

CLIMAMAT STAR®

Installations for manufacturing long-life meat products



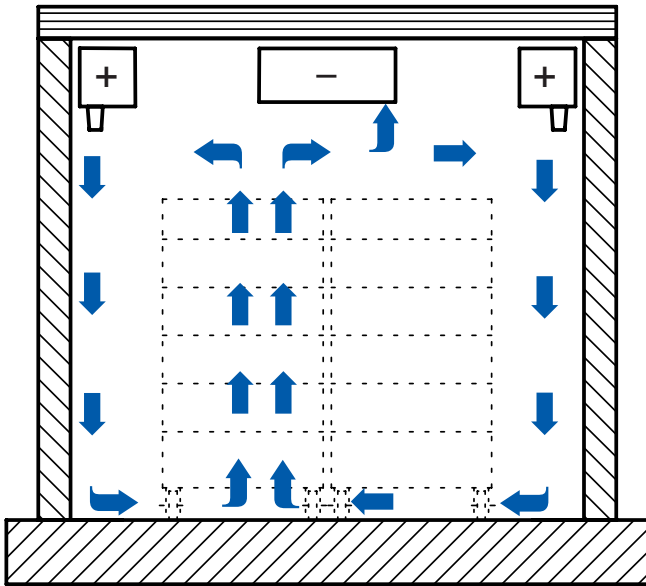
CLIMAMAT STAR® - Perfect long-life meat products

In the manufacture of long-life meat products, water is withdrawn from the product in a controlled drying process to achieve shelf life. The first phase of significant water loss is called pre-maturing, during which time smoking can also take place. Post-maturing and storage make

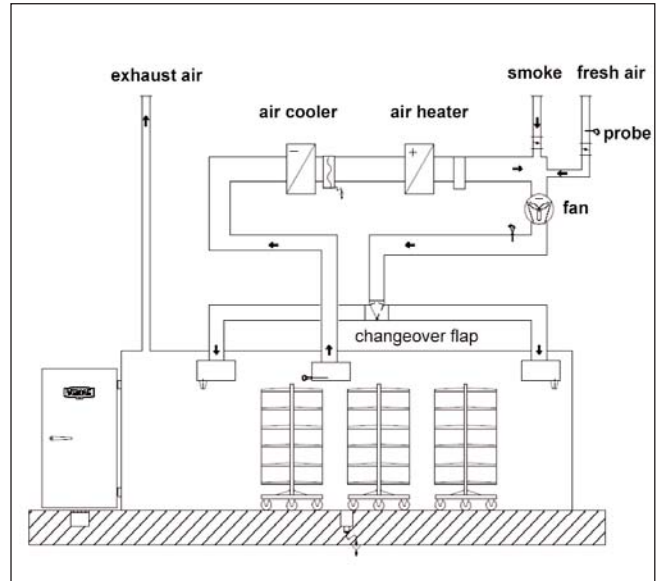
up the second phase with less drying and constant air conditions. VEMAG can supply suitable storage and post-maturing rooms for this purpose.

Besides raw material and recipe, the temperature and humidity curves in both the maturing

room and the product are key factors in determining flavour. Constant room conditions across all batches is determined by air flow conditions. CLIMAMAT STAR® installations give you the right tool for controlling these processes reliably and reproducibly.



CLIMAMAT STAR®: air movement in the chamber varied by VEMAG changeover flap
arrows = air flow, + = injection duct, - = return duct



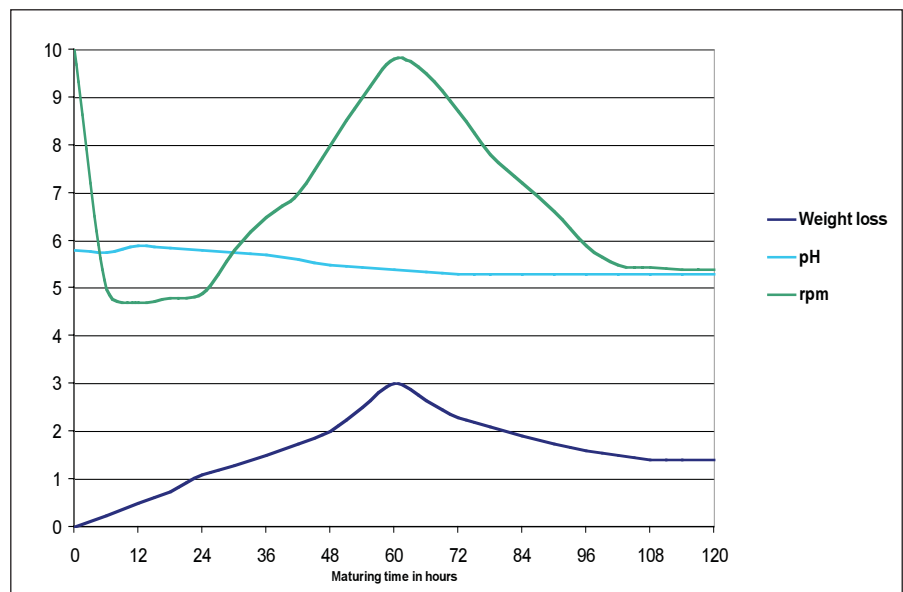
CLIMAMAT STAR®: principle of operation

Maturing, drying and smoking of Salami und raw cured meats: the CLIMAMAT STAR® climatic maturing installation sets standards in pre-maturing. Your products are treated particularly gently and reliably whilst achieving a high degree of standardization. Even distribution of air in the room is achieved by the changeover flap, which constantly allows the air currents in the room to migrate from one side to the other and back.

Yet the operating costs of the CLIMAMAT STAR® are well below those of conventional installations. It is equipped with patented automatic fresh air and auto-

maturing circulating air systems. These optimize humidity and the circulating air flow and thus

improve product quality whilst significantly reducing operating costs.



CLIMAMAT STAR® - range: maturing curve with automated circulating air

CLIMAMAT STAR® - Perfect long-life meat products

Automatic fresh air and automated circulating air - two patented VEMAG processes

During the maturing process, the control system determines the quantity of water given off by the product by measuring the state of the air injected and returned and automatically adjusts the circulating air flow infinitely to suit this. In this way, the output of the installation is directly adjusted to suit the water given off by your products. The energy saving achieved as a result is as much as 40 % when compared to standard installations.

Adapting installation output to the state of the product also optimizes the maturing process and minimizes the risk of maturing faults such as dry edges or mould. However it is not only the intensity, but also the humidity of the circulating air flow which is precisely controlled and set. The control unit uses the automatic fresh air system to optimize the humidity of the air circulating in the chamber. When required, humidity is reduced by the addition of a precisely-metered quantity of fresh air.

A measuring device tracks the humidity and temperature of the fresh air and decides whether it can be used or not. Cooling is switched on in its place only when the drying potential of the fresh air is inadequate. This allows a large proportion of the expensive cooling energy which would otherwise be required to be saved.

Technical data

- Temperature: constantly controllable from 18 to 35 °C
- Relative humidity: constantly controllable from 65 to 98 % as a function of set temperature, trolley load and moisture removal
- Circulating air flow: constantly controllable from 40 to 100 %
- Fresh air: constantly controllable from 0 to 20 % of circulating air flow
- Moisture removal performance: 3 % in 24 h at 350 kg load per trolley 1 x 1 x 2 m at design point 20 °C and 80 % r. h., other outputs on request to suit local supply
- Electrical supply: steam, hot water or electricity
- Heating: Freon, Ammonia or brine
- Cooling: 4 to 6 bar
- Compressed air: 1 to 4 bar
- Cold water: nozzles for manual or optional automatic foam and rinsing water distribution in the climatic element, connection to existing installation possible, duct cleaning optional
- Cleaning:

If automated circulating air and the automatic fresh air system are operated in tandem, their effects are reinforced. This usually allows humidification steam to be dispensed with altogether.

Optimum installation design

We design each installation specifically for you and your products. To do this, we need to know the type of products, maximum trolley load and the required maximum weight loss per day for the temperature/humidity curve of your products.

The moisture return performance required for your products and the temperature and humidity values of future product programs are of particular importance in determining the economic optimum between the installed

and required performance of the installation.

Rugged technology

The installation can be designed in the form of a metal chamber or we can adapt it on an individual basis to suit your premises.

In the process, VEMAG will tailor outputs and quantity of circulating air, as well as flow conditions in the ducts to suit your requirements perfectly.

It goes without saying that all parts of the installation are manufactured from stainless steel in tried and tested rugged VEMAG quality. They are easy to clean and maintain, and they comply with the relevant safety and hygiene regulations.

CLIMAMAT STAR® ECO - the integrated solution for special processes

As an extension of the CLIMAMAT STAR®, this installation gives you the option of processing products at higher temperatures and of cooling them to below freezing point in the same installation following the maturing process.

There is accordingly a direct link to the next processing step such as cutting. You can use the expan-

ded temperature range to 55 °C for any products which go beyond classic maturing, such as air-cured ham ("Lachsschinken") for example.

The installation can furthermore be used for thawing and then storing until processing continues. The installation has all the characteristics of the CLIMAMAT STAR®

system and is designed equally precisely to suit your requirements and particular products.

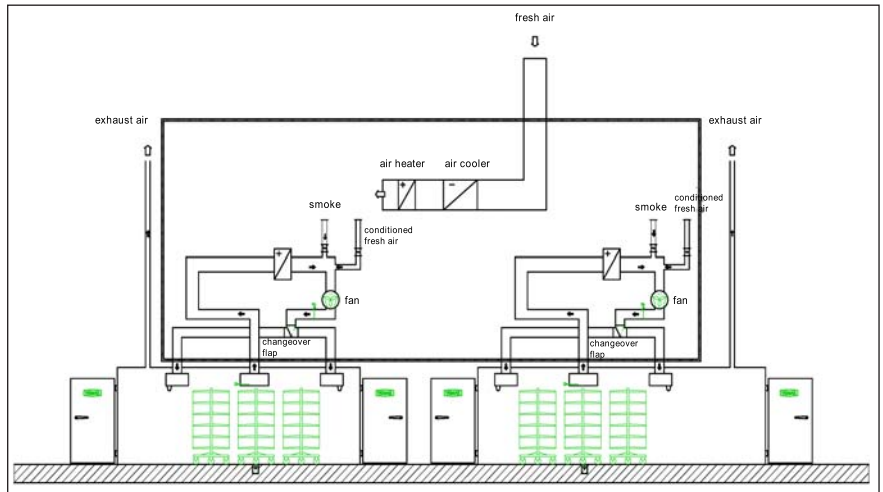
Technical data

- Differing from the CLIMAMAT STAR®:
- Temperature range: from -5 to 55 °C
 - Heating: steam or electricity

CLIMAMAT STAR® - Perfect long-life meat products

CLIMAMAT STAR® PLUS

The CLIMAMAT STAR® PLUS has an additional feature to the CLIMAMAT STAR® in that it is equipped with a patented central fresh air conditioning unit (ZFA). In conjunction with the automated circulating air and automatic fresh air systems fitted as standard, it can mature and dry your products even more gently and in an even shorter time.



CLIMAMAT STAR® PLUS: principle of operation

Central fresh air conditioning

Conditioning the air in the machine chamber of the CLIMAMAT STAR® PLUS installation to a constant temperature and humidity range excludes the effects of the weather on the fresh air fed in. The daily and annual fluctuations of the outdoor climate no longer have any effect on your maturing processes, as the installations only have access to the pre-conditioned air controlled by computer and independently of one another.

The ZFA cools and removes moisture from the air, making it possible to dispense with the coolers and eliminators in connected installations. What is more, the installations can therefore operate exclusively using the moisture inherent in the products, without humidification from an external source.

Constant maturing climate

The maturing climate on the CLIMAMAT STAR® PLUS system is very even, as no control fluctuations caused by the outdoor climate or cooling can occur in the chambers. This considerably minimizes potential maturing faults. The process runs perfectly and at the precise speed permitted by your products.

Best energy balance

Energy consumption is up to 45 % less than with conventional installations.

Cooling is switched in only if the limit temperature or humidity for fresh air are exceeded. The graph "energy requirements during the year" shows that depending on

location, this is the case for only a proportion of the year.

The conditions for economical and energy-saving deployment are connection of more than two installations each with a capacity of at least 20 trolleys and filled to at least 75 % capacity.

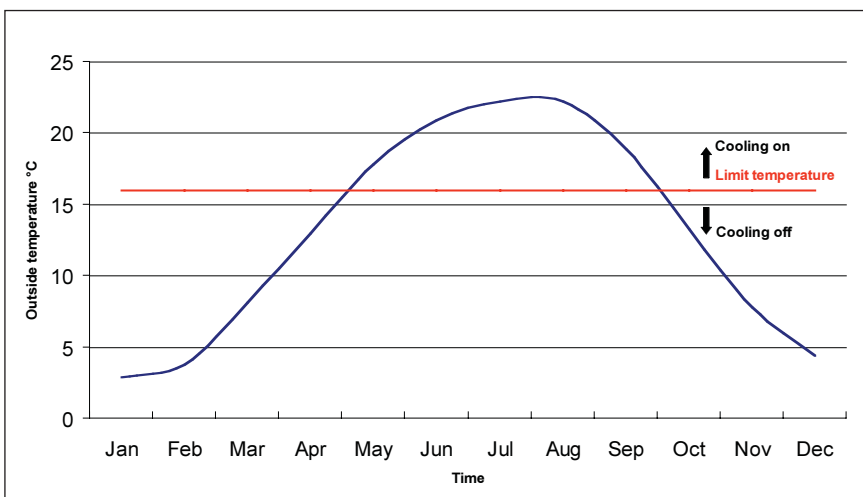
Maximum economy

Dispensing with the cooler, eliminator and humidification on the individual installations has a positive impact on the level of investment required.

You save installation costs in

- humidification, e.g. steam
- cold
- waste water

Running costs are minimized by reduced energy consumption, in particular for cooling. The fresh air is conditioned only if either temperature or humidity exceed a limit value, whilst no energy of any kind is used below these limit values.



CLIMAMAT STAR® PLUS: energy requirements during the year

Technical data

Differing from the CLIMAMAT STAR®:
 - Fresh air: constantly controllable from 0 to 25 % of circulating air flow

CLIMAMAT STAR® - Perfect long-life meat products

CLIMAMAT STAR® TWIN - precision-weight maturing

Pre-maturing and post-maturing in one installation

The CLIMAMAT STAR® TWIN climatic installation combines the classic process steps of pre-maturing and post-maturing in a single installation. Without moving trolleys, you can mature and smoke your Salami with complete precision in the shortest possible time.

New products

The CLIMAMAT STAR® TWIN is designed for the production of standardized Salamis with a defined weight of packaging (calibrated product). Products can be manufactured ready for packing within minimal maturing times of up to a week at precisely defined drying rates. You get the most from these benefits with small-calibre products.

New process

The process developed by VEMAG combines the vertical air delivery of a classic climatic maturing installation with the horizontal air delivery of a storage room.

The switch between air flow directions is performed either automatically by the installation control unit or as a result of your manual settings.

The frequency of the change of air direction can be adapted individually in every program to suit the requirements of your products.

This allows air to flow through the trolley alternately from the bottom up and from the top down, resulting in a very high level of precision of drying throughout the trolley and throughout the installation. This

allows you to reduce the giveaway required to adhere to pack weight.

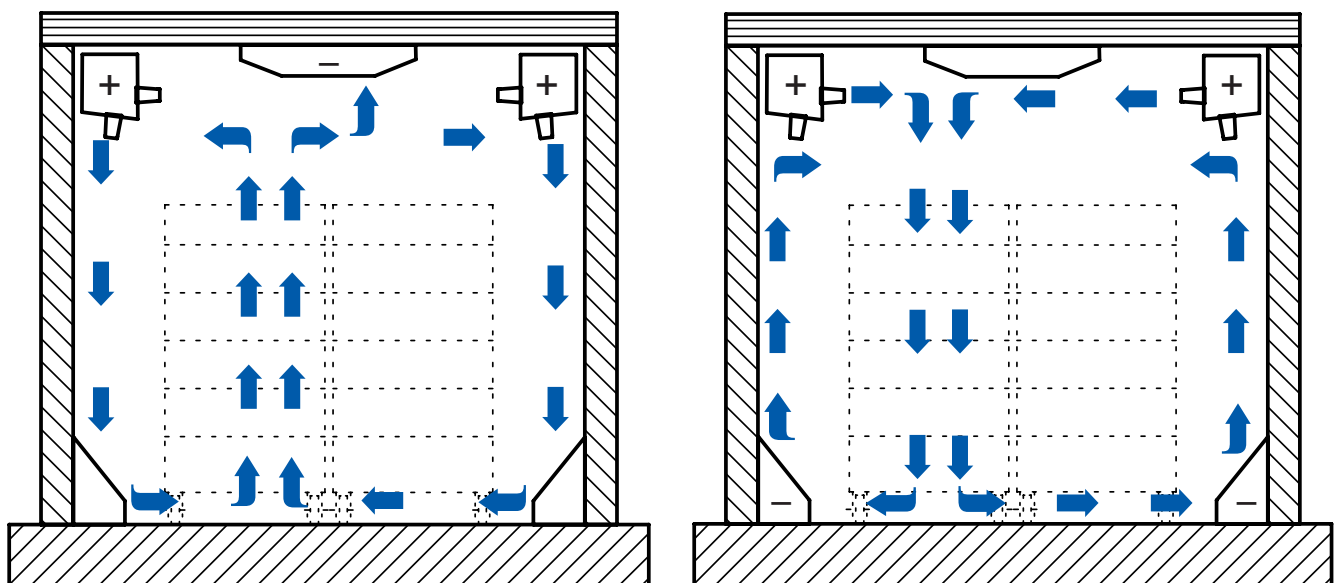
Consistent quality of products is guaranteed.

New technology

Each of the two injection ducts has two rows of nozzles which expel air downwards and to the side.

They have a pneumatically-driven changeover flap, which alternately covers the lateral or bottom expulsion nozzles. This particularly simple and rugged technology allows infinitely variable changeover between the two air flow directions and takes up no more space than a classic CLIMAMAT STAR® installation.

Air return for vertical air flow is in the ceiling and for horizontal air flow on both sides of the floor next to the trolleys.



CLIMAMAT STAR® Twin: switch between vertical and horizontal air flow

CLIMAMAT STAR® - Perfect long-life meat products

Proven function

The CLIMAMAT STAR® TWIN also includes all the features of the CLIMAMAT STAR® series. It is fitted with a changeover flap to ensure even distribution of air right across the installation. The air flow moves from right to left through the trolleys and back in both directions of injection.

Every installation has an automatic fresh air system. This makes moisture removal via the cooler redundant whenever the fresh air has a temperature and humidity to suit the process, thus saving a significant quantity of expensive energy.

Every installation is equipped with automated circulating air which constantly adapts the circulating air flow precisely to suit the water given off by your products. It thus prevents maturing faults such as dry edges or mould and again results in major energy savings.

The installation is designed with a performance reserve which provides broad ranges to compensate for changes and variety in products.

Technical data

- Installation temperature: constantly controllable from 12 to 35 °C
- Relative humidity: from 65 to 98 % as a function of set temperature, trolley load and moisture removal
- Circulating air flow: constantly controllable from 40 to 100 %
- Fresh air: constantly controllable from 0 to 20 % of circulating air flow
- Moisture removal performance: in accordance with your specification, e.g. 15 % in 24 hours at 150 kg trolley load 1 x 1 x 2 m at design point 20 °C and 80 % r. h., other outputs on request
- Electrical supply: to suit local supply
- Heating: steam, hot water or electricity
- Cooling: Freon, ammonia or brine
- Compressed air: 4 to 6 bar
- Cold water: 1 to 4 bar
- Cleaning: nozzles for manual or optional automatic foam and rinsing water distribution in the climatic element and in the ducts, connection to existing installation possible

The benefits to you

Depending on product, you can freely define the change in air-flow and thus the consistency of drying.

You do not need to move the trolleys again during maturing, nor it is necessary to rehang sticks. As there is no need to switch to a post-maturing installation, this

eliminates a further potential source of mould formation.

Above all, however, the use of raw materials can be reduced to a minimum.

The absolute drying consistency of each individual product on the trolleys directly reduces your use of raw material which would otherwise be necessary to compensate for fluctuations.



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