

DISTRICT HEATING NETWORK “DREISPITZAREAL” IN KÖNIZ (BERN) - SWITZERLAND

Wärmeverbund Dreispitzareal in Köniz (Bern)



Fig 1: Areal view on the Dreispitzareal, Köniz.

Summary of the project

For many years, the “Dreispitzareal” in Köniz (Bern) has been used as a research lab by the Swiss Federal Research Institute Liebefeld. It has now been converted into a residential area including an open space park. For this residential complex built according to the Minergie® standard, a suitable heat supply concept has been realized. The heat is supplied by a district heating network with a central heat pump system using groundwater, so that 60 % of the heating demand is covered by renewable energies. The peak loads are covered by the existing gas burners of the research institute.

The project

An on-site assessment showed that the existing heating system of the Swiss Federal Research Institute is generously dimensioned and offers the possibility of additional installations and equipment. The Federal Office for Buildings and Logistics (BBL), which was in charge of the Swiss Federal Research Institute, indicated that the active use of groundwater for energy

” RESIDENTIAL COMPLEX SUPPLIED BY A DISTRICT HEATING SYSTEM USING GROUNDWATER AND HEAT PUMPS ”

production could potentially be of interest, in particular for the removal of excess heat from the air-conditioning units. Subsequently, the project concept was further elaborated and the groundwater prospection and a pump test have been carried out.

The tests revealed that an economically viable use of groundwater could only be achieved by a joint approach. Given this situation an agreement was reached with the BBL with the following content:

- Thermal energy for space heating and domestic hot water (DHW) of the Dreispitz residential development shall be supplied from the Federal Research Institute



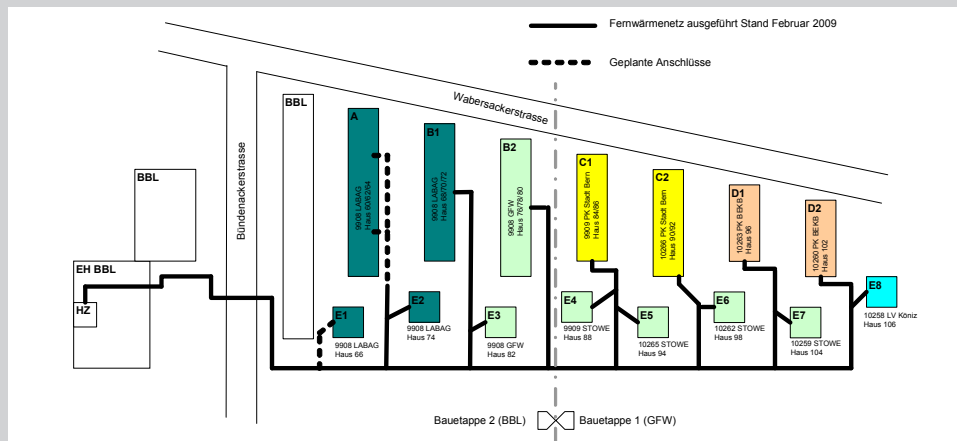


Fig 2: Overview of the Dreispitzareal in Köniz, Bern.

- The cost for the construction of the groundwater borehole and energy supply facility shall be carried by both parties.
- Peak loads of the residential development shall be covered by the existing multi-boiler system.

In 2006, the construction of the residential development began. In autumn 2007, the basic development of the plant including the underground district heating system was completed.

Simultaneously the construction work on the site development has been started and the installation of the first chiller/heat pump unit was carried out at the Federal Research Institute.

For the first stage of the construction, the supply of space heating and domestic hot water (DHW) has been performed successfully.

For the heat supply of the second stage of the residential development Dreispitz, an additional heat pump financed by Energie, Wasser Bern is currently being installed and hydraulically integrated in the main district heating system.

Contact information

Martin Bretscher, Energie Wasser Bern

+41 31 321 92 91

martin.bretscher@ewb.ch

FACTS ABOUT THIS PROJECT

Building type: Residence apartment buildings

Heated floor area [m²]: 34 000 m²

Installed heat capacity [kW]: 1 100 kW

Heat demand: 1 020 MWh/a (high temperatures), 680 MWh/a (low temperatures)

Heat source: Ground water and heat pumps, natural gas (for peak loads)

Investment cost: 1 430 000 CHF

Participating countries: Switzerland

Time frame: 2006-2007

Project organisation:

Project leader: Energie Wasser Bern

Project partners:

- Consumers: GWF Wohnbau AG, Bern
- Consumers: Labag Landhaus Bau AG, Köniz
- Consumers: Personalvorsorgekasse der Stadt Bern
- Consumers: Liegenschaftsverwaltung Köniz
- Consumers: Pensionskasse BEKB
- Consumers: STOWE Wabersackerstrasse (Stockwerkeigentümer)
- Contractor: Energie Wasser Bern
- Planner: Energie Wasser Bern
- Planner: Eicher+Pauli, Haustechnik
- Planner: Kellerhals + Haefeli AG

Link to web page or report:

<https://www.ewb.ch/nachhaltigkeit/erfolgsgeschichten/dreispietzareal-wiesland-liebefeld> (in German)



IEA Technology Collaboration Programme on Heat Pumping Technologies (HPT TCP)