boats.

Mountain Regional Water Special Service District is located in a sensitive area with resource protection and conservation playing key roles in water planning and development strategies. Even though the District doesn't estimate to reach build-out until 2050, it believes it is never too early to start planning for the future. Ambitions include increasing the current reservoir capacity of 9 MG offered by 18 reservoirs with new projects to facilitate more efficient off-peak pumping.

Process Solutions, Inc. parent company, UGSI, Inc. (UGSI), a private company, is a leading provider of cutting edge infrastructure technologies and process solutions to a wide range of commercial, industrial, and governmental water and wastewater customers. UGSI meets its customers' needs through technological innovation, dedication to customer service, and an unyielding commitment to quality.