

Energy innovation
for sustainable cities.

Gēo
mētropole

challenge

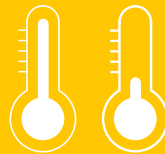
A district heating network is a system that produces heat from a central location via one or more production units, generally using different energy sources. It is a primary means of supplying local and renewable energy. Underground pipes are used to deliver heat to customers in the form of hot water or steam.

The network acts as a large central heating system for cities and districts. Heating network specialist CPCU and cooling network expert CLIMESPACE have joined forces to provide an innovative solution as part of a campaign to promote more sustainable cities. Together, the two have built and now operate a remarkable geothermal plant in the 19th arrondissement of Paris. The new plant is designed to meet the heating and cooling needs of the new Paris Nord-Est (PNE) eco-neighborhood through the use of natural energy.

HEATING AND COOLING SUSTAINABLE CITIES

As part of the PNE urban renovation project for the 19th arrondissement and to meet the requirements of this modern district, CPCU and CLIMESPACE have developed a solution able to draw on the geothermal energy stored in the Dogger aquifer — which lies below Île-de-France at a depth of around 1,600 meters—involving the use of a combined heating and cooling plant.

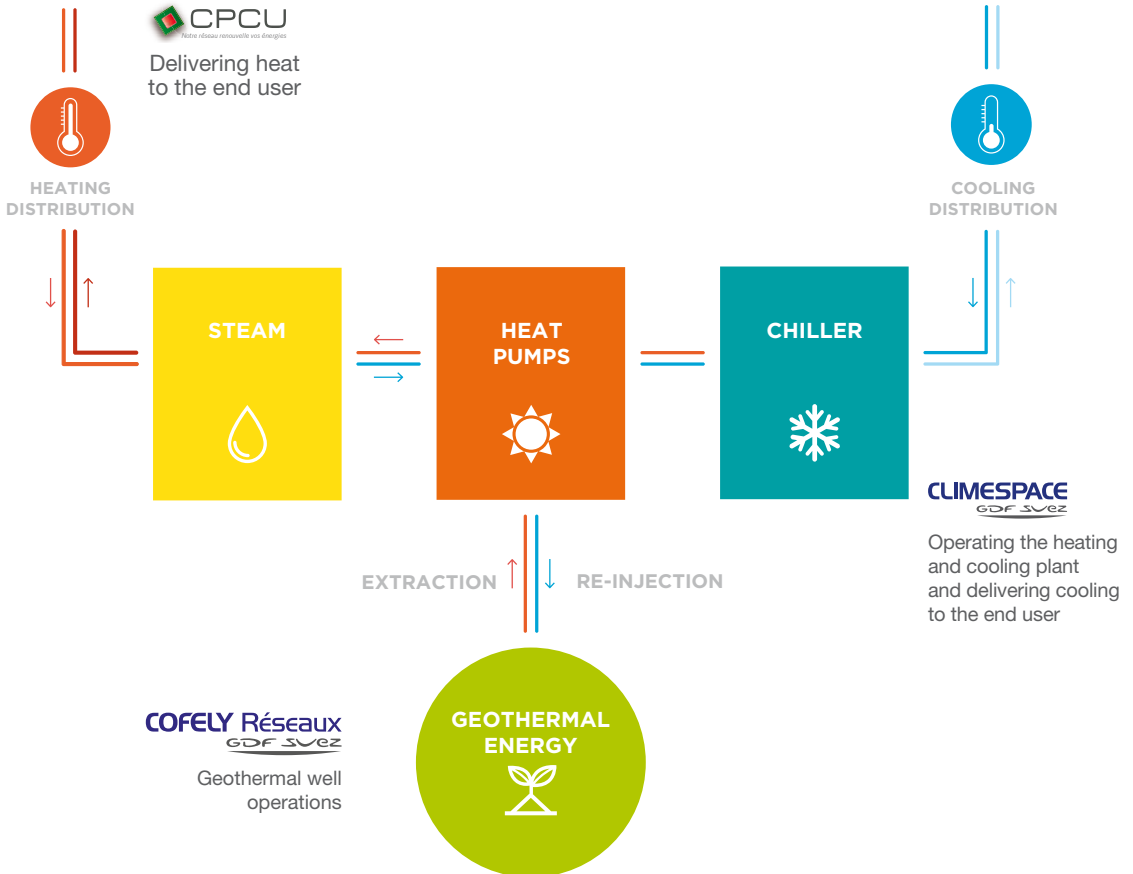
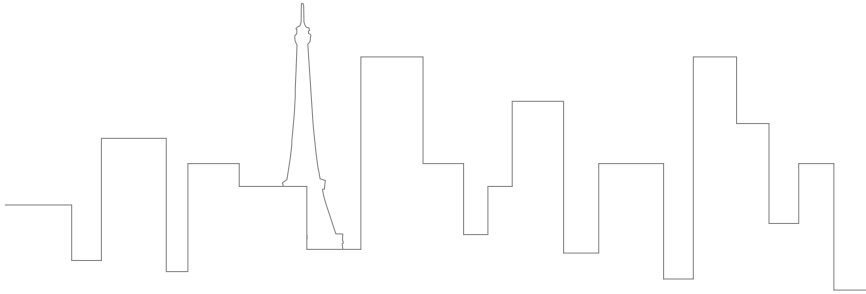
The plant draws geothermal heat from the aquifer at a depth of 1,800 meters and a temperature of 55°C. The geothermal energy is recovered using heat pumps that are able to simultaneously produce renewable thermal energy for both heating and cooling. Where necessary, production is supplemented by the CPCU metropolitan heating network.



+ 100 MW
of heating and cooling power

HOW DOES IT WORK ?

Paris Nord-Est Geothermal Network



innovation

«In November 2012, the project received a 'Geothermal Days' award for innovation based on its original solution, combining efficiency and convertibility.»

Christian Boissavy

President, French Association of Geothermal Professionals

OPTIMAL URBAN INTEGRATION

The plant comprises three levels below ground and is hidden from view thanks to a successful design ensuring a minimal urban footprint. The heat sourced from deep below ground and supplied through the network provides a local source of renewable energy that is pollutant-free and does not drain natural resources, since the hot water withdrawn is injected back into the aquifer after use.

This «geothermal doublet» technology involves drilling two wells: one to extract the water, the other to re-inject it. Ile-de-France is one of the French regions most conducive to geothermal installations based on the characteristics of its subsoil, with the Dogger aquifer providing warm groundwater at a depth of 1,600-1,700 meters.

Delivering this supply of geothermal energy through a district heating network is particularly effective for a number of reasons, chief among which is the ability to production methods to distribute this locally sourced renewable energy cost-effectively in a densely populated urban area to enhance energy and environmental efficiency. Depending on the season and on demand, combined heating and cooling production can use the heat released by the refrigeration process in the heating system in winter and transfer it to the Dogger aquifer in summer. This goal is achieved by the Paris Nord-Est heating and cooling plant.



65%

of recovered, renewable and local energy



solution

“The North-East Paris project – which called on CLIMESPACE’s full range of expertise – combines heating and cooling, and recovers energy from local sources as well as from the district systems themselves, offering a demonstrator that represents an innovative, unparalleled solution to the challenges of the energy transition.

For CLIMESPACE, the project opens up prospects for growth in urban cooling systems in a new area of the capital, with a future connection to the Philharmonic plant.”

Laurence Poirier-Dietz
CEO of Climespace

Recovering geothermal energy through district heating networks provides a number of benefits. The underground plant blends seamlessly into the surrounding landscape to prevent noise pollution and ensure no unwanted eyesore. The resulting alternative energy offers a clean solution in the shape of a renewable resource that is readily available and locally sourced. The ability to use this clean, replenishable resource provides a valid solution to the challenges faced by new urban developments and the social concerns of local communities.

MEETING AMBITIOUS GOALS FOR ENERGY AND THE ENVIRONMENT

CPCU and CLIMESPACE have pooled their expertise as part of the campaign to redevelop the Paris Nord-Est district and help to shape the city of tomorrow. Relevant solutions must be compact, combined and cost-effective, but also sustainable from an energy standpoint, which means rethinking flows and favoring local resources.

Through the construction of a geothermal well and combined heating and cooling plant, CPCU and CLIMESPACE have delivered a response tailored to the need to protect resources and harness locally sourced energy.



17,500

metric tons of CO₂ avoided annually,
equivalent to the CO₂ emissions
of 10,000 cars per year.

Paris Nord-Est, called Géométropole: an outstanding urban initiative for the city of Paris

SUPPORTING AND ENHANCING CITY PLANNING INITIATIVES

CPCU and CLIMESPACE have delivered a highly effective and tailored solution to supply heating and cooling to an innovative, pioneering region known for its attractive public spaces, urban diversity and impressive architecture.

Their original, practical initiative was enough to capture the imagination of stakeholders such as the French financial organization Caisse des Dépôts et des Consignations, the Île-de-France regional council, and the French Environment and Energy Management Agency through its «heating fund».

The move to build the plant is part of the extensive urban renewal scheme launched by the city of Paris, known as the Grand Projet de Renouvellement Urbain (GPRU). The project in question spans 200 hectares criss-crossed by four major thoroughfares and involves the creation of a new business district, housing, stores and public facilities, all with a focus on energy efficiency. The new RER Rosa Parks commuter rail station

and T3 tramline will provide an intermodal hub to ensure easier access.

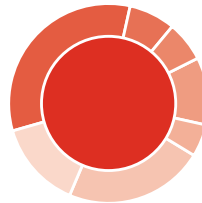
The heating and cooling plant will ensure minimal impact on the environment and the surrounding urban landscape while responding to the energy challenges faced by the cities of tomorrow. The new eco-neighborhood that it serves, offers a far-reaching example of Paris commitment to sustainable development.

France's Climate Plan aims to promote renewable energy and policies of more environmentally friendly housing and means of transport. The geothermal plant will supply the Claude Bernard joint development zone and the MacDonald warehouses (representing 265,000 square meters of housing, offices, stores and activity premises), along with education and sports facilities, childcare services, a rest home and cultural attractions, including the Philharmonie de Paris, France's largest concert hall.



1,100,000 sq m

of new construction in the Paris Nord-Est district.



12,000

homes supplied with geothermal heating and cooling

expertise

«For over 30 years, CPCU has been pursuing a network development policy in keeping with its mission as a public utility: supplying the city of Paris with clean, reliable and affordable energy.»

Marc BARRIER

Managing Director of CPCU

A FORWARD-LOOKING PARTNERSHIP BETWEEN THREE FRONTLINE STAKEHOLDERS

CPCU, CLIMESPACE and Caisse des Dépôts et Consignations have established a long-term partnership with GéoMétropole by combining their technical expertise and experience:

- CPCU offers a new source of renewable energy,
- CLIMESPACE is developing a new chilled-water network,
- Caisse des Dépôts et Consignations is supporting an innovative and ambitious local initiative to produce renewable energy.

The partnership is one of the long-term strategic initiatives adopted by Cofely Réseaux through its subsidiaries CPCU and CLIMESPACE.

Caisse des Dépôts et Consignations is committed to supporting the energy transition by backing local projects designed to produce renewable energy.

contacts

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