chillBooster

evaporative cooling for retail applications

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An extra boost in efficiency for refrigeration systems: by exploiting evaporative cooling, chillBooster increases the heat transfer capacity of dry coolers, extending the working life of existing systems and saving on new installations.

The water sprayed by chillBooster removes heat from the air through evaporation, thus naturally cooling the air.
This lowers the gas cooler air inlet temperature by up to 4-10°C below ambient temperature, depending on the conditions.
In addition, the surplus water that remains on the surface of the heat exchanger coil further increases heat transfer, again by evaporation, this time directly on the fins.

Operation

- pRack measures an outside temperature above a certain threshold
- ChillBooster is activated, starting a pump to circulate the water
- The water passing through the nozzles is sprayed against the direction of air flow into the gas cooler

Very low energy consumption

ChillBooster has very low power consumption: a dry cooler system with an air flow-rate of 200,000 m3/h atomises 1000 l/h with power consumption of less than 0.7 kW!

Overpressure safety

Evaporative cooling ensures service continuity by mitigating the effect of high summer temperatures

Easy to install

The water distribution system features nozzle racks available in various lengths, quick fittings and flexible connection hoses, making chillBooster easy to install without needed special tools or welding.

R744

Lowering the gas cooler inlet temperature increases the time that CO_2 systems operate in the more efficient subcritical mode.

Perfect for retrofits…

- Protects gas coolers against ever-higher peaks in summer temperature
- Avoids the need to replace the gas cooler in the event of increased demand
- Extends system life
- Higher cooling efficiency, lower fan power consumption
- Facilitates replacement of the refrigerant with new low GWP glide fluids

… and new installations

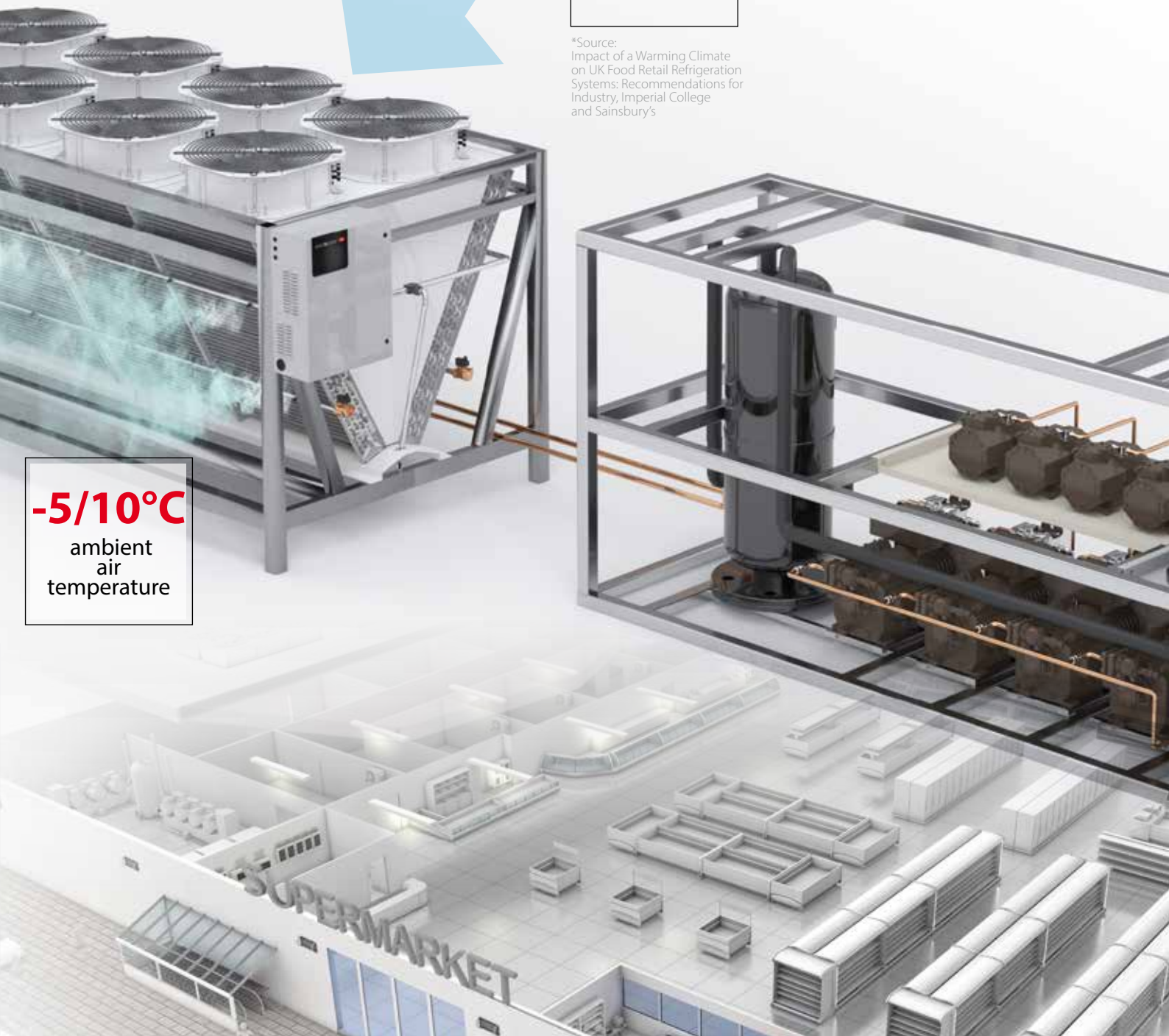
- Additional safety against high pressures
- Nozzles can be activated as needed
- Reduces the size of the gas cooler: lower design temperature, smaller dimensions, lower cost

Further cooling of the droplets evaporating from the wetted fins

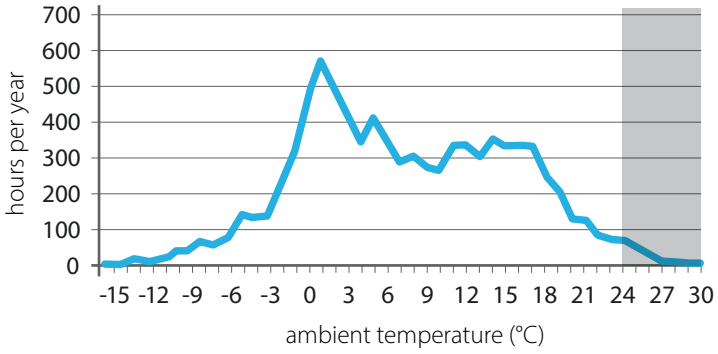
+8/12%
system energy efficiency*

*Source:
Impact of a Warming Climate on UK Food Retail Refrigeration Systems: Recommendations for Industry, Imperial College and Sainsbury's

-5/10°C
ambient air temperature



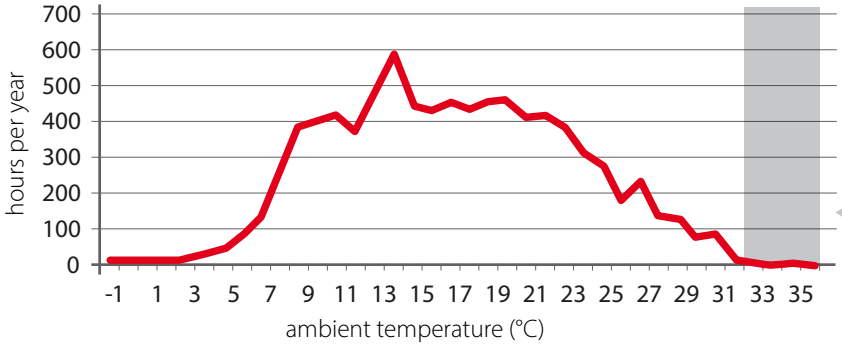
The ideal solution to respond to progressive increases in average seasonal temperatures



Annual temperature distribution in hours in: **STOCKHOLM**

only 122 hours above 24°C

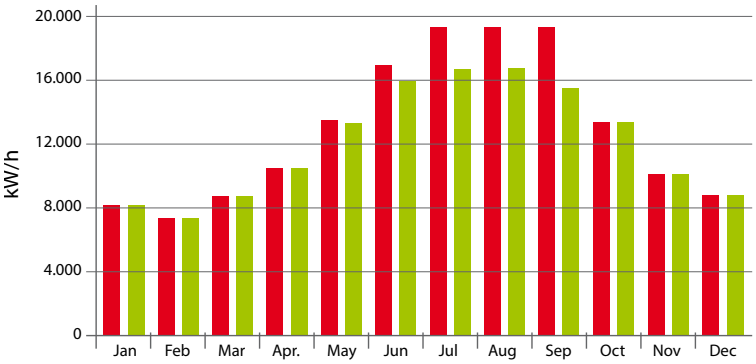
Mitigating peaks in summer temperatures through evaporative cooling means the condenser or gas cooler can be sized for lower ambient temperatures, reducing the upfront investment and the size of the heat exchanger.



Annual temperature distribution in hours in: **PALERMO**

only 94 hours above 32°C

Example of evaporative cooling on a chiller in a city in southern Europe (Palermo - Italy)



Decreasing system operating pressure brings energy savings by reducing compressor work, making chillBooster a strategic choice for refrigeration system efficiency.

power consumption with chillBooster

power consumption without chillBooster

Headquarters

CAREL INDUSTRIES HQs
Via dell'Industria, 11
35020 Brugine - Padova (Italy)
carel@carel.com

HygroMatik GmbH
Lise-Meitner-Str. 3
24558 Henstedt-Ulzburg - Germany
hy@hygromatik.de

RECUPERATOR
Via Valfurva 13
20027 Rescaldina (MI), Italy
customercare@recuperator.eu

For more information

CAREL Asia - www.carel.hk
CAREL Australia - www.carel.com.au
CAREL Central & Southern Europe - www.carel.com
CAREL Czech & Slovakia - www.carel.cz
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CAREL Thailand - www.carel.co.th
CAREL Turkey - www.carel.com.tr
CFM Sogutma ve Otomasyon San. Tic. Ltd.
CAREL U.K. - www.careluk.com
CAREL U.S.A. - www.carelusa.com

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