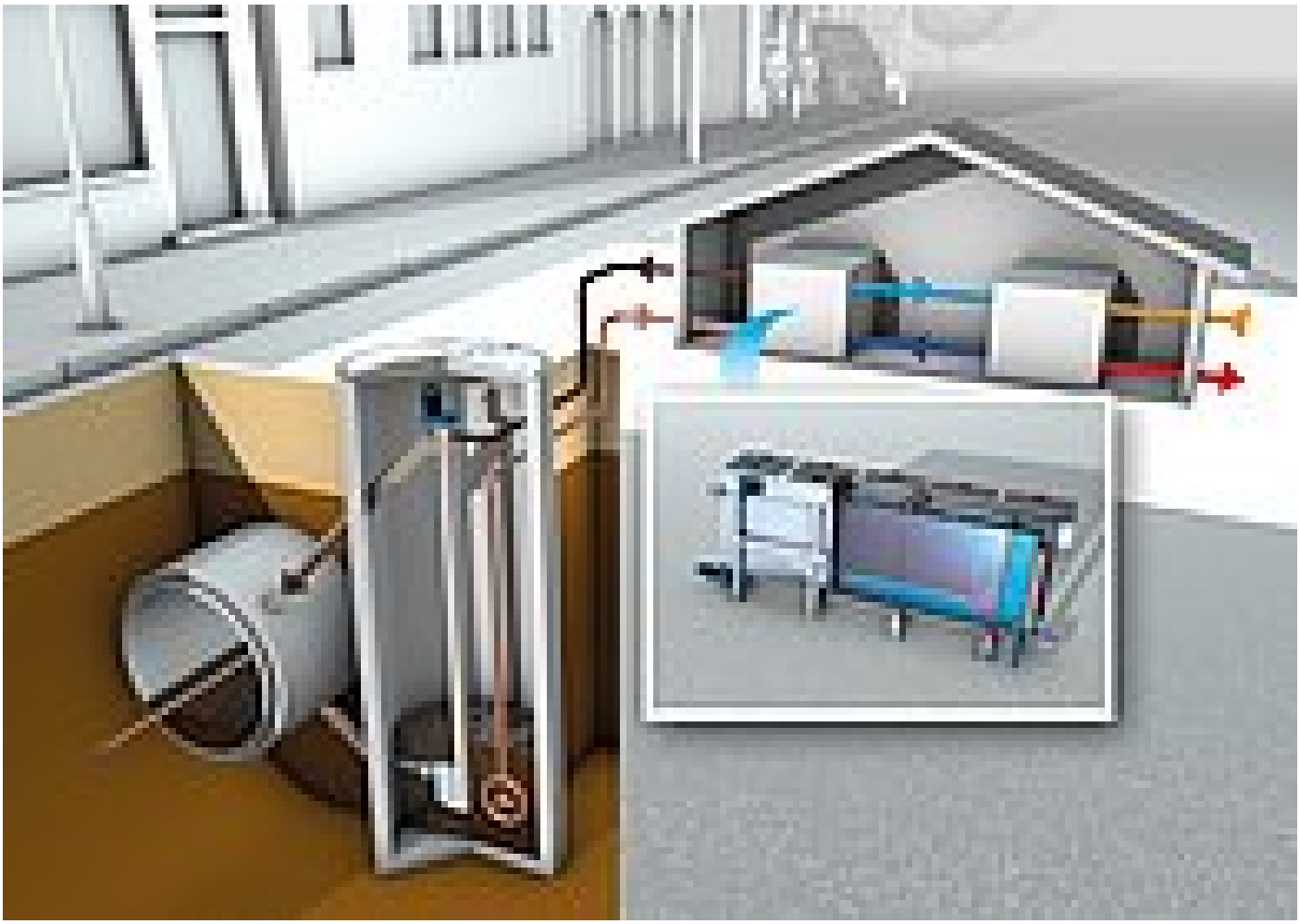
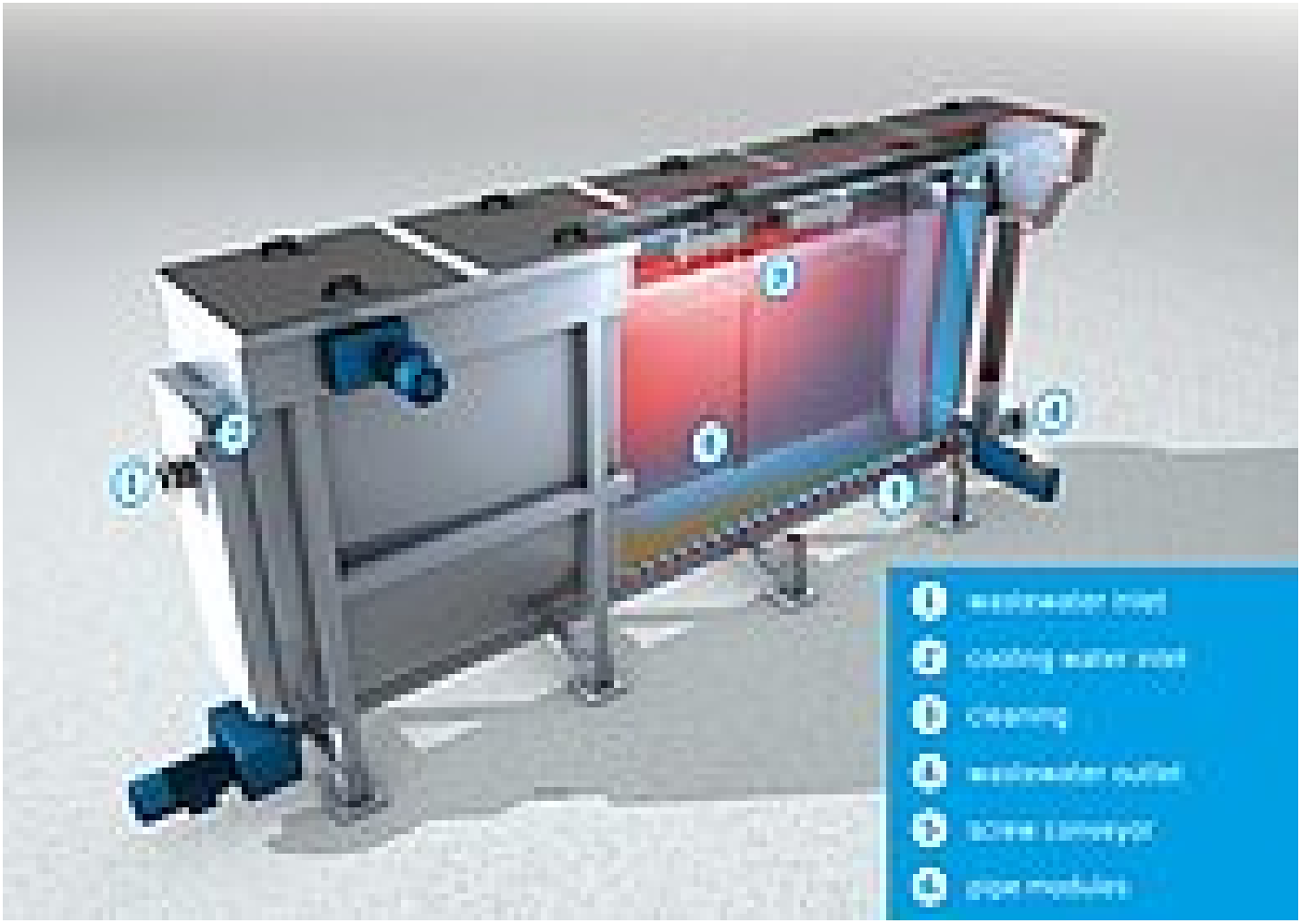
Heating without fuel with HUBER ThermWin: cold local heating network in Schallstadt (Baden-Württemberg)

The energy turnaround has already been under discussion for several years. The events on the energy market in 2022 at the latest have now made it very clear to the public that there is a very great need for reorientation on the “heat market”. The discussions about the right fuel are in full swing. HUBER SE has a solution that does not require any fuel at all: it is based on exploiting the energetic potential of wastewater using the HUBER ThermWin system.



Design sketch - functional principle of the HUBER ThermWin solution

HUBER Wastewater Heat Exchanger RoWin unit



Design sketch of a HUBER Wastewater Heat Exchanger RoWin

Photos of the Schallstadt project for energy from wastewater

Energy from wastewater replaces renewable and fossil fuels

In Schallstadt in Baden-Württemberg (Breisgau-Hochschwarzwald district), the developer and operator of the local heating network, Energiedienst AG from Rheinfelden, found ideal conditions. In the Weiermatten development area, 200 flats, houses and a new town hall were built. Due to the proximity to an existing sewer in Schallstadt-Weiermatten, the energetic potential of the wastewater can be used to operate the cold local heating network. This means that no fuels are used there, neither regenerative (such as wood chips or wood pellets) nor fossil fuels (such as coal, oil and gas).

HUBER ThermWin: clean energy from wastewater

Decoupling from movements in the market for these fuels has thus become a reality. The fixed parameter is the thermal energy in wastewater: a permanently available resource that can be converted into clean energy using the HUBER ThermWin system and downstream heat pumps.

The system in Schallstadt is divided into the local heating network itself and the upstream solutions for generating or storing the energy supplied to the network. A predefined amount of wastewater is taken from the sewer and coarsely pre-screened. This is done in Schallstadt with a HUBER Pumping Stations Screen ROTAMAT® RoK4. This is designed as an underground version and is therefore “invisible”. Only a manhole cover for access marks the point where the wastewater is prepared for use by the HUBER Heat Exchanger RoWin units.

Feed pumps convey the energy-rich wastewater, which has temperatures between 12 and 20° C all year round, to the heat exchangers. Energiedienst AG has set up an energy centre in the basement of the town hall. Two HUBER Heat Exchanger RoWin transfer the energy of the wastewater via tube bundles to the circulating water. In this way, the energy is fed to a 500 m³ buffer tank.

Constant heat transfer thanks to innovative self-cleaning system

An innovative and unique self-cleaning mechanism of the heat exchangers ensures constant heat transfer. Cleaning operations on the HUBER Heat Exchanger RoWin units are automated – neither operating personnel nor other cleaning tools or agents are required. The concrete buffer tank was delivered in segments that were assembled within one week, and the site was prepared to the extent that it can be used as a car park.

“Power-to-heat”: converting electrical energy into heat

The buffer storage is designed in such a way that in future additional heat can be supplied via already existing interfaces or a sector coupling of the electricity and heat sectors can be carried out. The name of this technological functional principle is “power-to-heat”:

surplus electrical energy can thus be converted into heat.

Zero emissions: heat pumps cover the entire heat demand in Schallstadt

In Schallstadt, the heat pumps are operated as a monovalent heating system, because the energy extracted from the wastewater is sufficient to supply the entire area described with heat. This means: no fuel storage, little technology in the boiler room, no chimneys. If the heat and wastewater pumps as well as the heat exchangers are operated with “green” electricity, this means in concrete terms: zero climate-damaging emissions.

Heating without fuel: energy optimisation with HUBER ThermWin

”Heating without fuel” is therefore not just an empty promise – it is reality. HUBER has successfully implemented its RoWin heat exchanger for wastewater in combination with intelligent solutions for pre-screening wastewater, such as the HUBER Pumping Stations Screen ROTAMAT® RoK4, in a wide variety of projects since 2010.

The HUBER ThermWin system is an important component in meeting the challenges of heat supply and energy optimisation. Companies with foresight started planning and implementing projects like the one in Schallstadt at an early stage. At the time of the initial planning, the energy turnaround was more of a short- to medium-term goal – now it has become a necessity.

Related Solutions:

- HUBER Solution for Heat Recovery from Sewers (ThermWin)

Related Products:

- HUBER Heat Exchanger RoWin
- HUBER Pumping Stations Screen ROTAMAT® RoK4

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