

THERMAL NETWORK OF THE JARDINS DE LA PÂLA, BULLE - SWITZERLAND

Réseau thermique des Jardins de la Pâla, Bulle



Promenez-vous sur les bâtiments avec votre sou

Fig 1: 3D view of the supply area of the thermal network in Bulle.

Summary of the project

The neighborhood of Jardins de la Pâla in Bulle currently consists of 18 buildings, primarily newly constructed residential, office and commercial buildings. The supply of space heating, domestic hot water and passive cooling is provided by an anergy network.

The concept consists of pumping groundwater (approx. 8 – 12 °C) from a depth of 50 to 65 m and supplying a low temperature network (approx. 8 – 9 °C) via a heat exchanger. The thermal energy is transported via the low temperature network to the buildings, where heat pumps generate the heat required for space heating (35 - 45 °C) and domestic hot water (60°C). In addition, decentralised heat exchangers provide passive cooling of the buildings.

Detailed description of the project

The conceptual decision to develop an anergy network was determined by the fact that the existing geothermal resource had to be used as efficiently as possible. Since not all buildings have the same heat requirements, an energy supply via a low temperature network was

” GROUNDWATER USE FOR COOLING AND HEATING BUILDINGS IN A NEIGHBOURHOOD IN BULLE ”

preferred. From a practical point of view, this decentralised solution offers greater flexibility in the provision of services. In addition, a low temperature network enables the use of groundwater as a source of passive cooling, which is essential for new buildings. Therefore, the solution to exploit the geothermal resource through an anergy network and decentralised heat pumps was selected.

The sizing of the plant was carried out by EKZ based on the calculated specific energy, power and temperature requirements of the individual buildings. EKZ then developed an energy supply concept that meets the overall requirements. The final decision to implement this project was made after the entire drilling, water exploration and pumping phase. A detailed analysis of the geothermal resource is essential and determines whether such a plant can be realized.



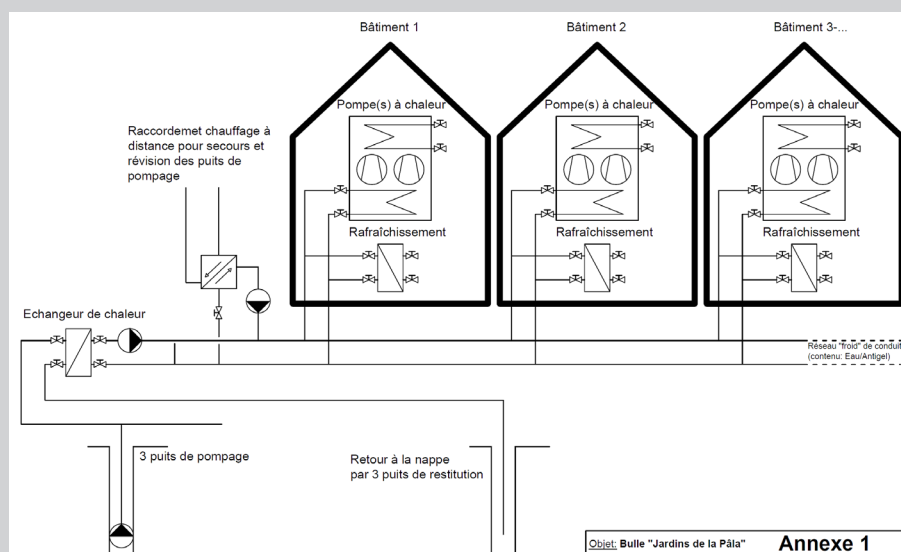


Fig 2: Schematic representation of the system.

The installation in Bulle consists of a heat source, represented by 3 pump wells and 3 return wells, located approx. 100 m below the pumping station in the direction of groundwater stream. Thermal energy is extracted from the groundwater via heat exchangers and transferred to the buildings via the low temperature network (glycol water circuit, 8 °C – 12 °C). The heat pumps, located in every building generate the heat for space heating and domestic hot water that is needed for the building's needs. This system has the great advantage that the energy network can be used as a passive cooling source.

The entire plant is continuously monitored via a remote monitoring system. This allows the optimization of the operating parameters, in particular the temperature of the energy network and the pump wells. Currently the facility is not operating at full capacity, as not all buildings are connected yet. Although the heat demand per building is higher than originally estimated, the plant operates very reliably and the measured overall performance meets the expectations.

Contact information

Patrick Sudan, EKZ Contracting SA
 ☎ +41 58 359 79 00
 ✉ patrick.sudan@ekz.ch

FACTS ABOUT THIS PROJECT

Building type: Residential buildings, commercial buildings and industry

Heated floor area [m²]: 65 000 m²

Installed heat capacity [kW]: 2 000 kW

Heat source: Ground water water and decentralized heat pumps

Investment cost: 6 millions CHF

Participating countries: Switzerland

Time frame: 2012-2020

Project organisation:

Project leader: EKZ Contracting SA

Project partners:

- Planner: Energie Concept SA, Bulle
- Planner: SignaTerre SA, Genève
- Planner: BESM SA, Granges-Marnand
- Coordination: Urban Project SA, Vernier
- Geology: Alpgeo Sàrl, Sierre
- Drilling: Gebr. Mengis AG, Luzern

Link to web page or report:
<http://www.jardins-pala.ch/> (in French)



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