

## 1.1 Novel Solution #11 - Waste water Heat Recuperation (Paris pilot)

### 1.1.1 Location in building - Paris

The Biofluides system is located in the basement at the crossing of the two streets (Cotentin and Falguière). The central control system and the heat pump are installed in the boilers room where the mix is done with some extra hot water from the boilers.

There are two tanks collecting the waste waters located in the two rooms next to the boilers' in each wing of the building. There takes place the heat exchange with the tap water as shown by the next figure.

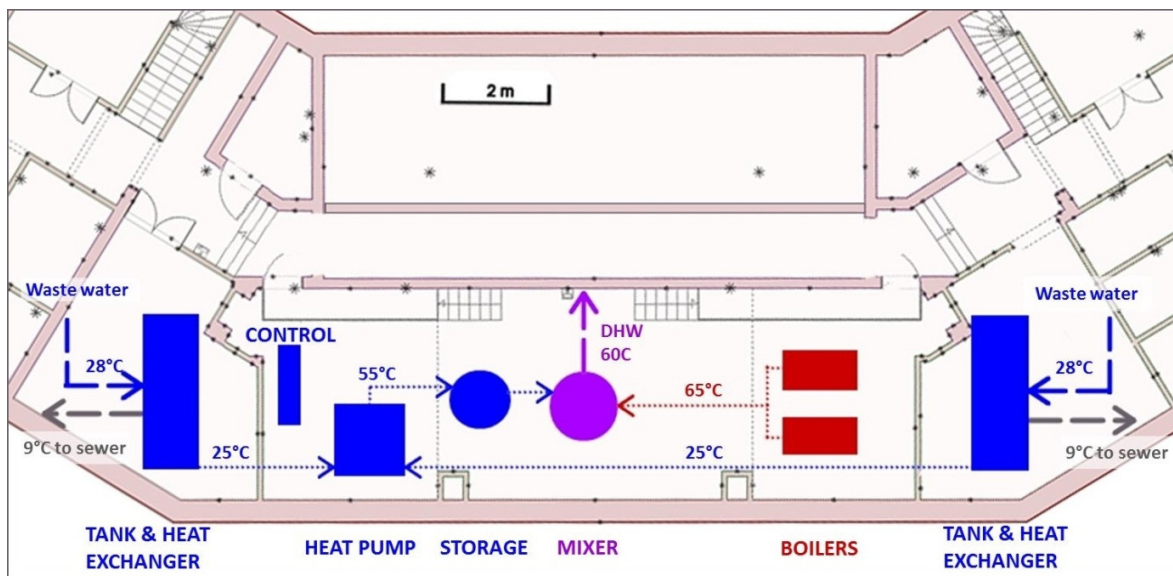


Figure 1 Location in building: Sketch of Biofluides system installation in the basement.

### 1.1.2 Existing Construction

No renewable energy source is used for the building. All the energy consumed is from hydrocarbons (natural gas) or from the grid (electricity, nuclear by 80% in France).

### 1.1.3 Identified Problems

The building doesn't contribute enough to energy savings and CO<sub>2</sub> reduction. Especially, heat is lost in the ventilation system and in the waste water.

### 1.1.4 Solution

Recycling the heat lost in wastewater was chosen for this existing building as it gives good performances and doesn't require too heavy work compared to the implementation of a central heat recovery ventilation which require the installation of a second tubing.

This is the system developed by Biofluides Environnement E.R.S.<sup>®</sup> (Energy Recycling System), which uses water from showers, baths, washing machines and dishwashers (poured away in very large quantities at certain hours of the day at an average temperature of 28°C). This recycled heat is used to supply sanitary hot water installations.

Associated with a combined heat pump, the system preheats the cold water (between 40 and 55°C) and stores it in a tank and it is mixed, if necessary, with hot water from the gas-boilers to reach the 60°C required.



Figure 2 Insulated hot water storage and mixer



Figure 3 Biofluides tank



Figure 4 Heat exchanger

Retrofitting of wastewater drainage network required access to certain private cellar storage rooms. The demolition and transfer of six storage rooms was necessary to create enough space for hot water tanks.

### 1.1.5 Energy Experiences

The ERS<sup>®</sup> should lead to a 50% reduction on the hot water energy bill, and reduce greenhouse gases by two thirds.

### 1.1.6 Lessons Learnt

The tank was a little too large for the dimensions of the locale. This required the feet of the tank to be cut off.