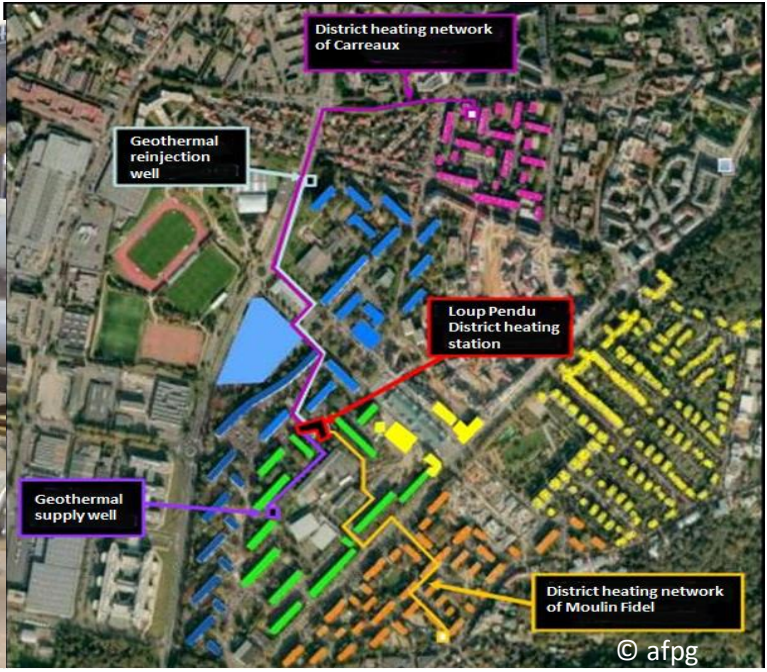


Plessis-Robinson - Environmentally friendly heating with 2 Unitop 22 BX

Client

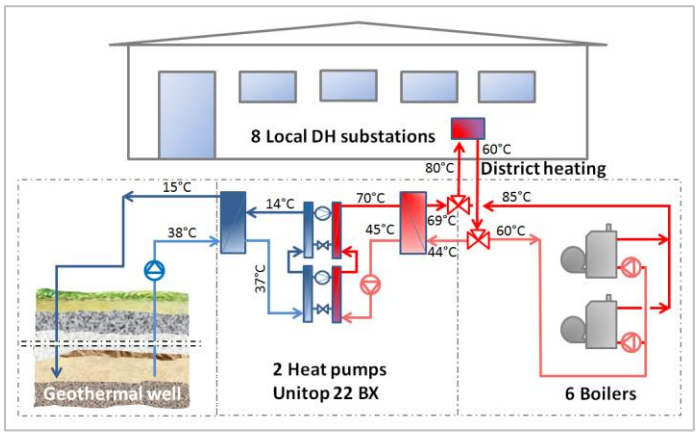
Dalkia
FR-59350 Saint-André/ France

Plant location

Dalkia
FR-92350 Plessis-Robinson / France

Exploiting the Albian aquifer

In the Ile-de-France area, the Dogger geothermal aquifer at a depth of approx. 1800m is the most exploited, providing water temperatures up to 85°C. Less common is tapping of the Albian and Neocomian aquifers at a depth of 800m to 950m, providing water temperatures of 30°C to 40°C. As this water reservoir is also considered a possible source of potable water, precautions to preserve its quality are numerous, especially regarding the return well.



The Loup Pendu - district heating station of Plessis-Robinson draws the energy needed through two closed loop wells from the Neocomian aquifer at a depth of 850m. The supply well is located next to the machine room. Hydro-cyclonic filters remove sand and other solid matter with very little head loss. The reinjection well is located 900m downstream of the supply well.

The two centrifugal heat pumps are connected in series to the ground water heat exchanger of 5MW capacity. Flow rate of the extracted water is 200m^3/h at a temperature of 38 °C. It is reinjected to the aquifer again at 15°C. In an area of less than one square kilometre, a total of 3500 apartments are connected to the district heating network. 60% of the heating energy required is provided by heat pump operation. The six boilers provide the additional capacity required during the cold season. The heating energy produced by the heat pumps is fed into the district heating network with 70°C via a plate heat exchanger.

2 Unitop 22 BX heat pumps from Friotherm

The Unitop 22 BX heat pumps consist of heavy duty industrial type centrifugal compressors at their heart. Together with the heat exchangers and the control system the units are especially adapted to comply to 100% with the client requirements regarding flexibility of operation, high efficiency and reliability. The service friendly design enables limitation of service and maintenance work to a minimum while the units are operational for decades.

Main technical data

Operating Seasons:	Autumn – Winter - Spring
Heating capacity:	6'830 kW
Cooling Capacity:	5'550 kW
Hot water in/out:	45 °C / 70 °C
Cold water in/out:	38 °C / 15 °C
COP:	4.75

Friotherm AG
Langfeldstrasse 104
CH-8500 Frauenfeld
Switzerland

Tel. +41 (0)52 724 77 00
E-Mail info@friotherm.com
Internet www.friotherm.com