Gas Foodservice Equipment Network

Straight Talk About Tankless Water Heaters

Can They Really Keep You in Hot Water?

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When it comes to operating your foodservice facility, a reliable supply of hot water is paramount. So often the appliances that are employed to provide this easily "taken for granted" commodity are "out-of-sight-out-of-mind" until you open the faucet and the water runs cold! There has been a lot of press recently about how tankless water heaters can provide an endless supply of hot water for today's foodservice applications while reducing the energy costs associated with producing it. This article will focus on this tankless technology that has sparked the interest of not only the residential sector but the foodservice industry as well. After all, the most important ingredient in any foodservice operation is…HOT WATER! Because when you're out of HOT WATER…you're out of business!

Water on Demand

Call them tankless, on-demand, or instantaneous, these water heaters provide hot water when and where it's needed — without using a storage tank. Whether electric- or gas-fired, tankless water heaters have the potential for energy savings. In addition to having higher fuel use efficiency than traditional tank-type units, some of those savings may come from eliminating standby losses, the energy that's wasted when heated water sits unused in a tank. And since there's no storage or proximity to the point of use issues, you won't have to run the water waiting for it to get hot.

Another benefit to eliminating the storage tank is avoiding leaks. Most storage tanks will eventually leak (typically around 8 years in commercial operations) and can be a major expense to fix or replace, whereas leaks rarely occur in tankless water heaters.

Replacing a traditional tank-type hot water system with these on-demand units can result in energy savings, but just how much depends on your current system and hot water requirements. While tankless units are particularly useful in small and midsized business environments, many manufacturers also supply systems specifically designed for larger commercial uses, such as lodging facilities, schools and even industrial applications. And because they are much smaller than conventional tank units they can easily be installed on an interior or exterior wall or even on the roof.

A gas-fired unit has a burner that is activated by the flow of water when a hot water valve is opened. Once activated, the unit will deliver a constant supply of hot water. The output of each unit limits the rate of the heated water flow but generally will provide 3 to 4 gallons/minute/unit at a 90°F temperature rise. This equates to 12 to 16 gallons/minute at 140°F delivery temperature for a four-unit system, which is a generous supply for most any foodservice application.

Straight Talk Answers

Q. How do these appliances work?

A. Tankless water heaters can be installed to deliver hot water to single or multiuse points. When hot water is called for, cold water flows into the appliance's copper heat exchanger where it is heated by a gas burner (or if electric, electric elements). Unlike conventional water heaters that operate at a constant input rate, most gas units operate with modulating burners. This means the gas burners "fluctuate" from low- to high-fire, depending on the amount of water flowing into the unit. This can save energy and also increase the life of the unit by not overworking it unnecessarily. It only operates when you turn the faucet on.

Q. What is the difference between a tank-type and a tankless water heater?

A. As the name implies, a tankless water heater has no storage tank, but is designed to deliver a "continuous" supply of hot water on-demand up to its maximum rated output. In most foodservice applications, multiple units are necessary to meet the required hot water demand. A tank-type water heater is designed to handle large peak demands from multiple fixtures, which is the usage pattern for most restaurants; i.e. warewashing, restrooms, general purpose, cleaning, etc., all of which may operate simultaneously.

Q. Are tankless water heaters more efficient than conventional tank units?

A. Absolutely. There are many brands available on the market today with energy efficiency ratings greater than 80% as reported in the Gas Appliance Manufacturers Association's August 2007 Consumer's Directory.

Q. Does it cost less to heat water with a tankless water heater?

A. Generally, yes. But that all depends on what type of water heating system you're comparing it to. A standard gas-fired tank-type system has an efficiency rating of between 60 - 70% compared to the 80%+ of tankless units. Here the savings can be significant. But when comparing a tankless unit to that of a high-efficiency condensing-type water heater with an efficiency rating of 95%+, the actual energy savings may never be noticed. The big advantage though is that a tankless unit only operates when you need it to, thus eliminating any potential standby loss keeping water hot in a tank.

The Pluses & Minuses

Potential Advantages:

- No standing pilot as in traditional tank systems. Saves energy by operating only when needed.
- Compact, wall-mounted unit saves space.
- Available in indoor or outdoor designs.
- Life expectancy of twenty years (up to twice as long as tank units).
- Replaceable parts can extend the life of the unit.
- Built-in redundancy with multiunit systems that will keep your facility up and running even if a unit should fail.

Potential Disadvantages:

- High initial purchase price of around $1500/unit installed.
- Limited flow rate requires multiple units for most foodservice applications.
- Replacement parts may not be readily available in remote areas.

Q. How much do tankless water heaters cost?

A. One must take into account the first cost, including the cost of the installation. The initial cost of buying a tankless unit or system is usually higher than a tank-type unit. Installation costs of tankless units may be higher or lower than tank-type units; it depends on your particular situation, as there are a number of factors that make up the installation costs.

Q. Can a tankless unit meet the entire hot water demand of my restaurant?

A. Typically, yes. However one must consider the following variables:

- The flow rate through the unit in gallons/minute.
- The minimum and maximum BTUs of the unit.
- The supply water temperature and the temperature rise necessary to heat the water to the required health department temperatures.

The maximum hourly hot water demand and

usage pattern of your restaurant will determine how many units you will need. Depending on the brand and model, multiple units can be installed together as a system which can increase the output to fulfill your hot water needs. Just remember, the higher the temperature rise required, the more units you'll need.

Q. Do tankless units really save space?

A. Yes, they are considerably smaller since they have no tank and are designed to be wall-mounted, inside or out. And in many applications, you may find them even installed on the roof.

Tankless is "GREEN"

With all the concerns about global warming, saving energy and other natural resources, tankless units certainly meet the criteria as far as water heating efficiency and conservation is concerned. Heating water only when it's needed is a positive way to promote sustainability by meeting your current needs without compromising the needs of future generations. In other words, it saves water and energy for tomorrow. And besides being good for the environment, tankless units can add some "GREEN" to your bottom line as well!

Chef /Owner Bill Nixon shows off his space saving gas tankless water heating system.

Reducing New Construction Costs

Tankless units do not take up the space typically associated with storage tank models. A standard restaurant water heater will require a floor space of 16 square feet, but by installing a tankless unit on the wall, that space can be better utilized to create additional seating in the dining area which can potentially increase your profits. After all, water heaters don't buy sandwiches!

When Bill Nixon, owner/operator of Sterling Steakhouse in Charlotte, NC started researching equipment technologies for his new restaurant, he was immediately impressed with the idea of "going tankless" and how that could impact construction costs. With commercial building costs running $250 - $300 per square foot in today's marketplace, utilizing every inch to its fullest was his primary goal. During a visit to the Piedmont Natural Gas Technology Center in Charlotte, NC, he met with industry experts who were quick to point out the attributes of tankless water heaters.

"The opportunity to see a working system at Piedmont's test lab was all it took to convince me that this technology would be a great fit for our new operation."

The idea of eliminating a large tank-type water heater by installing the wall-mounted tankless units would immediately save over sixteen square feet of floor space and nearly $5000 in construction costs! Factoring that cost and the cost of a typical tank-type water heater, it was almost a breakeven first cost. So given the potential energy savings for hot water and the fact that there are no costs to "store" hot water until it is used, incorporating a tankless system just made good business sense.

Commercial Tax Incentives

The Energy Policy Act of 2005 includes a tax deduction for investments in "energy-efficient commercial building property" designed to significantly reduce the heating, cooling, water heating, and interior lighting energy cost of new or existing commercial buildings. To be eligible, an energy-efficient unit, such as a tankless water heating system, must be placed in service between January 1, 2006 and December 31, 2008. To qualify for the full deduction, an operator must make investments designed to reduce energy costs by 50% or more.

For more information about today's high-efficiency water heating products, log onto the Gas Foodservice Equipment Network website at www.gfen.info or call (202) 824-7153.