



COLD CLIMATE HOUSING RESEARCH CENTER

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Domestic Hot Water

What is a tankless water heating system?

What is a tankless water heating system?

Tankless water heating systems, also called on-demand or instantaneous water heaters, heat water as it flows through the unit. They have no need for a tank, since water is heated as it runs through the unit on its way to the faucet, showerhead, or other appliance. Tankless heaters, like other heating appliances, should be serviced yearly to keep them operating at their full efficiency. This paper covers the pros and cons of installing a tankless heater.

Tankless heaters can be powered with propane, natural gas, oil, or electricity. When a faucet calls for hot water, water flows through the tankless heater, which is often a small box mounted on a wall. The flowing water triggers a burner or heating element, and the water is heated as it flows through pipes that coil around a heat exchanger on its way to the showerhead or faucet. There might be a short wait for hot water while the tankless heater comes up to temperature, but then it can provide “endless” amounts of hot water. Tankless heaters do not have standby losses (heat lost through the tank wall) like storage tank water heaters, so they have the potential to be more efficient. However, standby losses can be useful in a cold climate because they can contribute to space heating.

Tankless systems, when sized incorrectly during installation, are prone to control and pressure issues. Tankless heaters should be sized to account for the incoming water temperature, which is colder in Alaska than in other states, and they must also be able to supply water to appliances that might run simultaneously.

When choosing the size of the tankless heater, consider how many faucets might need hot water at any one time. For instance, if you typically shower while running the dishwasher after dinner, the tankless heater must be large enough to provide hot water to both locations without a drop in water pressure. This can be accomplished by installing a properly sized heater, and perhaps by adding a larger pump to the system. Hiring an experienced installer will help ensure that your system is able to provide adequate hot water and pressure at all times.



Advantages	Disadvantages
<ul style="list-style-type: none"> • Takes up less space than a traditional storage tank water heater • Typically has efficiencies in the range of 70–90% • Offers the potential for “endless hot water” because there is no tank that can run out of water 	<ul style="list-style-type: none"> • Typically costs more to install than a conventional storage hot water system • Improperly installed tankless heaters can result in inconsistent water temperature and delivery • Does not typically work with recirculation systems



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Is a tankless system right for you?



What kind of fuel do you use for water heating?

Tankless systems require either natural gas, propane, oil, or electricity to heat water. They also need electricity for their control systems.



Do you have a recirculation system?

Recirculation systems use a pump to continuously circulate hot water through pipes, so that there is instant hot water when a hot water faucet is turned on. Tankless systems typically do not work with recirculation systems.



Do you typically use hot water for more than one thing at a time?

For instance, do you run the dishwasher after dinner while taking a shower? If so, the price of a tankless system may increase for a larger size heater or for a pump to keep the water pressure normal in both locations.



Has your heating professional installed tankless systems before?

In Alaska, it is important to hire an experienced installer. Colder incoming water temperatures make sizing the tankless system important. Don't be afraid to ask your installer for names and phone numbers of past clients that you could ask about their tankless systems.



Is your water heater located in the garage?

Tankless heaters can be damaged by freezing temperatures, so you will want to speak with an installer about where you could move the heater indoors, or if you can find a model with freeze protection (some models have electric heaters that come on below a certain temperature).



Will you abuse the possibility of endless hot water?

Be honest....tankless heaters present the possibility of never-ending showers. Any energy savings from a tankless heater will be negated if your hot water usage increases.



How hard is your water?

Tankless heaters have manufacturer specification for the hardest allowable water. If you have hard water, installing a tankless system might require you to first install a softener, change filters or flush the system regularly.



Are standby losses useful in your home?

Tankless heaters can be more efficient than storage water heaters because they do not have standby losses. However, standby losses from an indoor storage water heater can be useful in Alaska's heating-dominated climate because they help offset space heating requirements.