Rational use of Water and Energy

WESAVINGS ecological faucets

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we savings
WATER & ENERGY SAVINGS

Plan

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Water-Energy Nexus

- At least 1 gal. of water is required to produce 1 KWh at the plant, on average 2 gal./ KWh (EPA source) mainly because of evaporation in the cooling towers.

Saving energy saves water

- The production of cold water consumes 0.25 to 4 KWh per m^3(265 gal.)of drinking water from surface water. The desalination of seawater consumes 4 to 8 KWh per m^3(265gal) of water produced.
- The production of 17 liters (4.5 gal.) of hot water at 60°C (140°F) requires 1 KWh

Saving water saves energy

Measured consumption

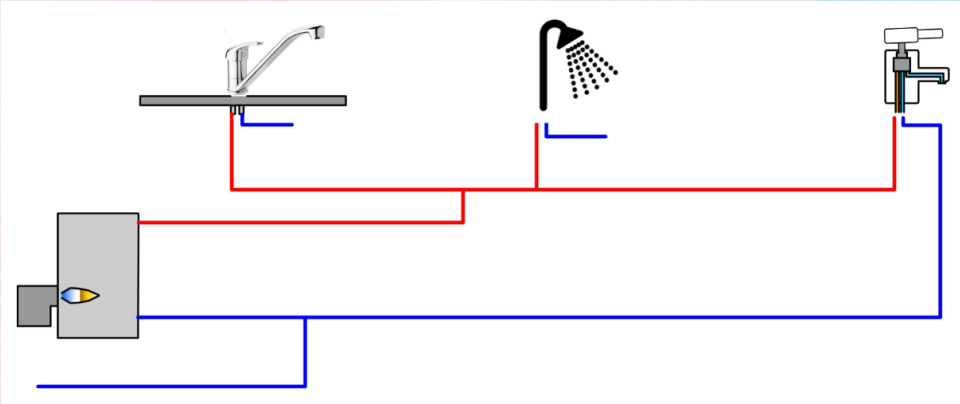
- Daily water consumption for a household of 2 people eco-responsible, average over 1 year.
  - Drinking water:
    - 7 gallons of cold water
    - 7 gallons of hot water
    - **7 gallons of chilled hot water, often wasted in the sink**
  - Rainwater (toilet, washing machine, floor maintenance)
    - 25 gallons of rainwater

- Daily energy consumption of a hot water loop
  - Permanent loop: 20 KWh / day
  - With timer and aquastat: 10 KWh / day, which requires 10 gallons of water/day consumed at the plant.

Water Heater, Circulation Pump and Controls – as of April 2014

Source : https://aceee.org/sites/default/files/pdf/conferences/hwf/2015/7C-Klein.pdf

With a simple circuit

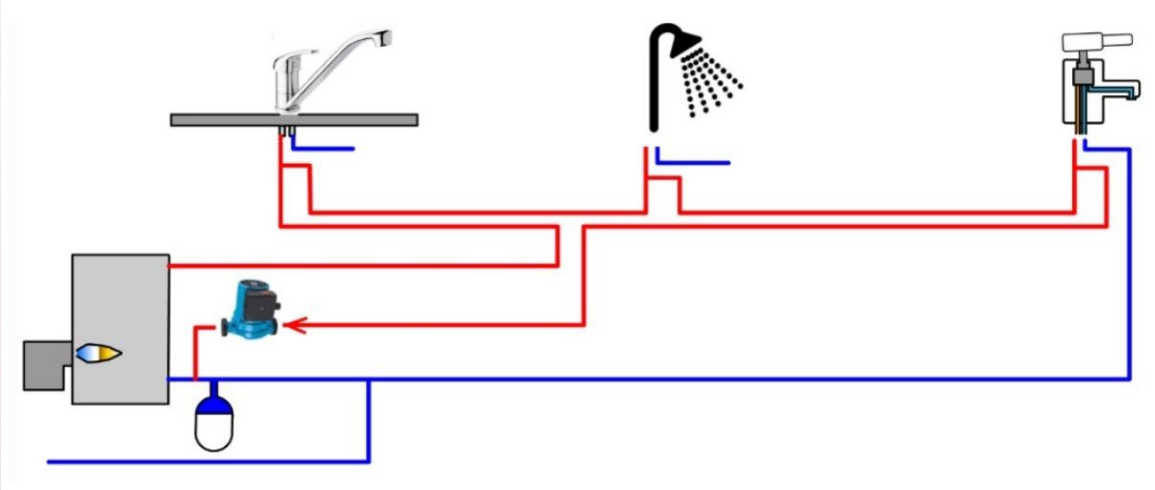


We wait for hot water, sometimes for a long time

Cold hot water is wasted in the pipes: 5 to 10 gallons of water a day.

- Part of the cooled hot water is sometimes recovered for the toilet, the plants watered, etc., but the method is restrictive and often relates to **uses that should be met more ecologically using rainwater.**

With a hot water loop

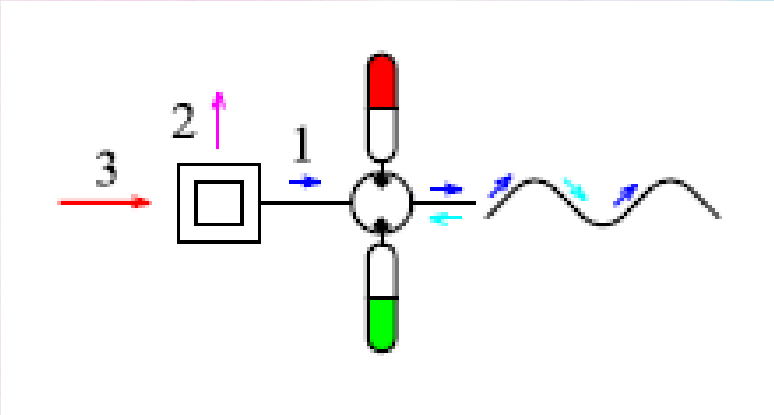


Hot water is accessed faster
Are no longer wasted water in the house

We waste energy: 5 to 20 KWh / day
(and **5 to 10 gallons of water** at the power plant)

- The simultaneous use of air conditioning and hot water looping **should be prohibited**, the walls are heated at the same time as the air in the room is cooled.
- To save energy you can install a switch that controls the start of the circulation pump, but **the waiting time for hot water becomes long** and **the economy is incomplete**, hot water is sent throughout the building while the application concerns only one tap.

Origin of the concept



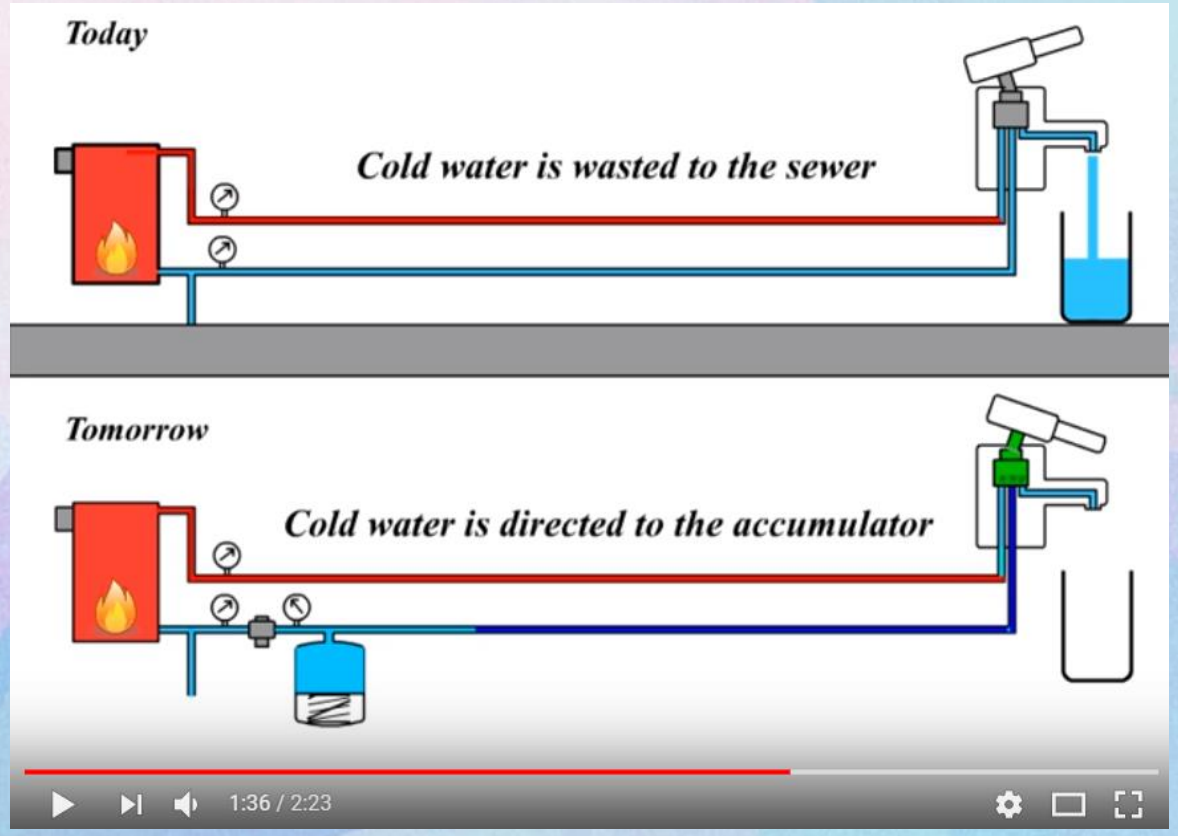
It takes 3 units of thermal energy to generate a mechanical unit, hence the interest of effectively managing the mechanical and electrical energy.

- The freewheeling hydraulic transmission designed to reduce vehicle consumption was developed in 2000 but did not find funding. (www.recyclonslesjoules.eu)

- **One of the basic ideas of the freewheeling hydraulic transmission is to temporarily store excess energy for effective retrieval later.**

The starting technology

The first circuits developed in 2009 used ecological faucets working with an expansion tank to temporarily collect the cooled hot water, see the video.



4 first generation prototypes have been in use since 2011
(these prototypes do not reduce the waiting time yet)

Disclosed technology

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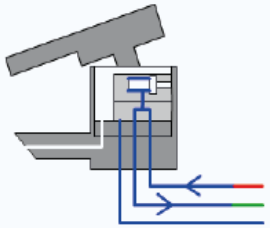
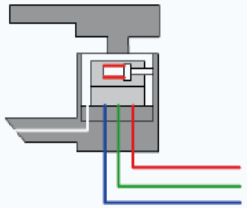
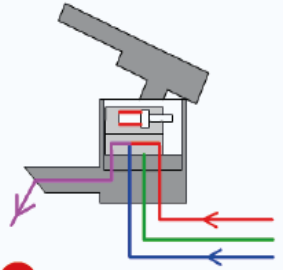
WATER SAVING MIXER: THE GREENEST TAP SAVE TIME AND WATER



1 Push the lever down until it locks. The **water is recycled** to the inlet of the heater through a wide passage during a few seconds.



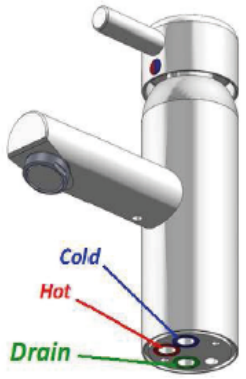
2 When the hot water reach the tap, a thermostatic element unlock the lever that will **automatically** return to neutral

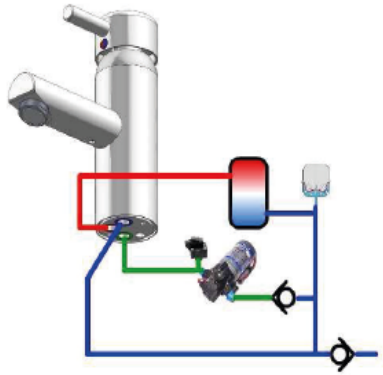


3 The mixer is ready to be used in a conventional manner,

HOT WATER is available AT OPENING!

GOLD MEDAL at the International Inventions Exhibition of Geneva (April 2013)





- **Single lever, proportional or thermostatic**
- In service FOR 2 YEARS
- SAMPLES available
- Patents for license/sale

▶ for new house

▶ and home improvement

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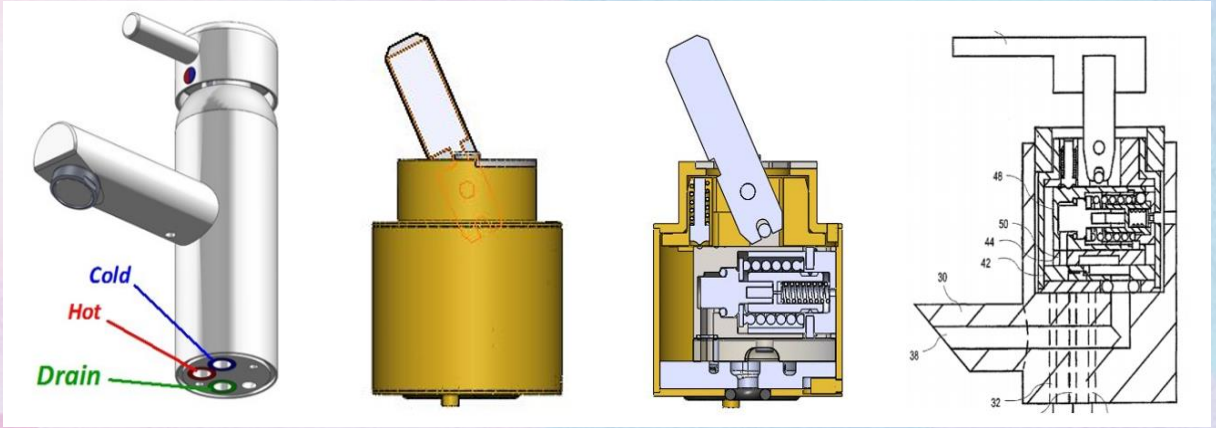
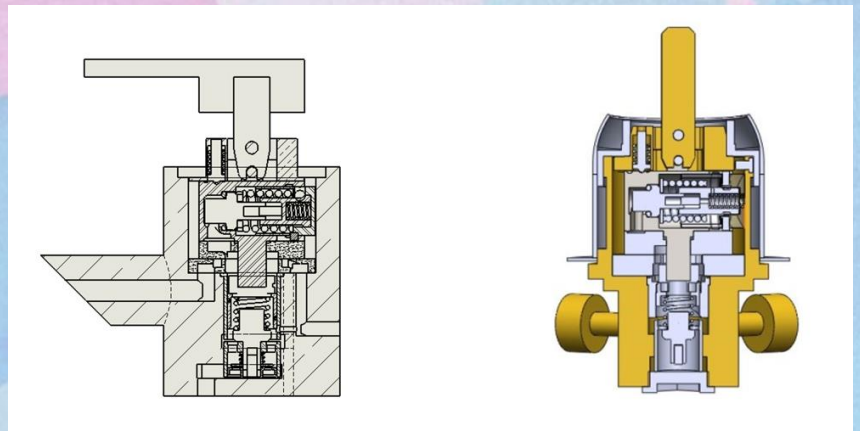
The faucet with a magnifying glass

- Proportional mixer

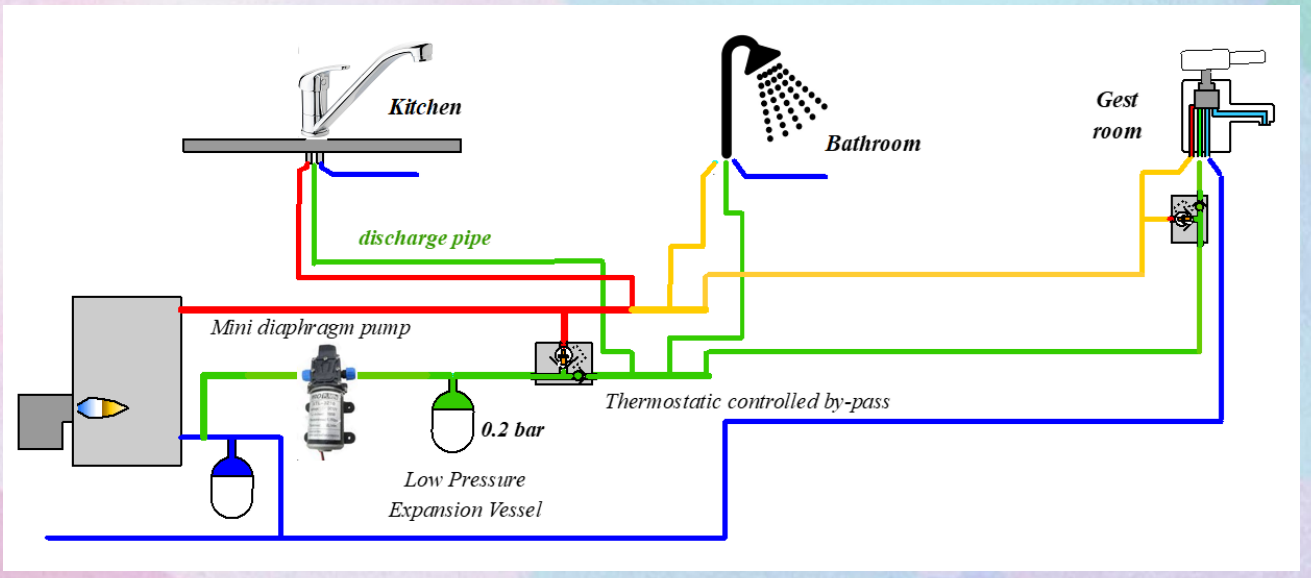


- Thermostatic single-lever mixer



In a new building

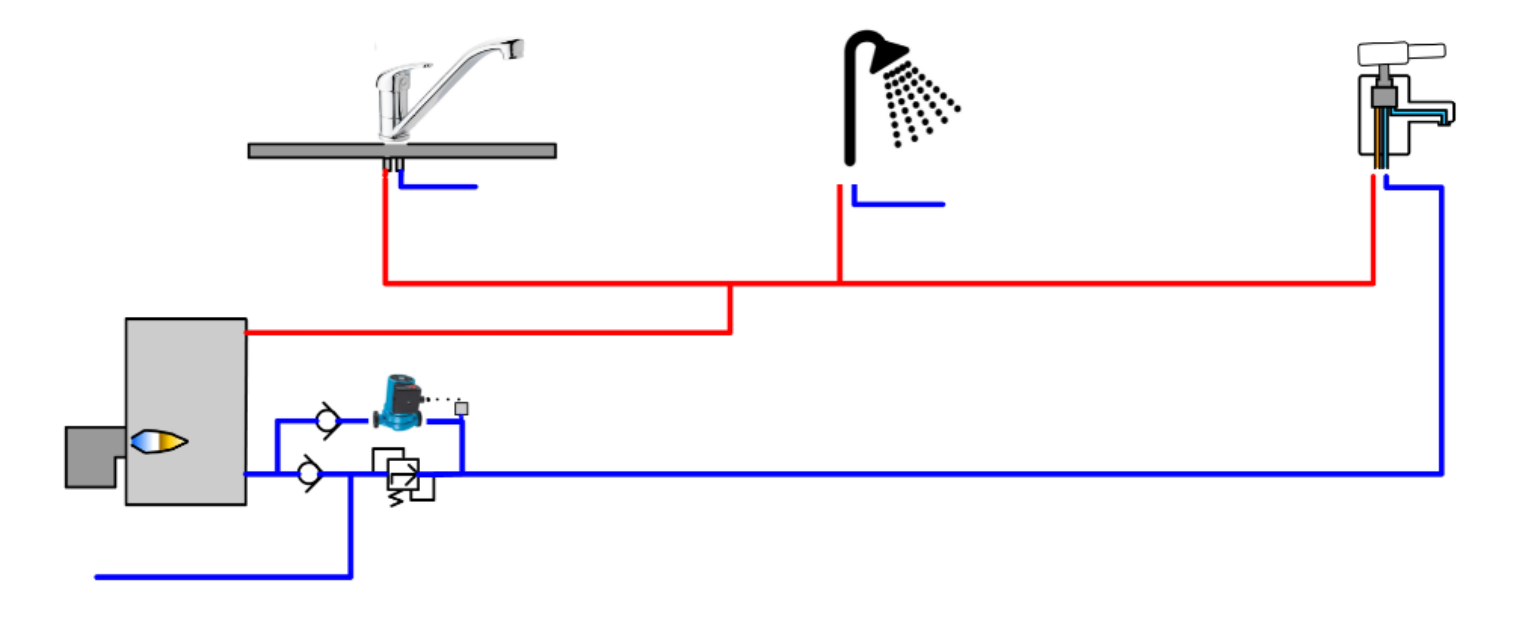
Or when a return pipe exists or can be easily added.



- By operating the tap, hot water is available **in less than 3 seconds when the water heater is located 10 meters away, without any waste of water or energy.**
- *Details of the latest technology that minimizes wait times are only disclosed as part of a confidentiality agreement.*
- **Hot water is only sent to the only tap that has requested it.**

In renovation

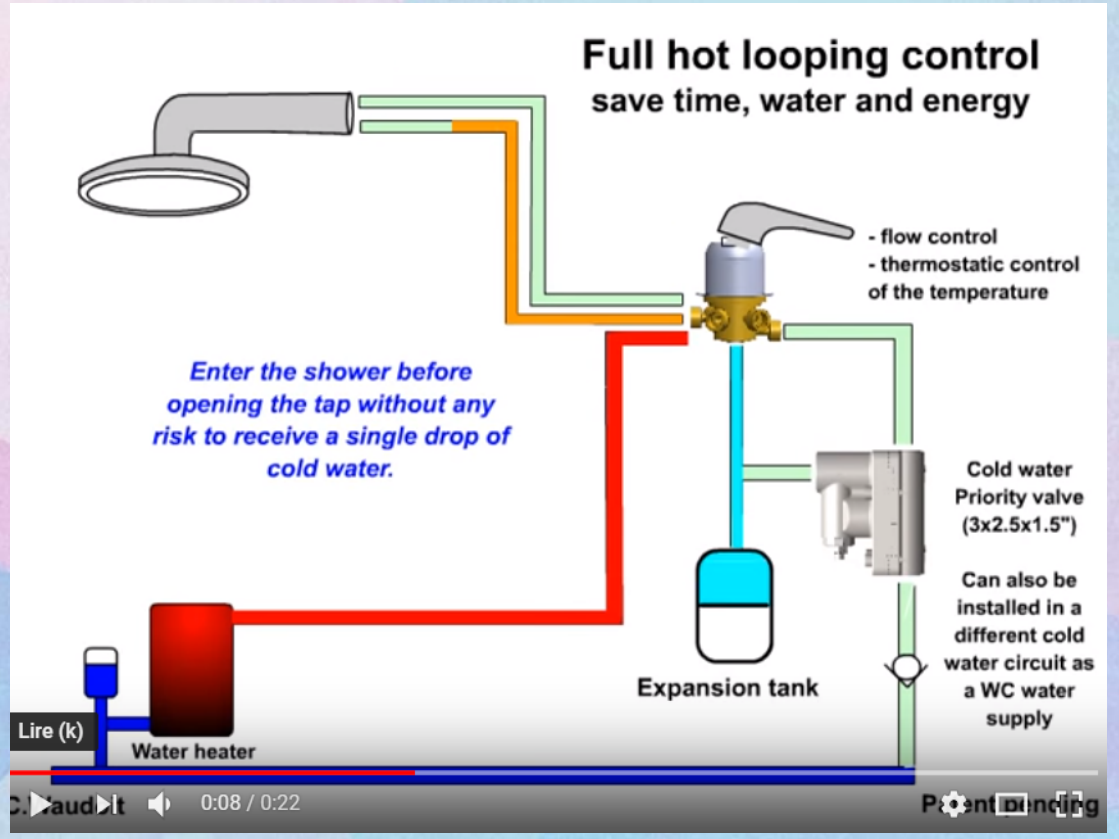
- When it is too difficult to add a separate return pipe, it is possible to use the cold water piping for the return to the water heater.
- In this case the waiting time is longer: 5 to 10 sec.



- The circulation pump operates automatically as soon as one of the taps is activated in hot water preparation mode

Downstream shower loop

You can **enter the shower before you open the tap** because the first drop of water is at 38 ° C (100 ° F), an eco-responsible person can take a shower using less than 2.5 liters of water (and less than 0.5 KWh).



Conclusions

1. After the use of rainwater for non-food uses, it is the automatic recycling of cooled hot water that **is a priority in the hierarchy of water savings**.
2. Ecological faucets have the **same appearance, functions and price** as traditional faucets, but they also have a function to recycle cooled hot water.
3. Low-tech, 100% recyclable, they have no plastic parts.
4. More comfort: **hot water is available in less than 3 seconds without any waste of water or energy.**
5. The hot water is **directed only to the faucet that makes the request**.



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www.wesavings.eu

www.recyclonslesjoules.eu