The Vattenfall central cooling station at Potsdamer Platz

A chill in the heart of Berlin

Vattenfall is operating the largest district cooling network in Germany for the new city centre of Berlin around Potsdamer Platz and Leipziger Platz. The Vattenfall central cooling station in Stresemannstraße supplies approximately 10,000 offices and about 1,000 apartments with district cooling. It cools the Sony Center, for example, as well as the Potsdamer Platz Arcades, the headquarters of Deutsche Bahn AG, the Bundesrat parliament building, the Federal Environment Ministry (BMU) and the Berlin House of Representatives.

Cooling technology

Since 1996 the company has invested approximately 70 million euro on district cooling technology including the central cooling station and district cooling network. The smart thing about the system is that a large amount of the cooling energy is generated by absorption refrigeration machines from environmentally-friendly district heat. This comes from the Mitte cogeneration plant where power and heat are produced in a coupling process. Compressor chillers refrigerating machines meet the remaining demand for cooling. They work in a similar way to domestic refrigerators with electricity. At times of peak demand 5,300 cubic metres of water at a temperature of 6°C flow through the district cooling network to the customers every hour. If the local cooling process has caused the water to heat up to around 12°C then it is returned to the central cooling station where it is cooled down again.

Facts & Figures

Installed cooling capacity: 44 megawatt (MW)
Estimated annual cooling load: 55,000 MWh/a

Absorption process
- 4 absorption chiller @ 2.5-3.0 MW
- Refrigerant: water, solvent: lithium bromide
- Recooling capacity for 1 MW of cooling: approx. 2.5 MW

Compression process
- 8 centrifugal chillers @ 3.8-4.0 MW
- 1 screw-type water chiller, 1.6 MW
- Refrigerant: FKW R134a
- Recooling capacity for 1 MW of cooling: 1.2 MW

Cooling systems
- Total recooling capacity 62 MW
- 4 hybrid cooling towers @ 7.5 MW
- 4 wet cooling towers @ 8 MW

Cooling energy distribution
- 3 peak-load cold water circulating pumps
- 2 base-load cold water circulating pumps
- Transport medium: purified water
- Length of pipeline: approx. 15 km combined heat and cold ring main to the buildings, currently 70 transfer stations
- Cooling pipeline: DN 600 – DN 65 (diameter 60 cm to 6,5 cm), design pressure 16 bar