



Blue-White®

Water Treatment Plant Successfully Makes the Switch from Gas to Liquid Chlorine

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Chlorine has been used to disinfect drinking water in the United States since the early 1900s, and it remains the most frequently used municipal water disinfectant worldwide due to its low cost and effectiveness at deactivating a wide range of pathogens. The two most common chlorine products for this application are chlorine gas (Cl₂) and sodium hypochlorite (NaOCl), a.k.a. bleach. For the most part, both chlorine compositions function the same way, in that they dissolve in water to form free chlorine in the form of hypochlorous acid (HOCl) and hypochlorite ion (OCl⁻).

Despite this similarity, they are two very different products. Choosing which form of chlorine chemical to use is an important decision among municipal drinking water managers, and requires balancing many factors including the overall costs, safety procedures and risk management, and more.

THE CHALLENGE

A Municipal Water Treatment Plant located in Indiana, supplies drinking water to 60,000 city residents, as well as surrounding populations.

The treatment plant had been using Gas Chlorine to treat their drinking water however, for many reasons including the increased safety issues associated with using gas chlorine, transportation issues, and requirements for advanced emergency management plans to be in place, the decision was made to switch from the Gas Chlorine to less problematic Sodium Hypochlorite, liquid chlorine.

The change to Liquid Chlorine meant that the equipment being used to feed the chemical also had to be switched out. The preferred method for delivering the 12% concentration of Sodium Hypochlorite at 30PSI is Chemical Dosing / Metering Pumps.

Because sodium hypochlorite poses some of its own challenges, careful consideration was given to the type of pump to be used, Diaphragm or Peristaltic. One of those challenges is that, as the chemical begins to degrade during the treatment process it produces bubbles. Most often referred to as off-gassing. These bubbles will eventually cause diaphragm style pumps to vapor lock and lose prime resulting in increased maintenance, downtime and added expense.

THE SOLUTION

For this reason, the decision was made to install Peristaltic Metering Pumps to dose the hypochlorite. Peristaltic pumps are not affected by air bubbles, the bubbles simply move through the pump tubing, while the pump maintains a constant rate of flow with no potential for vapor lock. Because of this characteristic, Peristaltic pumps have been widely accepted as the preferred technology in many applications, including municipal drinking water.

Also taken into consideration was, other than occasional pump tube replacement, peristaltic units do not require regular maintenance. Diaphragm pumps, on the other hand, require ongoing maintenance as valves and pump heads must be regularly cleaned.

The Water Treatment Plant initially purchased a total of eight FLEXFLO® M3 and M4 Peristaltic Metering Pumps, manufactured by Blue-White® Industries. Seven of the pumps are used to meter the Sodium Hypochlorite to sanitize the drinking water. The eighth pump is used to dose Polymer into the blending system to get solids to settle at the bottom of the filters.

There are a total of 11 FLEXFLO pumps now in service throughout the plant.

THE RESULT

The results have been outstanding. The Water Treatment Plant Manager appreciated the excellent outcome achieved with the switch to Sodium Hypochlorite and FLEXFLO Chemical Feed Pumps. In addition, they were grateful for the expert consultation and service they received from Paul Hayes at Living Waters.

FLEXFLO® Chemical Metering Pumps dependably deliver smooth and accurate chemical dosing to the system. Operators appreciate the pump's bright, easy to access and highly responsive 5-inch display screen, and the intuitive screen is as simple to work as a cell phone and features easily recognizable icons.

FLEXFLO pumps have a wide 10,000:1 turndown ratio to meet a broad range of dosing requirements, and are equipped with a brushless DC motor for trouble-free and energy efficient service.

M3 remote control signal options include Pulse, 4-20mA, and as technologies advance, these metering pumps are field upgradable.