

District Cooling as an Alternative Approach to Cooling in Israel supervised by Prof. Irene Peters and Hans Schaefers

Today, with energy sources becoming scarce, it is more important than ever to find innovative, energy-efficient solutions to human comfort in buildings. Seeing that people spend most of their hours indoors, with difficult weather conditions the indoor climate must be regulated. Climate-regulating devices, including airconditioning and ventilation, account for an increasing demand of the total energy consumption and CO₂ emissions.

In Israel today, despite ambitious plans for the incorporation of renewable resources into energy production, the majority of energy is still produced using fossil fuels - natural gas included. Most government policy and approach is directed towards electricity production, being a main energy consumer. The issue of using renewable resources is especially critical in Israel.

The solution proposed by this paper is district cooling, not previously implemented in Israel on a large scale or in urban surroundings. There are examples of energy centers for campuses, but not on a large scale determined by the cooling demand. First, various technical solutions for producing cooling will be reviewed, pointing out the existing solutions used today. This will be followed by an overview of district cooling solutions, including three case studies from Europe. A case study representing a typical situation requiring cooling in Israel will be introduced, for which several scenarios will be selected and evaluated. Finally, recommendations will be presented, focusing on technical feasibility aspects and touching upon legislative issues as well.

