

What Is A Water Recirculation Pump And Why Do I Need One?

A home water re-circulating pump is used to circulate domestic hot water so that any faucet or shower will provide hot water instantly upon demand. These systems slowly pump hot water through your hot water pipes and back to the water heater through either a dedicated line or through the cold water line.

Here's the Problem.

Homes waste a lot of water. An average home has approximately 125 ft of 3/4 inch water pipe. 125 feet of 3/4" pipe holds 3.14 gallons of static water. Ten hot water draws per day wastes over 31 gallons of water pushing hot water to the draw faucet and wasting all of the static water. Over a year, the wasted static water in the average home equals 11,461 gallons.¹ That's 9% of the average home's total water use of 131,000 gal/year.

Here's how a water re-circulation pump works.

In typical homes with one-way plumbing without a circulation pump, water is simply piped from the water heater through the pipes to the tap. Once the tap is shut off, the water remaining in the pipes cools producing the familiar wait for hot water the next time the tap is opened.

By adding a circulator pump, water is circulated through the cool pipes from the heater to the farthest fixture. The cool water is circulated back to the heater via the cold-water line, and no water is wasted during the wait. The energy use of the circulation pump is less than operating a 25-watt light bulb.

To reduce energy use even further, the circulation pump can be activated on demand in three different ways, supplying hot water with no waste only when needed. The first way uses a timer and thermostat to maintain hot water throughout the home during the times that hot water is needed, such as mornings and evenings. The user simply sets the timer to, say, 6am, and then again at 5pm. Hot water will be available instantly by 6:01am and 5:01pm. The second way to activate the circulation pump requires the user to manually activate the pump at time of need by pressing a button, or remote sensor. And a third way is for the circulation pump to be activated by motion sensors.

¹ Source: <http://www.csgnetwork.com/waterusagecalc.html>;

In all three activation methods, temperature sensors in the hot water line at the pump end let the pump know when the water is hot, and thus shut off the pump automatically, avoiding pumping hot water into the cold water lines.

Costs.

A water re-circulation pump can be installed in most homes from as low as \$599 to over \$2,000. Typically, an electrical outlet needs to be run under the sink to operate the pump. Also, the pump itself can range in price from a few hundred dollars to over \$600. Quality of pump is very important. This is not an area where you want to skimp on quality, and end up with a leak under your sink, or having to replace the pump entirely in three years.

The average re-circulation pump should run around \$1,200 for proper installation and quality equipment. Addition costs to consider are energy use. The average pump will use about 219kWh per year, costing around \$52 (based on a .24¢/kWh rate).

Savings:

Current water rates for Paso Robles, CA are \$4.10 per unit² (a unit being 100 cubic feet, or 748 gallons). The average water bill for a single-family Paso Robles home is \$720, based on annual water use of 131,000 gallons. Reducing water use by 11,461 gallons saves \$66. Over a 10-year period, the circulation pump will save 120,000 gallons of water (the equivalent of 10 in-ground swimming pools) and \$930 in water costs.

Based on the savings, the benefits of a re-circulation pump are not entirely financially motivated, as the cost is a near break even after 10-years. The true value of a recirculation pump is the conservation value. More importantly for some is the comfort value in turning on the shower and stepping right in to hot water without waiting?

Summary:

Being that we are in a part of the country that is in its third year of drought, with 2013 being the driest year on record in California, water conservation is more than top-of-mind. A water re-circulation pump provides the homeowner with an easy to implement improvement that doesn't cost a lot of money. Homeowners who are on a septic system avoid dumping an additional 12,000 gallons of water per year into the system, extending its lifespan. Homeowners on a well system save energy by reducing the time needed for the well to pump 12,000 gallons per year into a holding tank, and from there, to the home, and extending the life of the well pump.

Installing a water re-circulation system just about pays for itself, with the added benefits of saving water, saving time, increasing comfort, and the satisfaction of knowing you are making a difference. It makes me ask "why don't all of us have one of these already?"

² http://www.prcity.com/government/departments/adminservices/pdf/WaterFeesPenalties_notice.pdf