

The Reality of Water Heaters

At the last RFMA conference, I decided to take it upon myself to talk with as many facilities people as possible, and asked one simple question, "What is the single biggest item at a restaurant that causes you the most concern, and can shut you down." Ninety-five percent (95%) of the time the one answer I received was, "water heaters; nothing shuts us down faster than that." So, I decided to take a step further, speak with seasoned professionals within the restaurants themselves, along with contacting several of the biggest water heater companies throughout the nation to get their take on the "Reality of Water Heaters."

Danny Koontz, Director, Facilities Management with Ruby Tuesdays, who has 30 plus years of experience in dealing with water heaters, said, "it never fails, and I can set my own clock to it, seems as though all water heaters break down on Friday nights or over the weekend; it almost never fails! We absolutely must close the restaurant down these days when there is no hot water. Our only option is to get the water heater back into operation by installing a new unit, and do so quickly, which leaves us at the mercy of paying exorbitant prices to get the restaurant back open. Every minute we are closed down, we are losing profits, your team members are not making money, and most important is the perception, and a bad one, that comes from our customer; it just does not look good because it is them who question why it is that we are in fact closed, when they came to Ruby Tuesdays to eat. This means the next time they go to eat out, they go somewhere else. Water heaters are out of sight and out of mind; no one pays attention to them until they develop a leak or go down."

Dave Turner, Divisional Facilities manager with Darden Restaurants who has 28 years of experience said, "there are no options, we stay open because water heater readiness keeps our restaurants operating bottom-line. We are all over the store personnel in getting them to regularly check temperatures at dishwashers where they need to be at 160 degrees with a rinse cycle at 180 degrees. First and foremost, Darden believes in redundancy, or what is known as the Para-Flow System, where two heaters equal one system, and everything comes together in a T, where it is equally piped. The units are 18" from the 90 and the T is on both the right and left side of the outlet, which means there is a true parallel flow. This means each heater works equally as hard at any given time. If one unit goes down, we have another one operating at all times; therefore, there is no downtime; we solved this problem 95% of the time."

The simple fact remains, keeping a restaurant open has to be the main concern; however, there are so many other problems associated with water heaters including: mineral content and water quality and its temperature, type of unit to install, choosing the right installer for your unit(s), preventive maintenance programs, turn around time on repair, and budget constraints, that all restaurateurs are plagued by these issues, and yet there really are solutions to consider.

Water Quality - Water hardness is based on major-ion chemistry concentrations. Major-ion chemistry in ground water is relatively stable and generally does not change over time. Hard water requires more soap and synthetic detergents for washing and rinsing, and contributes to scaling in boilers and commercial water heater equipment. Hardness is caused by compounds of calcium and magnesium, and by a variety of other metals. General guidelines for classification of waters include: 0 to 60 mg/L (milligrams per liter) as calcium carbonate is classified as soft; 61 to 120 mg/L as moderately hard; 121 to 180 mg/L as hard; and more than 180 mg/L as very hard. information that is directly relevant to water hardness and other

chemical properties for a business is normally provided by the local health agency and local water utility. Before you purchase any type of water heater, take a look at these factors first.

Type of Unit to Install – I would be remiss if I did not say there are numerous suppliers throughout the United States. I spoke with many of the water heater industry leaders and there were many similarities; yet they all struggle with trends and technology; however, all can and have made a difference to the restaurant industry.

A.O. Smith - Invented the glass-lined water heater in 1936. They currently work with a “preferred brand of plumbers, architects, and engineers throughout all of North America, Asia and Europe.” They have a wide-ranging line of standard and custom-designed commercial water heaters in almost every size and characteristic listed on their web site, and are extremely proud of their high efficiency power direct vent unit that has proven itself in the restaurant industry. They provide guidelines “On-line” in how to install their units, for plumbers and installers. They offer gas or electric models, direct-vented, power vented, or traditional units; they also offer “fractional horsepower, hermetic, and integral horsepower electric motors; commercial and residential water heating equipment; and copper-tube boilers.” They have recently introduced a unit called the Cyclone XI, where they provide an added value to the restaurateur that has an LCD screen which outlines the performance history, set point operating status, its temperature and 32 diagnostic codes, where they say there is a 20% cost efficiency rating for the restaurateur. They customize each system for the restaurateur, and make recommendations on the size unit required, softener if needed, all which are offered on the front end.

Choosing the Right Installer – seems to be one of the bigger dilemmas. Dave Turner said, “proper installation is the biggest problem; vendors simply do not follow instructions. The corporations’ last expense is in the mechanical room, where there are water heaters, softeners and electrical panels. To make it worse, employees stack salt and ice melt where there is condensation, decreasing the life span of a water heater.” While national suppliers of water heaters have their own recommended plumbers, in listening to professional facility people throughout this entire nation, it appears the one issue that is hard to control is the installation of the units.

Do’s & Don’ts - Low commercial gas and electric water heating installation– My company, SLM works with thousands of plumbers throughout the United States, what we have been told and prefer is at least one anode in these types of water heaters, having at least two ports in which to vacuum, and flex lines to ensure the plumbing can be rapidly and easily be disconnected, and then reconnected. It has also been noted that unions rarely come apart and often will not go back together when they do fail. For the electrical part of this, it is less important, because the power will normally not be disconnected to clean sediment, which can be done in the cleanout hatch.

I wish all states required straps for new and replacement tanks, but they do not; often there are no straps or flimsy ones with plumber’s tape screwed to the plasterboard. Keep in mind, blocking behind a tank is not recommended, but many plumbers think it is a good idea if there is enough room for a tank to rock; watch this!

If a tank is on a bottom floor of a multi-story building, and there is no hot shut-off valve, when the unit is opened all of the water in the upper piping is going to run out complicating service and making it take longer to install. This makes it more expensive to you the restaurateur. Remember, ball valves are not infallible; however, they truly are more reliable than gate valves.

When it comes to the recirculation pump, keep in mind the following: there should be a T where the drain valve comes out of the tank with a ball valve on either wing. The long part of the T runs up the recirculation pump, and there should be a third valve on the line coming into the pump. Its purpose is, if you open up a water heater, some of the water usually flows out and air will flow in. After everything is sealed back up, and the water pressure is then turned on, the air needs to go somewhere. There certainly is a risk the air will run back down the recirculation loop, air-lock the pump and burn it out.

To simplify the flushing, the plumber needs to look at the valving arrangement. The valve nearest the tank should be closed and the other two should be opened. Alternatives include loosening the flanges of the pump; however, hot water will spray all over the area of installation, or go to the farthest compartment of the recirculation loop.

There are two types of check valves: swing and spring. From everything I have seen, spring valves seem to be better for plumbers, since they are less likely to stick in hard water. What the check valve does is to prevent water and sediment from being drawn backward off of the bottom of the tank, which can clog the pump and piping.

Many restaurateurs have seen where a plumber shoved or taped sections together; therefore, it is recommended to use three screws per section, which is less likely for a vent to fall down or be blocked. Also remember, the temperature of the water heater ranges anywhere from 130 degrees to 180, depending upon local code.

Do's & Don'ts - High efficiency or recovery gas unit installation - If your installer is putting in a gas high efficiency water tank, the key is to quickly get in and out of the tank, which means being able to easily remove the cover. Keep in mind the chief cost is the labor and the plumbing portion slows everything down, if not already set.

It is preferred to use stainless steel flex lines; however, there truly is no optimal connector. Unions are prone to leak; flexes can leak also. Often screwing copper fittings directly into a plastic-lined nipple will result in electrolysis and leaks. Flexes can be moved aside after disconnection; whereby, the stainless steel will remain flexible. Unions are tough to get off, there is usually that "no give" syndrome in the piping where a plumber is unable to remove the cover. Again, the straps are a good thing, but not necessarily code in all states.

The recirculation information above applies, but remember to have your plumber flush air from lines; again the vent falling issue above applies here as well. Basically, when in doubt be sure your installer follows the directions of the manufacturer for the install; it is extremely important.

Preventive Maintenance - What surprised me most was the lack of preventive maintenance throughout the restaurant industry. Darden has an annual program whereby they check their water heaters; Ruby Tuesdays is looking into a bi-annual system for checking their water heaters. Considering that the replacement value of a water heater, which can range from between \$4000 to \$7000 plus; if you are a large restaurant chain, you need to consider a preventive maintenance program that will save you money in the long-run.

Things to consider include:

1. Regularly inspect and maintain your water heater for all parts as outlined in the service manual.

2. Set water heaters to proper temperatures.
3. Fix all water leaks immediately.
4. Watch for scale build up in the hot water heater by opening up the clean out valve and cleaning out the debris at the bottom. Hard water leaves scale build ups which result in higher energy consumption.
5. Make repairs at the earliest possible time, to prevent more serious problems that will occur.
6. Bi-annually drain, inspect and descale.
7. Having prices already established with your vendors for emergencies, general repairs, and cost plus a given percentage of mark up for all standard parts. Make sure the vendor will respond no less than between two to four hours, or get another vendor. Make sure the plumber is trained on the type of equipment you own; ask for references, and be sure the vendor is licensed, insured and provides you with a certificate of insurance naming you, the restaurateur, as the additional insured to their policies.
8. It is suggested, depending upon the make and model of the water heater to keep various parts at your location; get with the manufacturer to determine this.

The bottom-line is to prevent breakdowns and or more serious problems that can and will occur, by establishing a program that prevents the chaos from happening. This means you take a hard look at your existing program, and see what it is costing your company for premature replacement of water heaters, versus saving money with a preventive maintenance program where inspections, repairs, review of vendors, tracking of performance and a review of costs are easily accessible.

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