

Upscaling sustainable cooling

Cooling Technology Overview

In cooling the following three main operational cases can be distinguished. The Cool Up programme focuses on air conditioning and commercial refrigeration.

¹ Sorption chillers operate without environmentally harmful fluorinated refrigerants.

² Currently there are no efficient solutions available for VRF-/Multisplit systems without environmentally harmful fluorinated refrigerants.

³ For standalone refrigerators and freezers as well as movable AC units, and central direct and indirect commercial refrigeration systems, the use of natural refrigerants has already reached relevant market shares internationally.



1 Air Conditioning (AC)

Systems to provide comfortable indoor air conditions (typically 22 to 27 °C).



2 Refrigeration

Systems to store food or drinks at low temperatures (typically -18°C for freezers 7 °C for refrigeration).



3 Process Cooling

Systems to provide cooling at various temperature levels for different industrial processes.

Cooling systems can furthermore be divided into two classes:

A. Central Systems

A central unit serves different units.
Examples include:

AC systems and district cooling:

- Water/Air to water compression chillers, including district cooling
- Sorption chillers, including district cooling¹
- Rooftop units
- VRF-/ Multisplit systems²

Refrigeration systems:

- Central refrigeration systems (direct and indirect)³
e.g. for supermarkets
- Condensing units (serving up to 3 units)

B. Decentral Systems

Each unit contains its own compressor.
Examples include:

AC systems:

- Split AC
- Wall/Window AC¹
- Movable AC unit³

Refrigeration systems:

- Standalone refrigerators³
- Standalone freezers

For almost all of the above systems, sustainable solutions that use natural refrigerants exist.