

Repairs and Maintenance

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More Than Meets the Eye

The quality of your restaurant's water may be impacting more than you realize

In the restaurant business, complaints about spotty glasses and food residue on dishes and flatware are common. Often, the cause is less-than-perfect water used in the water heater and the dish machine. Many people don't realize the effect water can have on the performance of dish machines and other kitchen equipment. But the importance of water quality is obvious once you understand what is in the water, how it reacts with soaps and detergents, and what happens when water is used in the restaurant environment.

Although water often appears to be clear, it contains dissolved natural minerals such as calcium, magnesium (hardness), iron and other elements. These minerals are what cause challenges in the daily back-end restaurant operations. Understanding what is in the water is the first step to addressing heater element scaling, poor soap and detergent efficiencies, and spray nozzle blockage—all of which can cause bad dish results.

Common Water Issues

Imagine washing your car without taking the time to dry it or allowing your glasses at home to dry without wiping them. In most cases, you will be left with spots that are difficult to remove and are aesthetically displeasing. Why does this happen? When water evaporates, it leaves the minerals that were in the water behind.

The natural minerals in water can cause many issues. First, calcium and magnesium found in many water supplies react with soaps and most detergents to form a sticky scum and insoluble residue that clings to everything it comes in contact with. This residue interferes with the cleaning and rinsing processes. Even if you could rinse the soap and detergent off completely, you most likely would still have issues.

It is difficult to believe water can have such a high concentration of minerals, especially considering water, in most cases, appears clear to the human eye. Heating the water in a restaurant environment can further worsen this mineral residue issue.

Getting to Know Your Facility's Water

Here's what happens to water in a restaurant: when water enters the building, it is immediately split into cold and hot water paths. The water on the hot water side goes directly to a house hot water heater and is heated to approximately 140 degrees Fahrenheit. At this point, the elevated water temperature accelerates scale build-up on the heating elements and other surfaces of the tank.

Once the water has been heated to 140 degrees Fahrenheit, it often goes to a booster heater to further increase its temperature to 180 degrees Fahrenheit for cleaning and sanitation purposes. Similar to the hot water tank scenario, scale develops on the heating elements of the booster heater, spray nozzles of the dish machine and, of course, glasses and dishware.

Improving Your Water Quality

How can you prevent spotting and scaling and improve the cleaning efficiencies in the restaurant environment? To date, the most effective way to remove hardness minerals from water is to install an ion exchange water softener before the facility's water heater. Ion exchange water softeners operate on a simple theory by which the hardness minerals (calcium and magnesium) are exchanged with a "friendlier" element such as sodium or potassium. They are considered more friendly because they do not produce the same spotting, scaling and soap residue challenges as calcium and magnesium.

Most water softeners use ion exchange technology, but each differs in its design. Many have proprietary features and benefits or a unique way of operating. One critical thing to remember is the importance of installing a softener that can provide a continuous supply of soft water. Even relatively small amounts of minerals could enter your water supply (like during a single tank unit's regeneration cycle) and greatly affect the quality of the water in the water heater. Only a multiple tank system or a system with duplex resin tanks can provide a continuous supply (24/7) of soft water, even during a system regeneration (when the system replenishes itself).

Additional consideration should be given to water and salt efficiencies. Although salt and water may seem relatively inexpensive, today's busy restaurants can use 3,000 to 4,000 gallons of hot water on a daily basis. And costs can add up quickly. The most efficient water softeners have twin tanks and use a meter to track actual water usage so they will only regenerate when necessary, not at a pre-set or arbitrary time like schedule-based models.

Furthermore, some geographic areas are challenged with what is referred to as total dissolved solids (TDS). TDS is the term used to count all dissolved minerals in the water. At times, TDS can be so extreme it makes obtaining good dish results very challenging, even with a well-designed water softener installed. In these cases, membrane technology, referred to as reverse osmosis (RO), is commonly applied. Typically, an RO system is installed directly at the point of use and, in most cases, treats the water right before it enters the dish machine. RO technology can reduce the mineral content of water to an acceptable level; however, the technology is expensive, physically large and somewhat wasteful since it sends a percentage of water down the drain for each unit of water it processes. Usually, RO systems are only applied in specific circumstances.

In closing, it is imperative to work with a water treatment supplier that views your business relationship as a partnership. The water treatment company you choose should proactively analyze your facility's feed water and work with you to determine the proper treatment to ensure the results you expect. Your water treatment supplier should forecast operating cost and supply the reasoning behind the specified technology for each application.

You should also consider the use of standardized products. Standardization means facility management can plan in advance and accurately budget for their water treatment needs. With little to no customization, you can achieve the most competitive cost of ownership possible.

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