

Defrosting Tips

In refrigeration systems, it is possible that, due to the humidity attracted by the refrigerator, ice may form in correspondence with the evaporator. This condition tends to get worse the more the refrigerated showcase is exposed to the external environment and the greater the difference between the two temperatures.

The formation of ice in the evaporator would obviously compromise the functioning of the refrigerating system and, consequently, the cooling of the display area. To avoid this, CIAM has three different types of defrosting systems, depending on the operating temperature of the refrigerator.

Before analyzing the three defrosting systems in detail, let's take a quick look at how a refrigeration system works.

The Refrigeration System

Let's take the ventilated refrigeration system of the 6040 horizontal showcase with the R4 H1200 glass structure as an example, and let's take a look at its main elements:

REFRIGERATION CYCLE

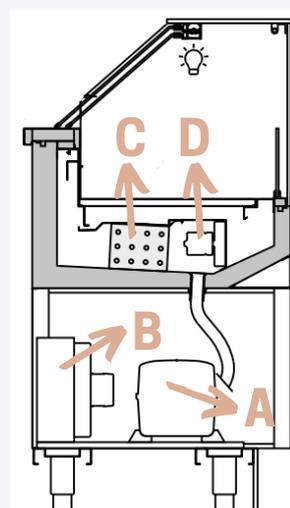
1. Compressor switches on;
2. The refrigerant (low pressure gas) is drawn out of the evaporator and is compressed by the compressor (hot, high- pressure gas);
3. This hot gas condenses in the condenser (high pressure liquid);
4. The pressure of this liquid is reduced (low-pressure liquid)
5. The low-pressure liquid is injected into the evaporator to absorb the external heat
6. The compressor then draws the gaseous refrigerant back in again. The refrigeration cycle is complete.

CONDENSING UNIT

- A** Compressor
- B** Condenser

REFRIGERATED COMPARTMENT

- C** Evaporator
- D** Fan (ventilated system)



Defrosting Systems

As previously mentioned, external humidity is attracted the more the showcase is exposed to the environment and the greater the difference between the ambient temperature and the operating temperature of the showcase. This humidity is transformed into ice around the evaporator, compromising the performance of the refrigeration system.

Let's now take a look at the solutions proposed by CIAM for defrosting on the basis of the various situations

#1 Cold application Refrigerated Showcase for Beverages

In this case, usually no real ice forms near the evaporator, but rather a frost.

Type of defrosting:

NATURAL DEFROSTING

In this case, it is sufficient to switch the compressor off for about ten minutes. In this way, it is possible to eliminate the frost and not compromise the organoleptic characteristics of the displayed products, which will not undergo any particular thermal shock given their nature and their storage temperature.

#2 Cold application Refrigerated Showcase for the display and preservation of Meat

Unlike the previous case, the operating temperature is lower and some ice may form, but turning off the refrigeration system in order to allow it to defrost could compromise the correct preservation of the meat, which is more subject to thermal variations than beverages.

Type of defrosting:

DEFROSTING THROUGH ELECTRIC RESISTANCES

By using electric resistances in the evaporator, it is possible to melt the ice that has formed in less time than natural defrosting, ensuring the correct preservation of the displayed meat.

#3 Frozen application Refrigerated Showcase for Ice Cream

In this case, the operating temperature of the showcase is significantly lower than the ambient temperature, and the formation of a considerable quantity of ice near the evaporator is unavoidable. However, neither natural defrosting nor defrosting by means of electric resistances would guarantee the correct conservation of the ice cream which, in both cases, would risk melting.

Type of defrosting:

REVERSE CYCLE DEFROSTING

With reverse cycle defrosting, the operation of the evaporator and condenser seen above is reversed. In fact, the evaporator will provide a large amount of heat that will complete the defrosting operation in a very short time without causing the ice cream to melt.

