

Quality



Reigns Supreme

While consumers and business owners are now more cautious and conscientious with their dollars than at any time in recent history, there are still significant opportunities in both residential and commercial water treatment. These opportunities rely on three important facts:

1. Water quality is not improving—in fact, in many areas of the world, it is getting worse everyday.
2. In many markets, a higher percentage of research and development dollars are being spent to make products less expensive than to develop new technologies.
3. People pay more for perceived quality and value.

If we were to take a step back from the day-to-day survival mode, and ask ourselves what today's customers want, the answer is probably the same: They want a quality product that offers exceptional value at a fair price.

Opting for RO

This was the case at Ricardo's Mexican Restaurant in Las Vegas, opened by owner Bob Ansara in October 1987. With incoming feed-water levels of 700 mg/L total

dissolved solids (TDS) and 25 grains per gal of hardness, water quality has been an issue from the start.

Ansara originally opted for a 2-cu-ft water softener to treat the water feeding the water heaters. He then selected four individual filter banks for his two ice machines, coffee and tea brewers and fountain beverages. On an average business day, the restaurant uses 4,000 gal of water.

With this system, the average monthly costs related to maintaining the water treatment at Ricardo's were \$334.17.

In May 2010, Ansara decided to remove all of the existing water treatment equipment and replace it with one central point-of-entry commercial reverse osmosis (RO) system. Due to challenges with the 23-year-old plumbing, the new system initially was connected to all the water in the restaurant, except for the water-cooled line on its Hoshizaki ice machine, which could use up to 2 gal per minute (gpm) for up to 10 hours per day. With limited space available, the unit was crammed into a utility closet next to the water heaters.

The system consisted of a 3,500-gal-per-day (gpd) RO unit that

Near right and center: After the RO system was installed, restaurant and bar staff noticed that dishes were cleaner, ice was clear and drinks tasted better.

Far right: The RO system setup required revision when demand outgrew its capacity.



RO system's results outweigh initial problems

By Tom Cartwright

was designed to reject, on average, 95% of the hardness and 90% of the monovalent ions, resulting in a final TDS between 50 and 75 mg/L. To accommodate the peak demands at the restaurant, two 300-gal storage tanks with individual ozone generators were included, along with a 20-gpm delivery pump.

Immediate Improvements

The results of the new system were dramatic. Restaurant staff immediately noticed that ice cubes were crystal clear instead of cloudy white, the dishes and glassware did not need to be wiped down after washing, tea was no longer cloudy, soda tasted better and coffee was less bitter.

Ansara also had the restaurant's soda and ware-washing vendors adjust the dispenser settings to allow additional savings.

Along with the improved operational and aesthetic results, the restaurant benefited from a \$299.17-per-month cost savings. This amount does not include the savings on labor to wipe down dishes and glassware or to maintain the water-using appliances. Including all factors, the new system saved the restaurant more than \$500 per month.

System Sizing Issues

Like many restaurant applications, water usage patterns fluctuated and several miscalculations in the system size quickly became apparent.

The first miscalculation involved the evaporative coolers. Ricardo's has three large rooftop evaporative coolers that use up to 1.5 gpm for up to 12 hours per day during the summer. When the new POE system was installed in early May, water usage from the evaporative coolers was minimal. Within 30 days of installation, however, the evaporative coolers were in full use and the storage tanks were running empty at least two to three times per day. To resolve this issue, an additional system was installed on the roof to feed only the coolers.

The second issue involved the primary kitchen area's cold water usage at the pot-and-pan sink next to the dishwasher. Converting that particular sink to raw water saved a high percentage of water usage from the RO system with no adverse operational impact. This substantially reduced occasions when the restaurant went into automatic bypass.

The third issue involved the cleaning crew. The tanks were not full when the restaurant opened each

morning. After a detailed investigation, including several late nights at the restaurant, it was discovered that the cleaning crew came in early each morning and washed down the floors with hot water. To alleviate this problem, the crew began to boil raw cold water and use it for the daily wash-down procedure, saving 100 to 150 gal of hot water per day.

Even after all the issues were addressed, there were times during busy days when the tanks were completely drained and the system ran in bypass for several hours. Because the restaurant had become accustomed to the improved water quality, not receiving the RO water was unacceptable.

Because of these issues, it was determined that the current system was not capable of keeping up with Ricardo's water requirements. In October 2011, the entire system was removed and replaced by a new system that produces up to 7,000 gpd. By increasing the overall production of the RO system, one of the 300-gal storage tanks could be removed, creating more space. Additionally, a blending system was incorporated into the design to allow Ansara to set the water quality to meet his expectations.

Planning Ahead

The key lesson learned from this application is that when dealing with restaurants, it is important to obtain as much information as possible up front, including daily and peak water usage, and then double the size of the system to account for the unknown variables that always seem to arise.

Ansara initially was budget-focused, but after enjoying the benefits of RO and seeing the difference in the equipment, small wares, ice cubes and overall flavors, he is thrilled about providing RO water to his guests.

"It's a miracle, especially considering the age of the building," Ansara said. "The results are tremendous. RO is the only way to go. I would not build another restaurant without having an RO system like this one. The operational savings are incredible and everything just tastes better." *wqp*

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