



No moisture.  
No ice.

Munters cold storage  
dehumidification solutions

# Ice-free means savings everywhere

Humid air enters the cold storage when forklifts and people are moving in and out. Condensation is created when this warmer, more humid air meets the frigid cold storage surfaces. Ice forms on cold ceilings, walls and floors, as well as on the cooling system and the evaporator itself, if not managed.

Automated warehouses can also be challenging. Bar codes and bar code readers can be compromised by ice build-up, jeopardizing equipment and operations.

Munters state-of-the-art, cold storage dehumidification solutions stop these problems in their tracks. Once the amount of available water vapor drops below a certain level, condensation no longer forms. And no moisture means no ice.

Munters has been a leading manufacturer in dehumidification for more than sixty years. Our service team features a worldwide network of highly skilled engineers dedicated to helping customers optimize their dehumidification systems.

## Stay safe

Ice and condensation cause slippery floors, and ice deposits can even fall. While humid air can cause fog, and reduced visibility. Staff injuries and equipment damage can result.

Munters dehumidification solutions can help you maintain the highest safety levels by stopping ice and condensation in their tracks. No ice means workers and equipment won't slip and trip or be injured or damaged by falling ice. No mist means no accidents due to reduced visibility. Keep your cold storage safe with Munters.

## Save energy. Save the environment.

Your cold storage will experience condensation and ice build-up if you don't have the right dehumidification solution. Defrosting costs time and energy, and your evaporator won't operate efficiently if ice has formed on it, further driving up operating costs.

Want to enjoy significant energy savings and reduce your carbon footprint? Munters can help, with a dehumidification solution tailored to your specific cold storage needs.

## Avoid contamination

Undesirable moisture leads to waste and health risks. Melting ice or pooled condensation can damage product and possibly lead to bacterial growth. The result can be reduced profit margins and negative customer relations.

Remove moisture before it enters the cold storage. Product quality and customer satisfaction will be ensured, and revenues maximized. Install a Munters dehumidification solution today.

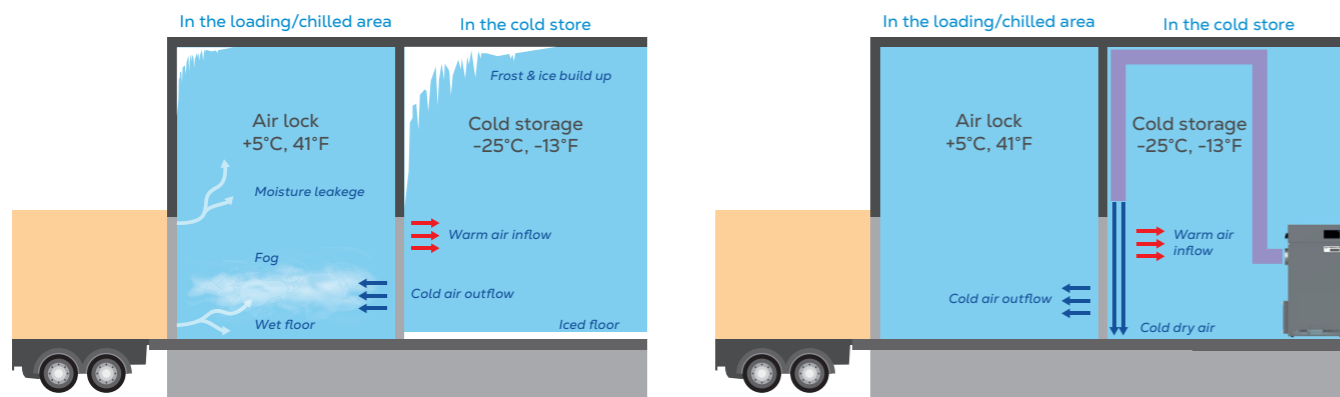


# The right solution for your cold storage

Your problems are only beginning once humid air enters the cold storage. But Munters can help you stop it in its tracks. The solution might vary depending on your facility's design. Sometimes the most efficient solution is to remove the moisture already in the cooling dock and sometimes it's better or necessary to focus on the cold room.

Munters has the expertise to help you find the optimal solution that will increase operational efficiency and save big on energy costs with a dehumidification solution.

Optimized climate control prevents unplanned production stoppages, improves product quality and increases output. Munters tailored dehumidification systems are the ideal solution to your cold storage problems.



Cold storage climate without dehumidification

Cold storage climate with dehumidification

*"We installed a Munters IceDry dehumidification solution in one of our cold storages. It solved some very important safety problems. Today all floors are dry and free of ice. The need for defrosting cold storages has also disappeared. We used to close down the cold storages four times a year for five to six days for defrosting. Nowadays defrosting is only carried during summer vacation."*

Carl Henning Sohl, Production Manager, Rahbek Fisk

## Munters IceDry – Simply the best

Specially developed for cold storage installation, Munters IceDry dehumidifies incoming air from inside the cold storage and removes high moisture levels that cause condensation, which can quickly turn into frost and ice.

Featuring automatic defrosting, the IceDry system provides increased evaporator efficiency, consistent product quality, and reduced maintenance costs. Worker safety is also ensured since slippery floors are no longer an issue.

Available globally, this Food Tec and Health & Safety award-winning system's exceptional performance is recognized by industry experts, and the customers who are enjoying the benefits of the IceDry today.

### Munters IceDry

- Specially developed for cold storage installation
- Automatic defrosting function
- Increased efficiency of evaporators
- Safer cold storages – no slippery floors
- Consistent product quality
- Less mechanical failures and reduced maintenance costs



Munters IceDry 1400



## IceDry combats ice in storage at KLM

KLM Catering Services (KCS) Schiphol is the biggest in-flight caterer in the Netherlands, producing 55,000 daily meals for more than 350 flights every day. KLM not only caters for its own scheduled flights, but also supplies meals to other airline operators.

90% of the in-flight meals are brought in frozen, and placed in cold storage. The meals can be stored for anything from three days up to six weeks, depending on whether they are for infrequently used special dietary requests. The quick-freezing process means rapid throughput and high product quality demand.

Preparing in-flight meals raises its own difficulties with ambient temperature often ranging from 20 to 30°C [68 to 86°F] in summer, and the food preparation areas must be maintained at 14–15°C [57.2–59°F], before the products enter the adjacent cold storage freezers at –20°C [–4°F]. With freezing at these temperatures, you get a lot of humidity, on account of the wide difference in temperature and pressure between the ambient air and that in the cold storage freezer.

Moist air streams into the –20°C [–4°F] storage every time the doors are opened, due to the frequent deliveries throughout the day. The result is the frosting and icing up of the floors inside and outside the storage area, icing of refrigeration components, such as the evaporator, and also frosting of product making it difficult for the food technicians to read the product labels.

“The floor was very slippery and unacceptably dangerous, we had to do something” said one employee. “We had ice and snow on the evaporator, it was difficult to clean, and difficult to keep at a constant –20°C [–4°F]”, we had frequent defrosts, typically six times daily for one hour.”

### The Solution

The simple and effective answer was to remove the moisture from the air, and this is exactly what Munters IceDry systems do so well. KLM Catering Services installed three IceDry systems in their cold storages, as Munters system is specifically designed for low temperatures. Munters desiccant dehumidifiers work by drawing air from the cold storage through a rotor containing silica gel.

In removing moisture from the air, Munters calculates, then controls the dewpoint temperature required – the point at which moisture in the air will condense out and freeze onto surfaces. Once the moisture in the air is removed, the now ultra-dry air is piped back into the cold storage area. By removing the moisture, the IceDry system also assists increase the periods between defrost, reducing energy utilisation and refrigeration plant cleaning.

“The difference before and after the installation of IceDry is like night and day” says the KLM employee. “The cold storage rooms are clean and the floors are no longer slippery”.

### The optimal dry room

The safety improvements also got the thumbs up from the “ARBO” welfare at work organization. Improving the safe operation of the environment had previously been attempted by adding grip strips into the floor to make it less slippery. This proved unsuccessful as after only two weeks, the ice built up again.

Now with IceDry this is completely clear. Moving the food pallets is also much safer, and loading is faster, the catering team can read all the labels correctly, without having to wipe the frost off. The improvements have not only been seen in safety, as KLM Catering Services now only defrost once a day for half an hour. It is not strictly necessary, but is done as a precautionary measure for cooling equipment safety.

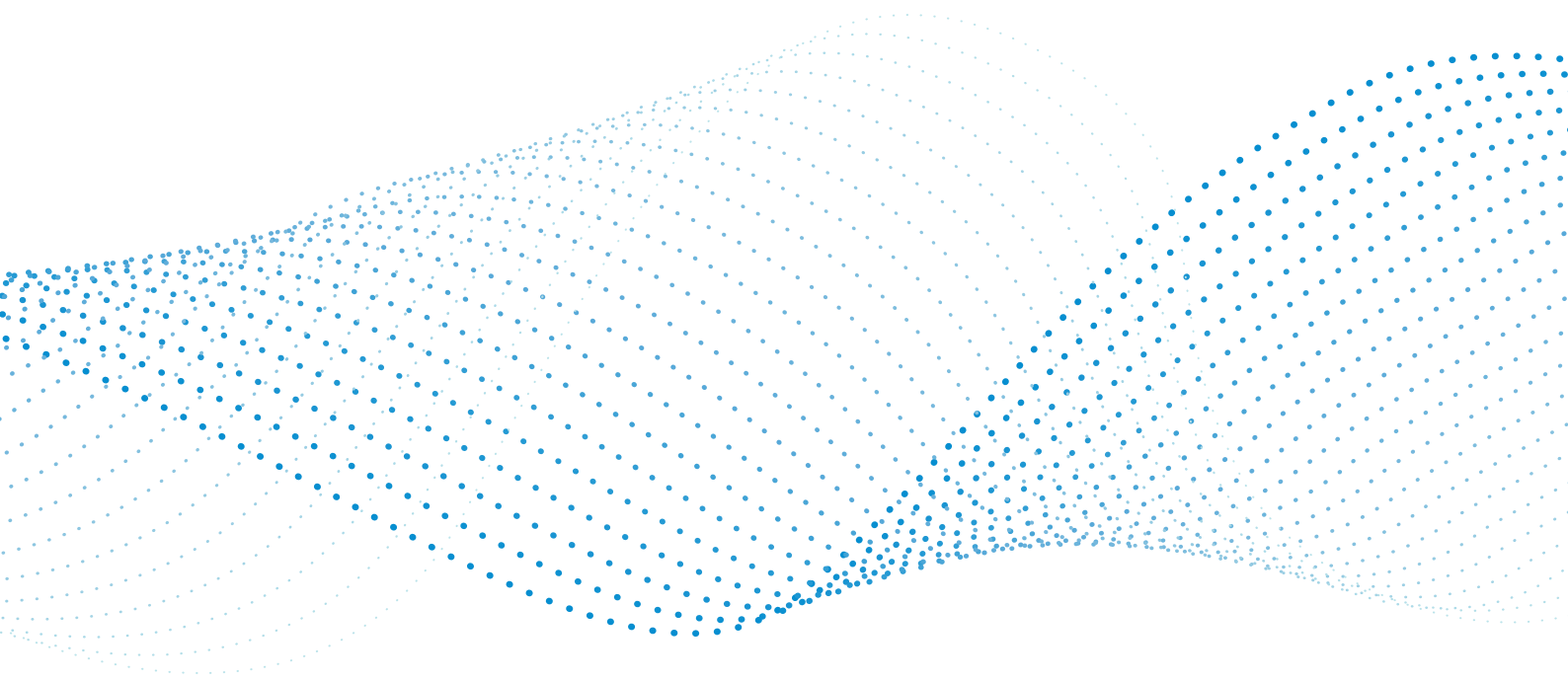
Previously KCS observed ice build-up on the cold storage fan during the night, which occasionally was so severe that it meant that the fan could not blow anymore. Now this has been completely solved with Munters IceDry. KCS also found through constant electronic temperature tracking, that they have been able to maintain much tighter temperature control.

The reduced defrost with IceDry enabled KCS to reduce the temperature of the refrigerant evaporator coolant from –27°C to –22°C [–16.6 to –7.6°F]. KLM Catering Services see the Munters IceDry as a primary element of their HACCP initiative for safe and effective working, in short, it has been a great success.



*“The difference before and after the installation of IceDry is like night and day”*

KLM employee



Munters is a global leader in energy-efficient air treatment and climate solutions. Using innovative technologies, Munters creates the perfect climate for customers in a wide range of industries.

Munters has been defining the future of air treatment since 1955. Today, around 4,000 employees carry out manufacturing and sales in more than 30 countries.

For more information, please visit [www.munters.com](http://www.munters.com)