Climespace, Centrale Canada

Paris, France

Seine river quayside with the entrance door to the 25 meters deep underground cooling plant, Centrale Canada.

One cool customer

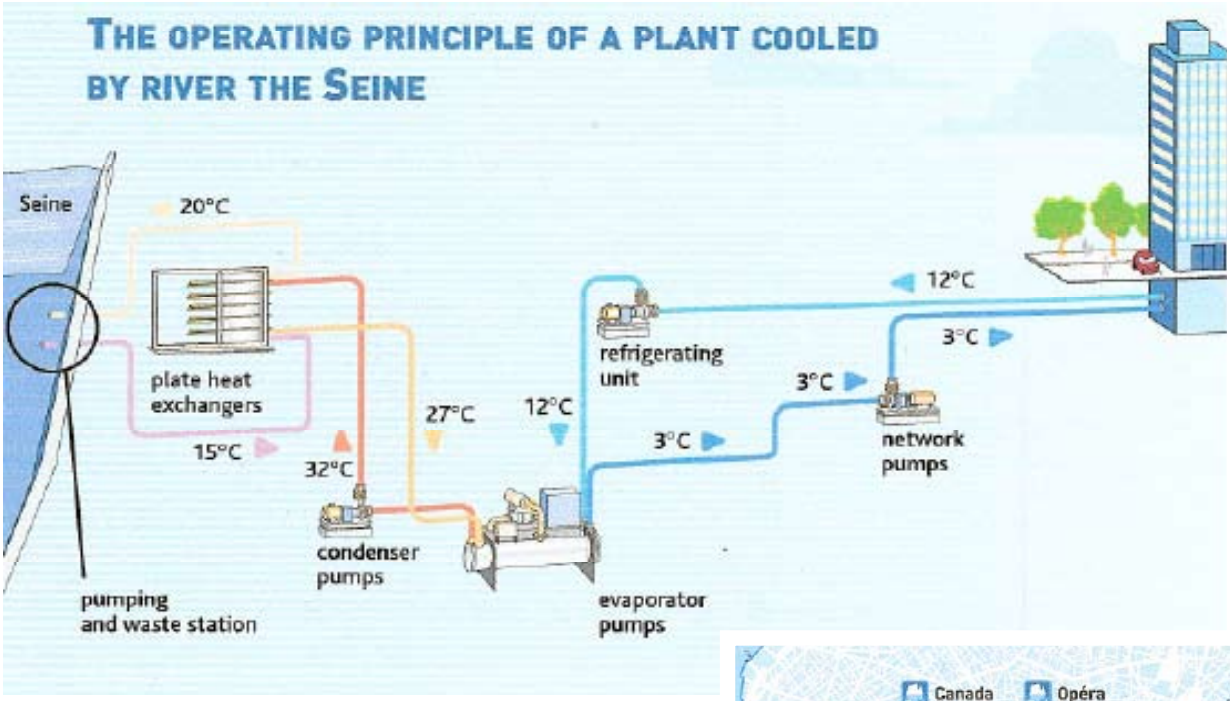
Climespace specializes in heating, ventilation and air conditioning (HVAC) in central Paris. With an underground piping network and access to chilled water from six plants, Climespace's system uses both air and naturally flowing water to cool the system water. In addition to the cooling towers with adsorption chillers that remove heat from the water, cool water from the Seine River is also used. With 57 km of chilled-water pipes in its network, Climespace holds the record for system length.

Hidden plant

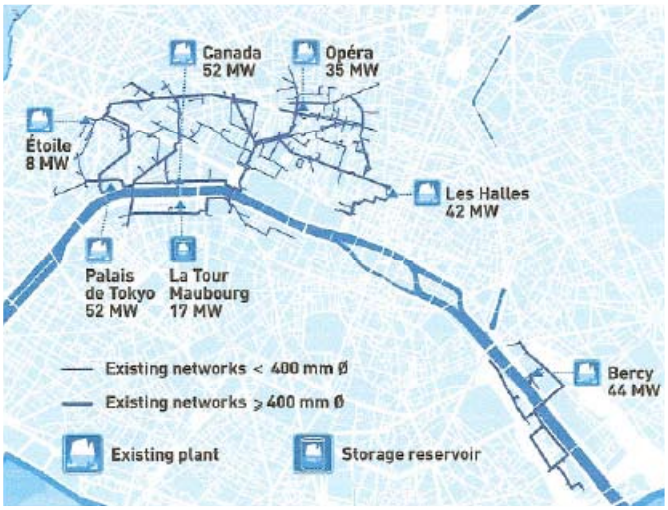
Operational since 2002, the Centrale Canada plant is located on the bank of the Seine on five levels, extending to a depth of 25 meters. It has a refrigerating capacity of 52 MW and is completely underground - a big advantage given its urban location. The cooling system uses Seine river water, thus avoiding the consumption of any drinking water. It does not generate plumes of steam and the technology carries no risks of spreading bacterial contamination to buildings.

FACTS AND FIGURES

Customer:	Climespace, Centrale Canada
Location:	Paris, France
Application:	Filtration of Seine river water
Filter model:	BSS 250/0.5W
Filtration:	0.5 mm
Operating flow:	500 m^3/h
Design pressure:	150 psig
Operating pressure:	40 psig
Serial Nr:	2543



Schematic sketch of a district cooling plant cooled by Seine river water.



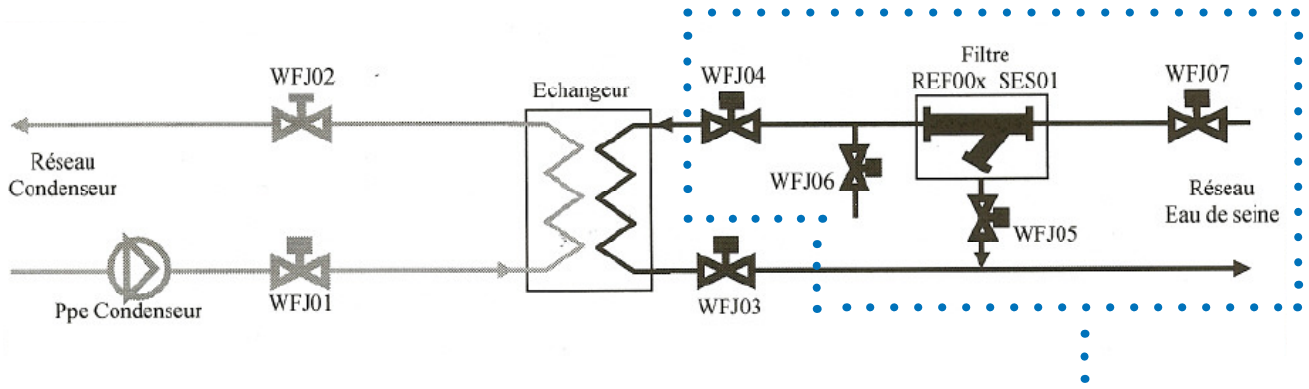
The district cooling network of Paris.

Malfunctioning Y-strainer

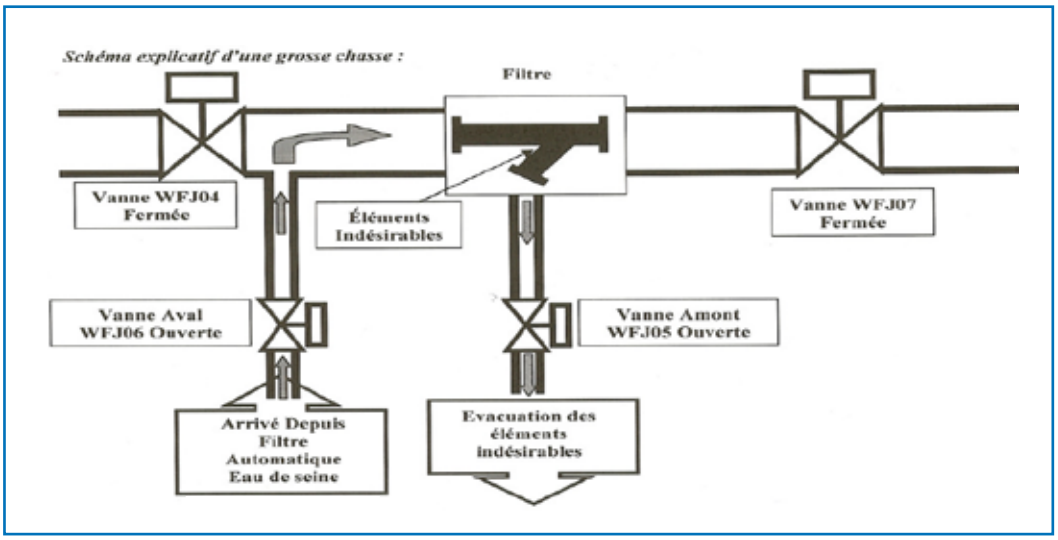
Until this year, the plant contained five PHEs with 397 plates each. The PHEs werequipped with automatic backwash filters (DOUCET Jet Filter 3220, DN 600), to prevent debris in river water from clogging them. The design of the DOUCET Jet Filters requires an external flushing flow. To deliver clean flushing water to the DOUCET Jet Filters, a classic manual Y-strainer was installed, which often became clogged and had to be manually cleaned. This in turn interfered with the backwashing of the DOUCET filters, clogging them as well. The flow rate of Seine water across the PHE dropped, and the cooling capacity of the system deteriorated. Intervention was then required to unclog the intakes that served the PHEs. Climespace assigned workers to open and clean the manual filters twice a week. It was a time-consuming, stop-gap solution - far from ideal.

Finding a long term solution

In September 2006 Drakar Fluid Technologies met Climespace engineers and introduced them to Bernoulli filtration technology. Climespace decided to try out a BSS 250/0.5W filter in place of the existing Y-strainer. The Bernoulli filter was delivered in May 2007 and Climespace began using it a few weeks later.



Heat exchangers with protecting cooling water filters. The Y-strainer has been replaced with a Bernoulli BSS 250.



Getting results

After nine months of continuous operation with no manual cleaning, the Bernoulli filter was opened and found to be 90 percent clean and nearly free of debris. Limited parts of the filter were discolored due to pollution, but because of nearby boat traffic this could not be avoided. Maintenance was reduced, performance improved, and personnel costs cut. A second Climespace plant is now being fitted with a Bernoulli filter - this time a plant that delivers water chilled using a cooling tower. Heat exchangers are protected by cooling water filters. The Y-strainer has been replaced with a Bernoulli BSS 250.

Bernoulli System