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Three HUBER projects for wastewater heat recovery in Switzerland

With each of the following projects our customers substantially contribute to achieving CO₂ reduction goals.



Two RoWin Heat Exchanger size 8 installed in the second basement of the Wintower building at Winterthur

Utilisation of heat from wastewater for the Wintower high-rise building at Winterthur

22.000 m² is about the size of three football fields but is also the floor space of the 28 storeys of the Wintower in Winterthur, Switzerland. It is a real heating technology challenge to cool such a building in summer (= additional benefit) and heat it in cold winter months. About 600 kW heating energy is needed in winter. The HUBER ThermWin® system was installed and successfully put into operation at the beginning of this year.

An amount of approximately 50 l/s wastewater is taken from the sewer and pre-treated in a ROTAMAT® Pumping Stations Screen RoK4, size 4,700/3. Two submersible pumps deliver the water to the two RoWin Heat Exchangers size 8 installed in the cellar of the Wintower. Heat transfer to the cooling medium takes place inside the heat exchangers. The medium is heated and supplies the heat pump with the necessary energy. About 600 kW are in this way provided for the heating system. The plant is also used for cooling in summer, extracting up to 600 kW from the building.

It is an ideal energy sink not only due to its far higher heat capacity but also due to its temperature of about 20 °C. All-year-round utilisation and high coefficients of performance of the heating/cooling machine guarantee high saving potentials so that investment costs pay off soon.

Project data Wintower:

Technical data:

- 2 RoWin Heat Exchanger units
- 1 HUBER Pumping Stations Screen RoK 4

Operating parameters:

- Load case heating:
 - Max. 480 kW extraction of heat from the wastewater
 - 585 kW heat input into the building
- Load case cooling:
 - 600 kW extraction of heat from the building
 - max. 840 kW heat input into the wastewater
- Wastewater volume: max. 50 l/s



Thermal spa Burgerbad (www.burgerbad.ch)

Utilisation of heat from wastewater in the thermal spa Burgerbad at Leukerbad

Burgerbad is the biggest alpine thermal spa in Europe. Located at 1,400 m above sea level, its 10 thermal baths are constantly fed from several natural springs that are 50 °C hot. The vitalising thermal water is rich in minerals and invites to relax all year round in the middle of an impressive Alpine scenery. The wastewater from the baths contains grease from suncreams, skin particles, hairs, sand, etc.; the constant flow of 8 l/s still has a temperature of 30 °C. In the future, this energy will be used to heat buildings instead of being discharged to the sewage treatment works. The flow to the sewer outside the building transports the 30 °C hot wastewater into a concrete channel where the two HUBER Heat Exchangers, type RoWin B (= tank version) are installed below ground surface level. The cooled wastewater can be discharged to the sewer.

Automatic cleaning of the exchanger surfaces of the HUBER RoWin Heat Exchanger ensures constant heat transfer. The secondary circuit of the two heat exchangers, coupled with a parallel plate exchanger for clean water, transfers the combined wastewater heat energy with a temperature of about 20 °C to the new heat pump plant for a heating capacity of > 1000 kW. Plant start-up will take place in autumn 2011, the old oil-fired boiler will be dismantled after plant start-up.

Project data Burgerbad:

Technical data:

- 2 RoWin B Heat Exchanger units (tank design)

Operating parameters:

- Load case heating:
 - Max. heat extraction from process water: 585 kW

- Heat input into the building: 780 kW
- Max. wastewater flow: 50 l/s

Utilisation of heat from wastewater in a wood processing industry

Can you imagine how much heat energy is hidden in a flow of 150 m³/h process-internal circulation water with a temperature between 50 °C and 58 °C, or how it is cooled by about 8 °C by the HUBER RoWin Heat Exchanger? About 1,200 kW of energy (cooling capacity) is available to heat the production halls and offices in a wood processing industry. The production plant operates 24 hours, its circulation water contains a lot of wood fibres and critical aggregates. Every type of heat exchanger tested before had the problem that its surface got almost completely blinded within a very short time. It turned out that only the HUBER RoWin Heat Exchanger with automatic surface cleaning and solids removal is able to ensure the reliable utilisation of waste heat. Basic tests over several weeks proved that the exchanger surfaces are perfectly cleaned every day and encrustation is reliably prevented. In summer, however, the circulation water sometimes reaches a temperature of up to 58 °C, which is a critical range that can have a negative impact on product quality.

It is therefore an obvious solution to utilise the HUBER RoWin Heat Exchangers in summer to cool the circulation water. This can be achieved by introducing the cooling water extracted from the nearby river to the secondary circuit of the same heat exchangers (= additional benefit). So, the huge waste heat potential can be used to heat buildings in winter and guarantee constant product quality in summer. Under economic aspects, there should be a strong incentive for the use of this system.

Project data wood processing industry:

Technical data:

- 2 RoWin Heat Exchanger units

Operating parameters:

- Load case heating:
 - Max. heat extraction from wastewater: 1000 kW
 - Heat input into the building: 1300 kW
 - Max. amount of process water: 42 l/s
- Load case cooling:
 - Heat extraction from process water: 940 kW
 - Max. heat input into the receiving water body: 940 kW
 - Max. amount of process water: 17 l/s

Other projects for wastewater heat utilisation in process

- Chemical production
- Potatoe processing industry
- Thermal spa
- Muncipal wastewater upstream and downstream of a WWTP
- Sea water
- Paper production
- Slaughterhouse wastewater

The HUBER ThermWin® system with the RoWin Heat Exchanger in a tank or as a submerged version for sewers offers new solutions for the recovery of heat from wastewater and for cooling media that have been impossible previously.

Related Products:

- [HUBER RoWin Echangeur de chaleur pour eaux usees](#)
- [Récupération d'énergie dans les eaux usées](#)

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