



## Perfectly cooled cook-chill production rooms

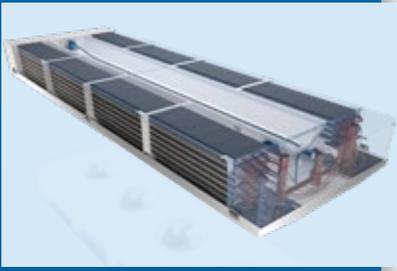
Hygiene is the number one priority in institutional food service, the HACCP standard is obligatory and perfect cooling technology is the icing on the cake for ensuring the long-term success of cook-chill canteen kitchens. Dresden-based company Sachsen-Kälte is proud to be able to design and supply a full range of cooling and refrigeration equipment for cook-chill canteen kitchens and uses Güntner heat exchangers in doing so. The highlight for workspaces is the new HACCP-certified Güntner DUAL Compact GADC air cooler which features a condensation pipe which is invisibly integrated in the casing. The new coolers are already being successfully used in Siegburg and Marl and will soon be up and running in Wetzlar, Frankfurt am Main and Düsseldorf.

Whilst cooking is usually equated with temperatures of around 100 °C, in cook-chill kitchens a sophisticated cold chain plays an important role. Firstly, sufficiently large blast chillers and often recooling vessels designed to cool fully cooked food and secondly, air coolers for workspaces in which the individual portions are plated up are essential for ensuring that kitchens run like clockwork. The subsequent cold chain (2 °C to 3 °C at approx. 90 % relative humidity) up until regeneration and final cooking shortly before service also plays a key role.

### Overview

Business line:	Industrial/Commercial Refrigeration
Application:	Food refrigeration
Country/Region:	Germany/Marl, Siegburg and elsewhere
Fluid:	R-407F and R-513A
Product:	Güntner DUAL Compact GADC air cooler

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▲ The Güntner DUAL Compact GADC is HACCP-certified and reliably conducts condensation into the condensation pipe located in a false ceiling with the help of a small pump inside the casing.

## Advantages of cook-chill

With a closed cold chain, cook-chill kitchens are HACCP-compliant and, despite higher initial investment costs, offer operators operational advantages (easier staff planning, flattening out of peak periods to ensure steadier work levels, and standardised recipes, etc.). When organised properly, the process is very economical in the long term.

Cooling food to approx. 3 °C prevents pathogenic germs from multiplying and therefore prevents toxins from forming, which in turn means that food can be cooked in advance, for example for weekends or large events. The cook-chill principle also helps to ensure that dishes retain their colour, aroma, flavour, texture and vitamins. These are all lost in the “alternative” approach which involves keeping food warm at 65 °C for hours on end, which is how traditional canteen kitchens operate for organisational reasons. Microorganisms start to be increasingly killed off at temperatures around the 65 °C mark, however the quality of the food also suffers.

## Strict requirements in terms of cooling technology

For hygiene reasons, there are very strict requirements in terms of air cooling for institutional food service. The critical temperature range of between 75 °C and 3 °C within which microorganisms thrive must be passed through as quickly as possible following the cooking process (see table) in order to inhibit the multiplication of microorganisms. A powerful blast chiller is therefore used in cook-chill kitchens, which cools food that has just been cooked back down to 3 °C within max. 90 minutes so that it can then be portioned out.

The cold air needs to be distributed with as little draught as possible, especially in rooms in which people are working. The distances between the locations where the individual steps are carried out are kept as short as possible and are therefore logistically efficient. High room occupancy means that the heat loads of such workspaces and their relative humidity are high.

## Condensate

As a rule, in the workspaces of cook-chill kitchens which are air-conditioned to 10 °C, the heated air from the air coolers is vertically sucked up into the ceiling and the cold air is blown out on both sides (“dually”) horizontally along the ceiling back into the room.

## Cook-chill...

... is a process used in institutional food service in which the production and serving of a large and standardized number of portions can be separated both in terms of time and usually location. The food is cooked as usual but only to the point that it is around 80 % to 95 % done. It is then cooled down to 3 °C with a blast chiller within a maximum of 60 to 90 minutes. The meals are then portioned out in a room cooled down to 10 °C.

The cooled and plated meals can then be stored with a closed cold chain for around three days without any loss in quality and are then locally warmed up to the consumption temperature so that the cooking process can be completed just half an hour prior to serving. This can be done using induction, conduction or convection in specially designed devices.

The cook-chill process was developed in the 1960s in the USA and has also been playing an increasingly important role in the centralised food service of hospitals, old people's homes, schools, kindergartens and catering companies in Germany since the 1990s. Ultimately, the sensory quality and nutritional content of cook-chill dishes are comparable with those of freshly prepared meals.

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Temperature [°C]	Effect on microorganisms
+ 120	Destruction of most microorganisms
+ 75	Start of destruction of microorganisms
+ 65	Increased killing of microorganisms
+ 50 bis +10	Dangerous growth of bacteria
+ 3	Start of microorganism growth
0	Safe storage temperature
- 18	End of microorganism growth

The condensate from the air coolers that accumulates due to the cooling and/or during the defrosting previously used to be traditionally dissipated via an external free-standing pipe in the room running on a free slope. However, this meant that there was the potential risk that deposits which had formed on the pipework could find their way, in an uncontrolled manner, onto food and components – an unacceptable situation from a hygiene point of view.

### Güntner DUAL Compact GADC

The Güntner DUAL Compact GADC, the technology for which was developed as part of the long-term cooperation between Sachsen-Kälte and Güntner, is able to remedy this though. The HACCP-certified unit reliably conducts condensation without the need for any maintenance into the condensation pipe located in a false ceiling with the help of a small pump inside the casing.

These air coolers also ensure extremely draught-reduced air distribution in chill kitchens. This in turn creates considerably improved working conditions. The Güntner DUAL Compact GADC is also efficient and quiet and is extremely easy to install and maintain. When regular cleaning work is carried out, there is no need to dismantle the condensation pipe, which would otherwise be necessary. This considerably reduces the cleaning time required for the units and makes cleaning the cold room a breeze.