Eco Quarter Capazur, Nice, France

New built eco-district in Roquebrune Cap Martin collective heat pumps on waste heat for space heating and special high temperature collective heat pumps for domestic hot water, boosting the low temperature source.

Key facts

Building

Location	Nice, Franc
Construction	2012
Heat distribution	in building
Heated area	20.000 m² living
Level of insulation	good

Heat pump and source

Number of heat pumps
8 x 12kW HP for DHW
5 x HP for heating/cooling

Operation mode	monoenergetic
Heat source	Waste heat for DHW HP
	Waste heat for space heating HP

Brand and type:

- 8 HT Heat Pumps from Heliopac GEOPAC
- 5 Heat Pumps (CIAT Dynaciat®)

Refrigerant	Heliopac	R134a
	CIAT	R410A
Sound level	55 dB	

Heating system

Heat demand	
Heating temperature	45 °C

Domestic hot water

Type of system	collective
Max. Temperature	65°C
Circulation system: two pipe with substations	
Legionella measures	thermal
Storage size	17,000 litres
Number of storage tanks	6

Other information

Electric energy Consumption year	40 kWhep/m².yr
Investments costs	1 m€
PV installation	

More information

Promotion video

The eco-district "Capazur" brings together 7 buildings certified Low Consumption Building, with 280 dwellings, including more than half of social housing, a nursery, a tourist residence with pool and office space.

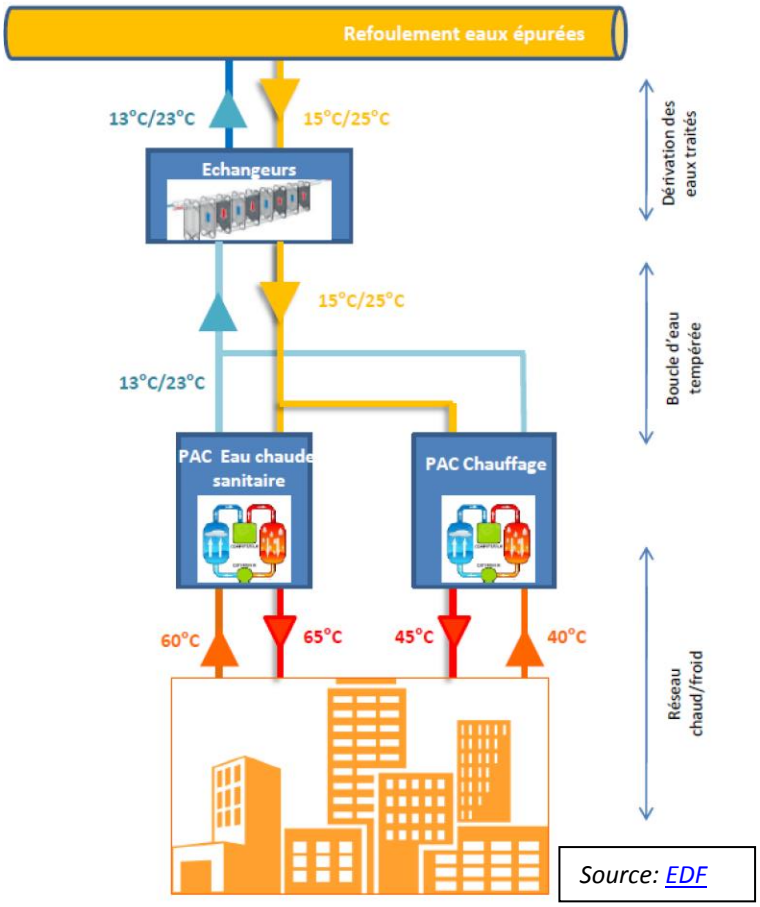
After considering several options, EDF Optimal Solutions identified, near the site, an available energy resource: the treated water of the new HQE (High Environmental Quality) treatment plant located about 500m from the neighbourhood. Designed to be discharged at sea off Cap Martin, this water is at a temperature of 15/20°C and therewith a potential energy source. It was proposed to recover this energy with heat pumps to provide water for the seven BBC buildings, which make up the eco-district, heating, hot water, as well as cooling of tertiary spaces (nursery, offices and tourist residence).

Principle of operation: the heat of the purified water is transmitted via exchangers to a water circuit called "temperate water loop", maintaining the water in the loop at 15/20°C, thus being the low temperature source for the heat pumps, supplying the buildings with water at 45°C for space heating. The five CIAT Dynaciat® heat pumps installed in the buildings are reversible to cool the buildings if needed. Domestic hot water at 65°C is generated by eight special high temperature collective Heliopac GEOPAC heat pumps for domestic hot water, boosting the temperatures from the low temperature waste heat source.

The various components in this heat network are managed by centrally optimising the energy performance, adjusting the production of heat and cold in response to the buildings actual needs. The system also manages the eco-district's energy demand during peak periods by temporarily interrupting supply to certain units (i.e. load management).

Eco Quarter Capazur, Nice, France Technical details

A process patented by Veolia, ENERGIDO recovers heat from wastewater. Wastewater, put in contact with a heat exchanger located outside the sewer system, conveys its energy to a fluid feeding the heat pump located within the facility. The latter returns the energy by producing water at the desired temperature (40° to 60°C) that feeds the heating network. *Source* [Veolia]



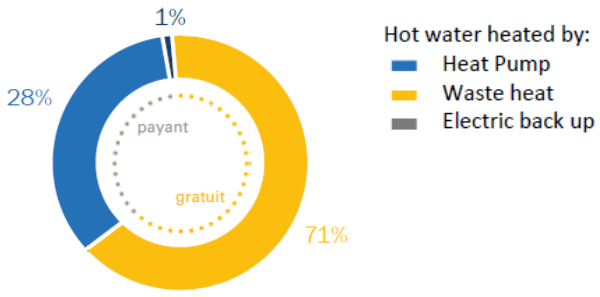
Source: EDF

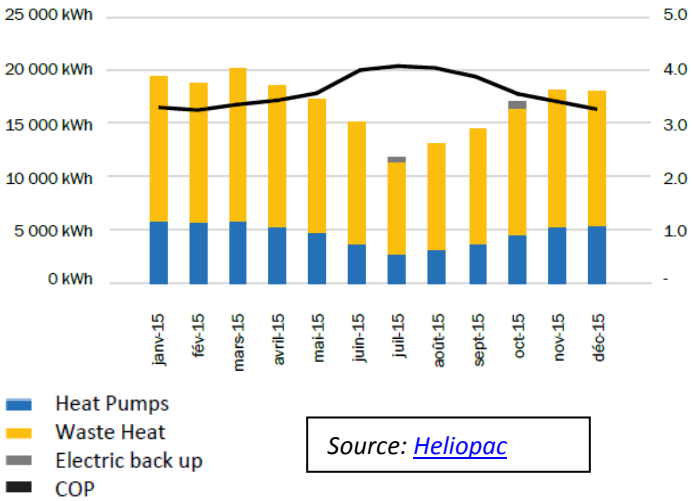
Description of the technical concept

The system consists of:

- Boreholes to collect the treated water (the water is collected at a temperature ranging from 12°C to 25°C and rejected at a temperature between 7°C and 30°C)
- 5 medium temperature (45/40°C) heat pumps (CIAT Dynaciat®) for space heating and cooling (distribution is ensured by fan heaters)
- 8 high temperature (65/60°C) heat pumps (Heliopac Solerpac®) for domestic hot water production.
- Water tanks for domestic hot water storage (17,000 liters)

Sub stations	Number of DHW Heat Pumps	Storage tanks
Building A&B	3*12kW	3*2000 litres
Building C	1*12kW	3000 litres
Building E	2*12kW	4000 litres
Building F	2*12kW	4000 litres





Source: Heliopac