



## **LEADING BOTTLED WATER COMPANY RELIES ON CDI® SYSTEM TO MEET WATER QUALITY, ENVIRONMENTAL AND SAFETY REQUIREMENTS**

When you're the first manufacturing plant in the world to meet a rigorous international standard that rates how environmentally friendly you are, and when you're required by law to limit groundwater use, chances are you're going to choose an environmentally friendly, water-conserving purification system.

That's exactly what a leading west coast bottled-water company did. One of the largest bottled water companies in the United States, they are a model of environmental consciousness and a firm believer in employee safety. So, in the summer of 1998, they dispensed with their mixed-bed deionizers in favor of a technology that uses no regeneration chemicals: continuous electrodeionization (CEDI).

"We had been regenerating our mixed beds with acid and caustic of considerable strength, and because we're an ISO 14,000 facility, we needed to reduce the use of hazardous chemicals in our plant," says the company's plant manager.

They chose a CDI® P-180 System from Evoqua Water Technologies to replace their degasification and mixed-bed equipment. The CDI continuous deionization system continuously produces highpurity water without chemical regeneration or waste neutralization. The P-180 is a high-flow-rate, rugged industrial, skid-mounted system with a low-per-gallon operating cost. Shipped completely engineered and ready for start-up, the unit is designed for automatic operation and easy monitoring.

Says the customer's plant manager, "The CDI system was state of the art. We liked the technology very much, because it would allow us to get rid of hazardous chemicals, and we would no longer have to use our 20-gallon holding tank and neutralization system."

Safety was another reason this customer selected a chemical-free system. "Employee safety is number one. After all, our employees are the most important part of our business." The plant manager says his company looked at other manufacturers' CEDI systems, but chose the Evoqua CDI system for its "high success rate" and "superior workmanship."

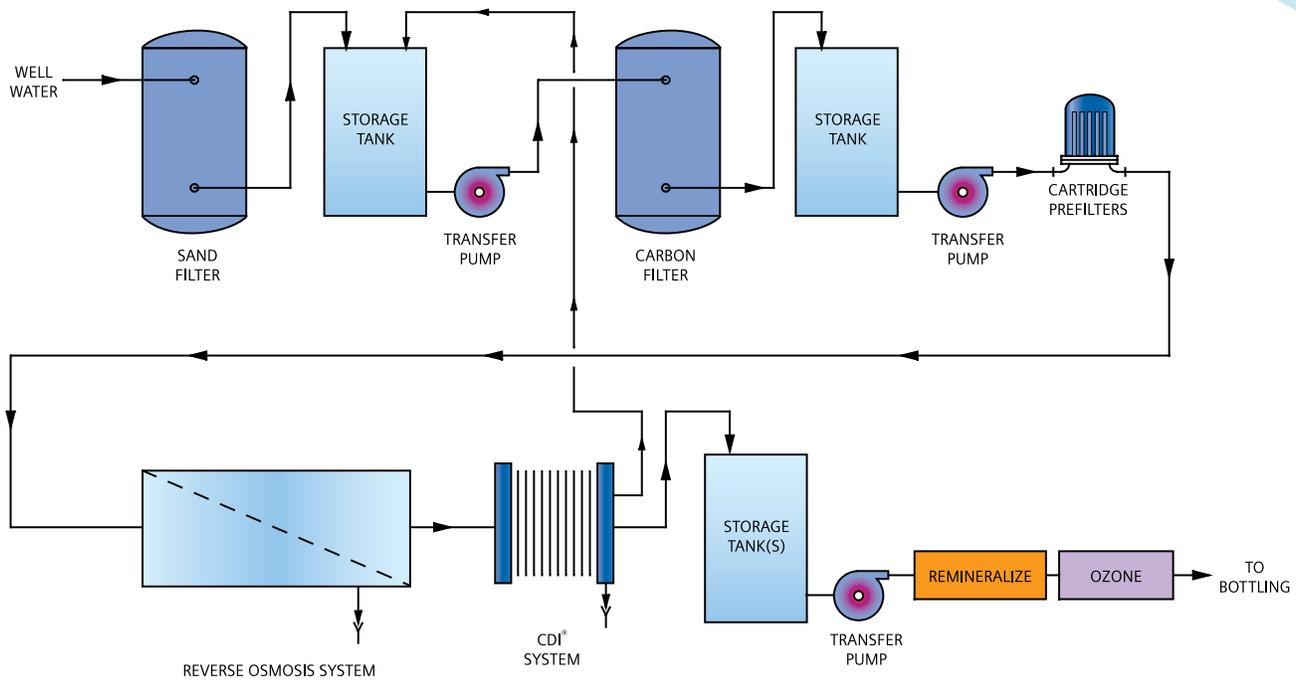


Figure 1 - Water System Process Flow Diagram

They required a water system that would produce 0.5 megohm-cm (2  $\mu\text{mho/cm}$ ) water from well water feed. Although they considered a two-pass reverse osmosis (RO) system, they wanted deionized-quality water. "We're feeding the CDI<sup>®</sup> System with 85-gpm of RO water. If we had used two-pass RO, we would have had to feed it 90 to 100 gpm to get the same quality we're getting from the CDI."

The customer decided to lease the P-180 System for five years to save on capital costs. Evoqua installed the system in the spring of 1998. Private well water is sent to pretreatment equipment consisting of sand, carbon and cartridge filters to remove particulate and organic matter, then to an RO system. The water is then fed to the CDI system, where it is polished to 2-3 megohm-cm. Next, the water is piped to three outdoor storage tanks. The minerals removed by reverse osmosis are added back in to give the water its signature taste. "We take a food-grade mineral formula that our taste-testers developed," says the plant manager, "and inject it into the storage tank water." The remineralized water is ozonated to inactivate any microbiological impurities before it goes to the bottling area. The water system process flow diagram is shown in Figure 1.

## CDI® SYSTEM: THE STRONG PERFORMER

Started up in June 1998, the CDI® System has met all of the customer's expectations. Water quality is consistently 2-3 megohm-cm, well above their specification of 0.5 megohm-cm. The system's product flow rate and pressure drop, as well as the recycle flow rate and pressure drop, have remained the same, which indicates that there has been no plugging or scaling. The system's power consumption has also remained the same. The CDI system product water quality, system product flow rate and pressure drop and system recycle flow rate and pressure drop, are illustrated in Figures 2-4.

Says the plant manager, "Because we're limited by the State in the amount of groundwater we can use, conserving water is extremely important. The CDI system is producing 80 gpm, with 5 gpm recycled to the well tank. So, we're only losing about a half-gallon a minute in water to recover the 5 gpm."

The water system runs 16 to 18 hours a day, seven days a week. Since start-up a year and a half ago, the CDI system has required only one cleaning. "The Evoqua local branch did an on-site cleaning of the unit in two to three hours," says the plant manager, "and they worked around our schedule so we didn't have to shut down our operation." He adds, "We've been very happy with the system and the service. The Evoqua people have been professional right from the start, from the sales people to the gentleman who started up the system. And, anytime I've called for service, they've come out right away."

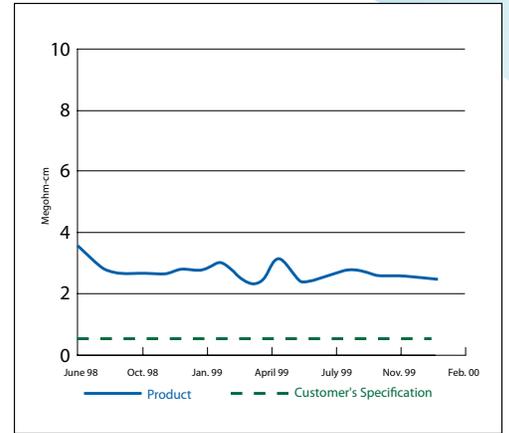


Figure 2 – CDI® System Product Water Quality (feed water quality is approximately 35µS/cm)

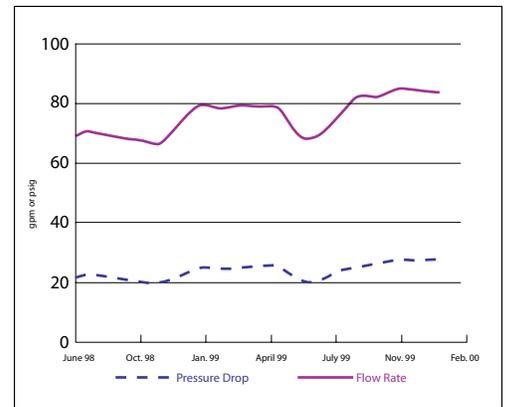


Figure 3 – CDI® System Product Flow Rate and Pressure Drop

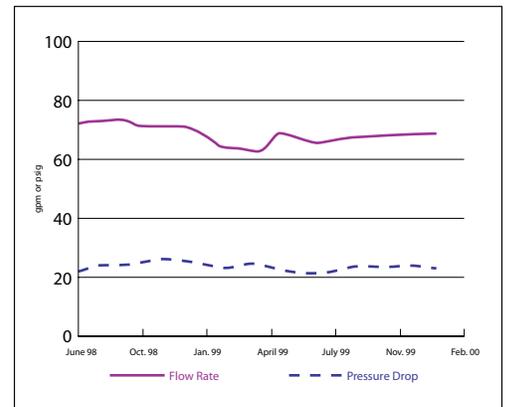


Figure 4 – CDI® System Recycle Flow Rate and Pressure Drop



P-Series CDI® system

In January 2000, the customer ordered a second P-180 CDI® System that will operate in parallel with the present unit. "Our sales projections showed that we needed to double our production over the next year. And, based on our financial model, we decided it would be more cost-effective to buy, rather than lease, the second CDI system." The customer adds that CDI technology has definitely improved his company's bottom line by eliminating regeneration chemicals and waste neutralization, and by conserving water. "We're saving money. There's no question about it."



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