

COOLING SECTORS PROFILES

District Cooling



District Cooling is – similar to District Heating – a technology that links multiple or many consumers as well as a variety of cold sources for the sake of efficiencies and economies of scale. The basic principle is that sources and consumers are linked through a network of pipes that provide thermal energy or cooling to the consumer.

District Cooling is

5-10 times
more energy
efficient

than traditional cooling

50% reduction
of CO₂
emissions

and
hazardous refrigerants
can be achieved with
district cooling.

40-60 TWh
reduction in
energy
consumption

annually if district cooling is
expanded to cover
25% of the European
cooling Market



District Cooling – a technology for many purposes

Usually District Cooling is a technology used to provide cooling to buildings. This happens mostly by circulating cold water that absorbs heat from buildings. In other cases District Heating grids are used to provide heat that can be used to generate cold in local heat-driven chillers. Moreover, district energy systems are used to cool down processes such as in steel mills, breweries or data centres and redistribute this heat to other consumers. More and more often District Cooling is also seen as a solution for refrigeration purposes. Water, ice and other cold storage systems ensure that the available cooling is matched to the actual demand.



District Cooling offers not just environmental and economic benefits thanks to economies and efficiencies of scale - it also has a positive influence on the urban climate. District Cooling – like other capturing technologies - captures heat and either reuses it for heating purposes or transports it away from the citizens. Avoiding that heat is inefficiently disposed in the streets has a positive influence on the microclimate of cities and therefore also contributes to a healthy living environment.

District Cooling offers a unique flexibility when it comes to the technologies that can be used to provide cold or cooling. As in District Heating all that matters is the temperature. Therefore, DC can efficiently combine natural cooling sources such as lakes and rivers, with excess cold from industry, heat pumps, highly-efficient electrical chillers, heat driven chillers, trigeneration and others. At the same time the shared provision of cold, allows for a tight control of refrigerants.

District Cooling is used all over the world and offers a sustainable solution to many fast-growing metropolis on all continents. UNEP identified it as core technology to fight the growing impact of cooling on our climate. In Europe the largest numbers of DC applications, both for buildings and industry, can be found in the Northern countries - which shows that it is not just a technology for hot climate zones. Major European cities such as Paris, Berlin and Milan but also like Helsinki, Stockholm and Sweden operate state-of-the-art District Cooling networks, linking industries, services and non-residential and residential buildings and integrating cold, heat, electricity and water networks.



BEST PRACTICE EXAMPLE

A striking example for the integrated use of District Cooling is the Helsinki case. The number of connection has more than doubled in the first five years of this decade. In Finland's capital more than half of the cold in District Cooling is supplied through large heat pumps that also can supply to the District Heating grid and one quarter is delivered by using natural cooling. Heat that is removed from hotels and office buildings but also data centres and other commercial activities can be reused in Helsinki's District Heating grid.

Information kindly provided by Euroheat & Power (EHP) (www.euroheat.org)

Euroheat & Power is the international network for district energy, promoting sustainable heating and cooling in Europe and beyond. EHP is a non-for-profit association headquartered in Brussels, Belgium, which unites the district energy sector. Their members come from over thirty countries around the globe and include national district heating and cooling associations, utilities operating district energy systems, industry associations and companies, manufacturers, universities, research institutes and local authorities.