150 YEARS 1872-2022

HUBER TECHNOLOGY
WASTE WATER Solutions

Heating and cooling with wastewater

Recovery of thermal energy from municipal and industrial wastewater

More information, downloads and current news

www.huber.de

Heating and cooling with wastewater

Right below the ground, in sewers, there is a hidden and seldom used source of energy: domestic, municipal wastewater with a temperature of at least 10 to 15 °C all year round. At the point of discharge to the sewer network the wastewater temperature can even be > 20 °C. Therefore and as wastewater is an energy source that is available at any time, it is an ideal energy source for heating and cooling buildings or industrial processes.

High coefficients of performance can be achieved with commercial heat pumps combined with the supply temperature provided by a panel heating, such as a floor heating (≤ 35 °C) or concrete core activation (≤ 30 °C). The electric power required is therefore only about 20 – 25% of the total power so that precious primary energy can be saved.

The HUBER Heat Exchanger RoWin has especially been developed to make available the enormous energy potentials hidden in wastewater or other difficult media.
Due to its low temperature of approximately 20° during summer wastewater is also an ideal heat sink. Cooling of buildings and processes can frequently be achieved with the “free cooling” principle, i.e. without the use of a heat pump. This saves an additional energy consumer and provides for maximum efficiency and cost-effectiveness of plants.

HUBER ThermWin system for the recovery of energy from wastewater.

HUBER ThermWin System

The utilisation of energy from wastewater is accomplished with the HUBER ThermWin system. In the first step, a portion of the raw sewage flows via an intake structure from the sewer into the HUBER Pumping Stations Screen ROTAMAT® RoK4 that retains coarse solids. The solids retained by the screen are transported vertically upwards and returned to the sewer system. The screened wastewater is lifted by a pump installed in the inlet structure and flows by gravity through the RoWin heat exchanger installed above ground. This creates continuously stable hydraulic conditions and ensures a controlled heat transfer. In the HUBER RoWin Heat Exchanger the heat energy is transferred to a cooling medium (normally water) which transports the energy to a heat pump. The cooled wastewater flows back to the sewer taking along the screenings separated by the HUBER Pumping Stations Screen ROTAMAT® RoK4.

HUBER Pumping Stations Screen ROTAMAT® RoK4

The HUBER Pumping Stations Screen ROTAMAT® RoK4 installed in the intake structure ensures optimal retention of the solids contained in the raw sewage due to its two-dimensional perforated plate design. The vertical installation of the screen requires only a minimum of space. The retained solids are transported fully automatically and returned to the sewer, generating a closed cycle of solids circulation. The screened wastewater in the pumping station containing the usable energy potential is fed directly to the HUBER Heat Exchanger RoWin.

HUBER Heat Exchanger RoWin

The innovative HUBER Heat Exchanger RoWin consists of a welded stainless steel construction in which horizontal pipe modules are arranged in parallel. The pipe modules are made of stainless steel to achieve maximum heat transfer efficiency. The heat exchanger is especially designed for wastewater as heat source and for difficult-to-process media. Only coarse pre-screening of the raw sewage is required.

Due to the specific chemical-biological properties of wastewater a biofilm is developed over time on the heat transfer surfaces that significantly impairs heat transfer. An innovative system for preventive, fully automatic cleaning of the heat transfer surfaces therefore is applied to effectively and completely prevent the loss of heat transfer capacity and ensure the maximum capacity is permanently maintained.

Sediments and solids settling on the tank floor are removed by a screw conveyor and returned to the sewer along with the cooled wastewater.

Wastewater pre-screening in the intake structure with a HUBER Pumping Stations Screen ROTAMAT® RoK4.

Municipal wastewater; 2x RoWin size 8; heat extraction capacity 560 kW heating / 1,000 kW cooling.

Case Studies

Hotels und apartments.

Swimming pools.

Hospitals.

Breweries.

Wastewater treatment plants.

Public institutions.

HUBER SE
Industriepark Erasbach A1 | 92334 Berching
Phone: +49 8462201-0 | info@huber.de
www.huber.de

Subject to technical modification | 0,15 / 10 – 6.2019 – 4.2012