

## Technology: Shower heat exchanger

### What?

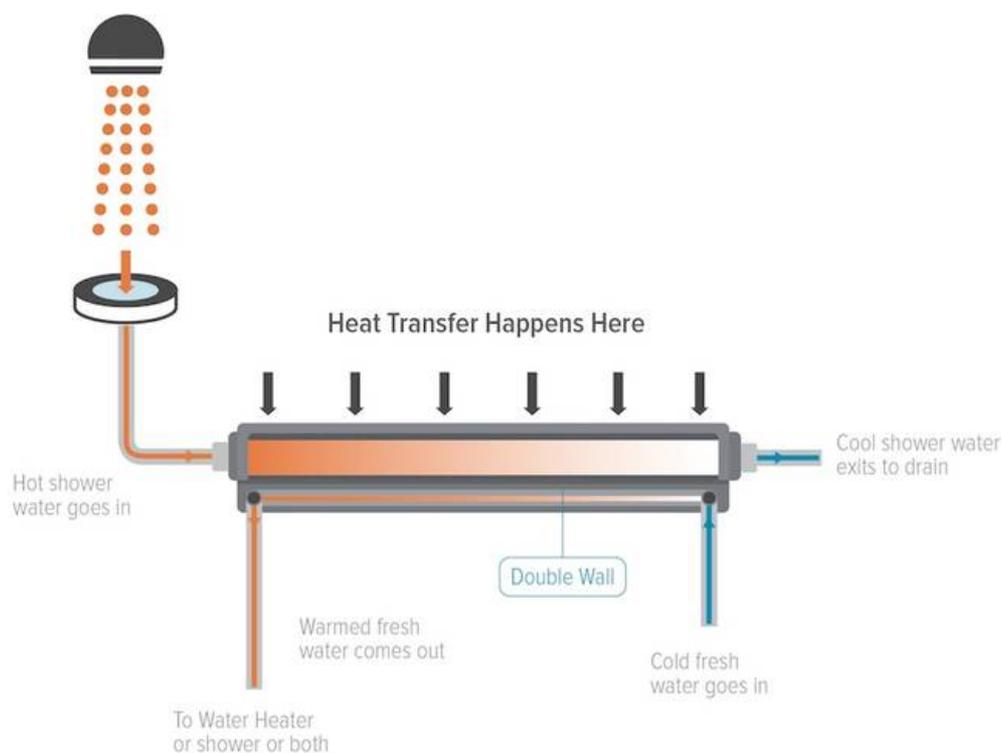
Shower heat exchangers or drain heat exchangers preheat the cold water that is flowing towards the shower with the hot water that is drained while taking the shower, before it is heated in the boiler. This increases the boiler efficiency. Different systems are available on the market.

Waste heat recovery, and drain heat exchangers, are not new concepts, but haven't really been viable on the small scale, due to design and installation limitations, and have mostly been targeted to larger commercial applications. This has now changed.

*© Ecodrain [1] [2]*

A new model of heat exchanger for waste heat recovery for residential buildings promises to be the first practical version for home shower use, recovering up to 45% of the waste heat from shower drains, and offering a good return on investment.

Earlier heat recovery models were designed to be installed vertically, which limited their installations to new construction or bathrooms with at least 1,5m of vertical drain runs. The Ecodrain can be installed horizontally, which allows it to be mounted right near the source of hot water (the shower drain), and is said to be easy to install. The principle of the system is explained in the figure below.



Principle Ecodrain [1]

Ecodrain has no moving parts and requires no electricity to operate. Inside, a specifically engineered piping configuration transfers heat energy from the hot shower water to the incoming fresh water supply. And, a special device optimizes turbulence in the fresh water supply for maximum energy recovery without significantly reducing water pressure for the user. The units, which have a rugged double walled design, keep drain water and fresh water completely separate, so there's no chance of cross-contamination.



*Itho Daalderop [3].*

Another type of drain heat exchanger is the DWTW2 shower heat exchanger of Itho Daalderop. This is a double wall heat exchanger of coated aluminium, especially designed for a shower WTW that uses the drained water to heat the cold supply water. It is assured that the drained water is not mixed with the supply water. Between the two pipes of the heat exchanger flows the cold water. The system is a vertical system.



### **Why?**

The cost of energy required to heat water is one of the biggest energy expenditures at home, right after cooling and heating, and considering that most of that energy essentially gets wasted by flowing down the drain, harvesting heat from our showers could be a simple way to save energy and money [1].

### **Cost**

According to Ecodrain, the payback on the installation of one of their heat exchanger units can be as soon as 2 years (in areas with high electricity costs), or up to five years (in areas with low electricity costs), and because the units are made to last for up to 30 years, this investment could continue to pay off for a long time.

The base price of the unit is about 400€, and because of the high rate of energy recovery possible with the device, Ecodrain says their product is one of the simplest and most cost-effective home improvements you can make.

**Where?**

The units can be installed at homes, but also in any place that uses a lot of hot water, such as gym or pool shower facilities, hotels, laundromats, or on commercial dishwashing machines.

**Manufacturers:**

- Ecodrain
- Itho Daaldrop
- Energy Inc

**Want to learn more?**

[1] <http://www.treehugger.com/clean-technology/next-generation-heat-exchanger-captures-waste-heat-drain-shower.html>

[2] <https://ecodrain.ca/en>

[3] <http://www.ithodaalderop.nl/sites/default/files/documents/productblad20douche20wtw-dds2001-00005.1.pdf>