

Closing the last Energy “Leak”

The heat contained in wastewater is one of the last major untapped resources in the field of renewable energies, despite the fact that it may some day provide some 20% of the heating energy we need. This huge potential has been addressed by a Swiss engineering office, **Rabtherm AG**, which now supplies patented technology for generating energy from wastewater, used for heating or cooling buildings.



Heat exchangers are integrated into sewer pipes in order to extract heat from wastewater

The brainchild of Urs Studer, an expert in building technology, Rabtherm AG was established in Zurich, Switzerland, in March 2000. Although the concept was warmly welcomed in the energy technology market from the very beginning, Rabtherm's entry into this field of business was sluggish, especially with oil and gas prices still being very low at the time. This changed dramatically in 2007 as the price of oil started to soar.

The company employs eight members of staff, as well as sixteen freelancers.

All components are manufactured by licensees in Germany, Switzerland, Canada and South Korea.

The Rabtherm concept is both simple and ingenious: when wastewater is emitted from buildings, it has a temperature of around 25°C, and even in extremely cold winters, temperatures in the sewers seldom fall below 12°C to 15°C. This heat can be extracted using heat exchangers installed in the sewers - a very environmentally friendly type of energy recovery system indeed. Depending on the

system of electricity generation used to power the heat pump, the carbon footprint could be reduced by 30% to 85%.

What is quite remarkable is the fact that the total energy stored in the world's sewers exceeds the sum of the solar, wood and biomass energy potential. Wastewater is a permanently available, renewable energy source at a high temperature level that can be exploited in the very place where it originates - with the aid of heat exchangers installed locally. Rabtherm heat exchangers

can be implemented in existing sewers or integrated into new pipe elements.

The heat thus extracted from the wastewater can be further raised in temperature by means of special heat pumps and therefore put to good use in heating, drying, hot water generation and process water. Additionally, the energy can be transferred in the opposite direction, i.e. the wastewater can be employed as



a “heat sink” for cooling water or air conditioning applications.

Our interview partner, Managing Director Urs Studer, relates: *“Over and above our patented technology, we provide cus-*



A sewer pipe equipped with the Rabtherm Energy System



Pressure pipe heat exchanger

tomers with the initial analyses, location, potential and feasibility studies, and other profound advice. The advantages of our technology are obvious: it is economic and environmentally friendly, emits no particulate matter, reduces annual energy costs by 20% to 30%, is independent from fossil energy, and the return-on-investment is less than six years."

Rabtherm technology is primarily aimed at customers with a high demand for heating or cooling energy, such as in municipal buildings, schools, sport venues, swimming baths, industrial and commercial buildings, housing estates and so on. The company exports its product around the world, as Urs Studer points out: "We have a ninety-two-percent export rate - our single biggest market at this point is Germany. Other important export destina-

tions are the United States, China, Canada, France, Korea, the Netherlands, Austria and Great Britain. One of our current customers is Harvard University in Boston." Rabtherm will be one of the few companies to represent Switzerland at the 2010 World Expo in Shanghai.



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