District cooling
Direct and indirect cooling systems

District cooling

The concept of district cooling is becoming more and more widespread all over the world. The idea, as for district heating, is to use one central source instead of local systems for each building. This will create both economic and environmental benefits.

The district-cooling system offers operating flexibility, since each building can use as much or as little cooling as needed, without worrying about chiller size or capacity. The installation will be very comfortable and convenient for the customer, with the possibility of using the same supplier for electricity, heating and cooling. The installation of a district cooling system is greatly facilitated if combined with an existing district-heating system, or one built at the same time, since the costs can be shared between the two systems.

One of the benefits for the customer is the saving of space at the location as there is no chiller. The investment cost will also be less than when having to invest in a chiller. There will be no need to re-place chiller, cooling towers or pumps due to wear or CFC/HCFC phase-out, as the CFC/HCFC handling problem will be taken care of. With centrally produced comfort cooling there will be no noise or vibrations. Maintenance and running costs will be lower, and a better level of equipment redundancy and round-the-clock expert management, which individual buildings cannot match, will be achieved.

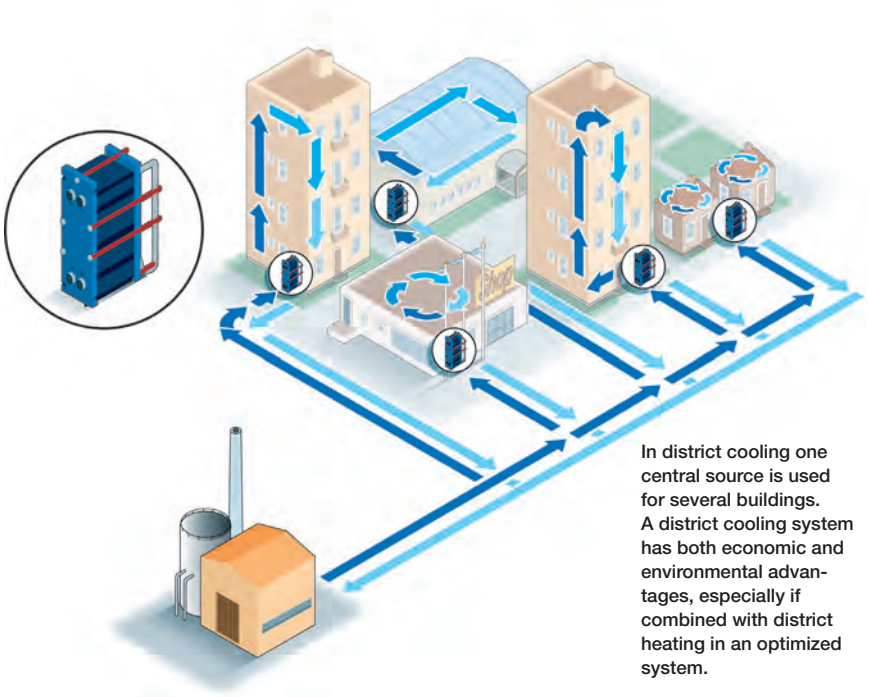
Direct and indirect cooling systems

In cooling systems the distribution can be either direct or indirect. If direct, the cooling water goes directly into the internal piping system of a building. In an indirect system, a heat exchanger separates the internal from the external system. Today this is the most common system, and the indirect system provides several benefits.

Leakage will be easier to detect, and if it does occur, will create minimum damage. There is no risk of one system contaminating another. In a district cooling system the responsibility line will be clearer, and the regulation and sales are easier to monitor with clear borders. With separate circuits the customers may experience fewer fluctuations and disturbances, should the central system expand or need maintenance.

In an indirect system the heat exchanger will also decrease the static pressure, thus working as a pressure interceptor. Noise from valves can be eliminated when the pressure in the pipes is decreased. In the indirect system solution the dimensions of the consumer's in-home system will be smaller, and thus cheaper.

Installing Alfa Laval plate heat exchangers in an indirect cooling system ensures minimal energy loss throughout the system. Alfa Laval's "close approach" enables temperature exchange approaches of no more than 0.5°C/<0.9°F.



In district cooling one central source is used for several buildings. A district cooling system has both economic and environmental advantages, especially if combined with district heating in an optimized system.