

Best Practices: Advanced Safety Features of Tankless Water Heaters

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Tankless water heaters, also known as instantaneous water heaters, are designed to deliver a constant supply of hot water as is needed without the use of a storage tank. When a water source is activated, cold water travels through a pipe into the unit and an electric element heats the water. Heated water is a crucial component to victim comfort during emergency response and enhanced victim comfort increases the user's desire to endure the shower for a full 15 minutes (as required by ANSI Z358.1).

There are tankless water heaters specifically designed with the demands of complex safety circumstances in mind. They provide superior temperature control for situations when tempered water is a vital requirement. A crucial element was recognized as absent from current configurations and has been applied to newer tankless water heaters – scald protection. This valuable feature is a must when using heating equipment for the drenching of chemicals off the skin and out of the eyes.

Temperature Control and Monitoring

Electromechanical devices like temperature sensors and solenoids for dumping, or cutoff sensors on copper tubing, can protect from scalding but it has been determined that a stronger algorithm with a safer option is needed. While many heating systems only monitor the outlet which can create issues should the inlet temperature change, only few constantly sense the input as well as the output temperatures to more accurately modulate the heating load in real-time. As inlet temperatures increase, there is a delay in controlling the heat input.

If there was a scenario where the water temperature reached 100° F (38° C), these advanced tankless water heaters measure the water temperature and turn off all power to the elements. This contradicts most models in the field that are designed with a temperature sensor on the piping. Once the piping is over-temperature, the switch turns off the power. This latency in waiting for the pipe to heat up versus the actual water temperature is not the most effective way to protect the user.

Flow Differences

An additional issue with other tankless heaters is the flow balance and control when supplying water to a high flow combination shower and eyewash to a lower required flow of an eyewash. The latent heat

in the heaters is transferred to the water and some existing tankless heaters are designed to open a dump feature until the issue is gone. This is major concern because there might be an unexplained dump of water in an environment where the temperatures instantly turn the water to ice causing a serious hazard and clean-up issue. Advanced systems have heating elements have a low thermal mass so there is no latent heat issue. Additionally, there are flow meters that will sense the change in flow and thereby modulate the amount of power that goes to the heating elements.

Haws Integrated's™ primary focus and experience is the delivery of tepid water for safety showers and eyewashes. This includes tank, steam, process heat, and tankless. Safety is the ultimate goal and over-temperature issues are a concern when developing a safety response system that will effectively and efficiently provide a dependable, comfortable solution. After many years of field experience and testing, the *Haws* model 9326/9327 tankless water heater incorporates a reliable algorithm that incorporates features not found in other heaters in the market thereby offering a complete safety solution.