



**CTR'S
CONTROL ROOM AND FACILITIES
IN FREDERIKSBERG**

THE HEAT EXCHANGER STATION, THE PEAK LOAD STATION AND THE CONTROL ROOM ON STÆHR JOHANSENS VEJ

FVW is one of CTR's 26 heat exchanger stations and **FVC** is one of CTR's 14 peak-load stations. They both share the same street address as the central control room that monitors the entire system.

FVW heat exchanger station

The FVW heat exchanger station is located in Frederiksberg where FVW supplies the heat from the transmission system to the local distribution grid operated by Frederiksberg Forsyning. The actual supply of heat occurs in the heat exchangers, which are relatively small compared to the rest of the equipment, i.e. valves, meters, etc., and which ensure that the entire system is fully automated and that the supply of heat can be rearranged if a fault occurs somewhere in the system. The station supplies heat to some 15,000 households.

The FVC peak load station

The FVC peak load station is first and foremost responsible for temporarily generating heat if one of the power stations has to stop producing for some reason – a rare occurrence. FVC is expected to be in operation only a few days a year. FVC can be started from CTR's control room, and the plant can start supply heat to the system within 20 or 30 minutes. This ensures that heating consumers rarely notice the unforeseen incidents which occur in other parts of the transmission system. FVC is also used to support the base load units in very cold periods.

The central control room

All stations and facilities throughout the transmission system are monitored and controlled at CTR's control room which is staffed round the clock. Technicians stationed in the control room make sure that heat is supplied to recipients without interruption or inconvenience. The technicians can intervene if the automatic controls cannot handle an unforeseen incident, and service staff are dispatched if any part of CTR's system is not functioning correctly. The heat demanded by the 250,000 households supplied with heat via CTR fluctuates greatly over a 24-hour period, which means that operations sometimes have to be adjusted. In addition, so much surplus heat can be generated by the waste incineration plants in summer that it is possible to avoid starting up the costly combined-heat-and-power plants.



Supplies of heat
Six combined-heat-and-power plants and waste incineration plants in Greater Copenhagen supply surplus heat to CTR.



CTR's control room
CTR controls, adjusts and monitors the supply of heat at CTR's control room which is staffed round the clock.



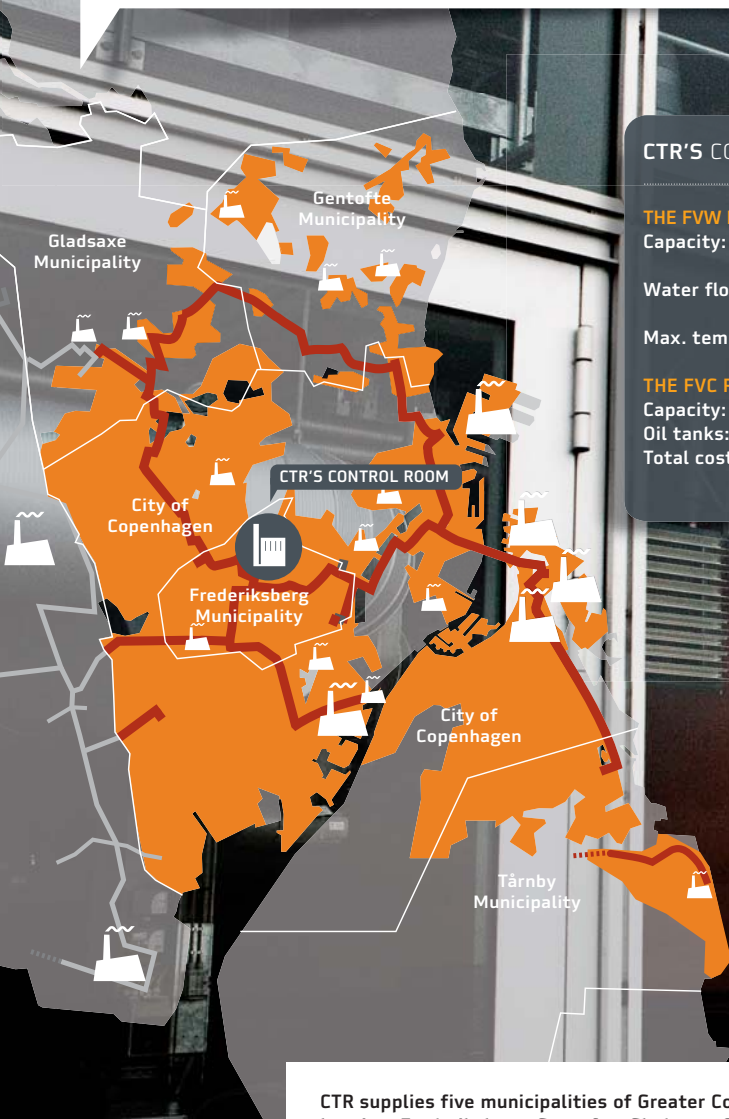
Exchange and pump station
29 stations transfer the heat from the transmission system to the local district heating systems.



Peak load stations
14 peak load stations start up whenever the demand for heat exceeds the capacity of the power plants and incineration plants can deliver.



Consumers
The heat is distributed via five municipal distribution companies to more than 250,000 households, i.e. to half a million citizens in Greater Copenhagen.



CTR'S CONTROL ROOM

THE FVW HEAT EXCHANGER STATION

Capacity: two heat exchangers, 42.5 MW each
Water flow: 655,000 litres/hour each
Max. temp.: 120 °C

THE FVC PEAK LOAD STATION

Capacity: 4 x 50 MW
Oil tanks: two 600,000 litre tanks
Total cost: DKK 126 million

CTR supplies five municipalities of Greater Copenhagen with district heating: Frederiksberg, Gentofte, Gladsaxe, Copenhagen and Tårnby. CTR's transmission system comprises a 54-km distribution grid with 3 pump stations, 14 peak load stations and, finally, 26 heat exchanger stations that transfer the heat to the local district heating systems.

PROVIDING INEXPENSIVE, CONVENIENT, RELIABLE AND **ECO-FRIENDLY** HEAT TO THE CAPITAL

CTR is the heating transmission company for its five member municipalities in Greater Copenhagen: Frederiksberg, Gentofte, Gladsaxe, Copenhagen and Tårnby. CTR supplies about 250,000 households in Greater Copenhagen with district heating based on surplus heat.

As the transmission system makes it possible to optimise heat production within the region, it helps the municipalities to offer their citizens inexpensive, convenient, reliable and eco-friendly heat. Surplus heat from power stations and waste incineration plants comprises 97-99% of the annual production. Utilizing this heat prevents 1,000,000 tonnes of carbon a year being released into the environment, compared to heat produced by individual oil-fired heating systems, a figure that increases year by year concurrent with the increase in the proportion of biomass used.

CTR is responsible for purchasing heat from the production units, for transporting it through the transmission grid, for selling the heat to the five member municipalities and to VEKS, which oversees a similar task for the municipalities in the western area of Greater Copenhagen.

In addition, CTR generates heat at its own peak-load and reserve-load facilities when needed and is also responsible for maintaining the entire system.

The heat is supplied through a 54-km distribution grid with three pump stations, 14 peak load stations and 26 heat exchanger stations.

CTR manages, adjusts and monitors the supply of heat round the clock at the central control room in Frederiksberg via signals emitted by more than 10,000 points distributed throughout the system.

