

## **Fabio Moneta**

Via Bodacco 11

28010 Pisano

Pisano – Italy

Ph. +39 335 6995032

email: [fabio.moneta@idmilano.com](mailto:fabio.moneta@idmilano.com)

# Saving energy device for showers

The concept proposed is a device that enables the user to recover part of the energy ( in form of heat) that is thrown away when people take hot showers.

It basically consists on a heat exchanger that recovers thermal energy from the discharged hot water and transfers it to the incoming cold water.

When using the shower, the water temperature results from the balance between cold water and hot water. They both have a fixed temperature depending on the ambient conditions and the boiler setting.

The device recovers heat from the discharged water and transfers it to the incoming cold water, making it warmer than it would normally be. This way the amount of hot water needed to reach the desired water temperature is reduced so producing an energy saving.

The heat exchanger could be designed as a simple aluminium extruded profile with two holes, one connected to the discharged water pipe , the other connected to the incoming cold water pipe. As illustrated in pictures 1) and 2).

To function well, the shower must be equipped with a thermostatic mixer tap which a customer can use to set the shower temperature. It then adjusts automatically the amount of hot and cold water needed to reach the desired temperature.

In case the shower basin is made out of metal ( instead of plastic, ceramic or any other thermally insulation material) the basin itself could act as a heat exchanger by adding an additional metal plate on the rear side. In this case the metal plate has some channels build in where the cold water flows and recover thermal energy from the discharged water and also the pan itself as illustrated in picture 3).

The device would be very convenient for people that likes very long hot shower and for hotels.

The construction is pretty simple, it is static with no moving parts and no need of maintenance.