

Dry Storage



Energy efficient storage
for longer product life

Dehumidification - the best solution for your material and your pocket

Materials are damaged when exposed to high relative humidity. Most materials will be preserved and unaffected at humidity levels below 50% RH. The only reliable protection, irrespective of weather conditions, is dry air produced by a desiccant dehumidifier.

For more than 60 years Munters has provided solutions for safe and energy efficient storage.

Dehumidification versus heating

Heating is a common method for trying to control the relative humidity. Temperature has no impact on the quality of materials (except for some liquids) and as the relative humidity in a heated store will fluctuate between 20-70% RH depending on the outdoor conditions, this method is both ineffective and costly.

The energy cost for heating a store will typically be at least twice the cost compared to dehumidification. Keeping in mind that the stored materials in the heated store will not even be efficiently protected, heating ends up being a costly, ineffective method.



4,800 m³ concrete building.
Outdoor conditions:
Average temp. 8°C
Rel. humidity: 79%
Required: 55% RH



Dehumidification - 11,000 kWh/year



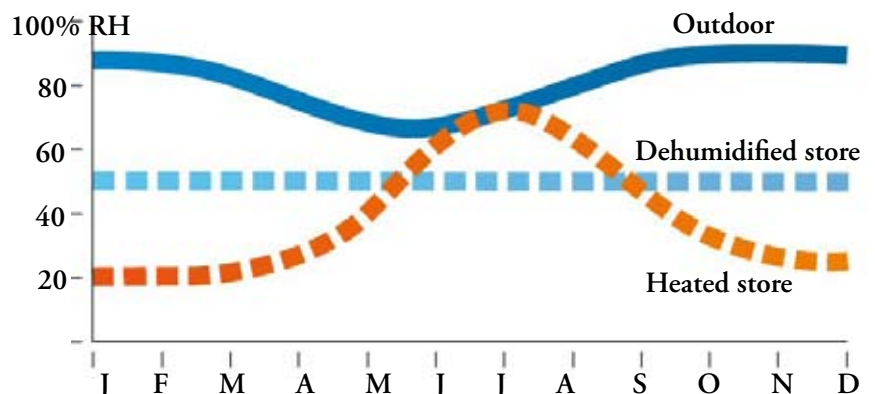
Heating - 78,000 kWh/year



In a dehumidified store the relative humidity can be controlled and constant throughout the year – completely independent of the outdoor conditions. Heating can be reduced or closed down, the stored materials will keep their high quality, meaning less waste/loss.

Relative humidity in different types of stores

In a heated store the RH% will fluctuate over the year, exposing goods to humidity levels critical to quality and shelf life. Only dehumidification secures a constant and protective environment.



Maintain high quality with energy efficient dry air

All materials have their “comfort zones” in which their properties are kept unaffected, securing a high quality and a longer shelf life.

When exposed to too high relative humidity the material will absorb the water in the ambient air, or suffer under condensation related problems.

Mould, mildew, insects (70% RH)

At humidity levels above 70%RH mould, mildew and fungus experience optimal conditions for multiplying. Affecting materials like food, seeds, grain, fabrics, textiles, wood, paper etc. etc.



Softening of packaging (55% RH)

Cardboard packaging absorbs moisture and starts to soften at appr. 55%RH resulting in collapsing boxes.



Corrosion (50% RH)

When storing metal products like galvanized steel, ball bearings, vehicles, or ammunition, corrosion is a problem. Cold surfaces can “sweat” causing metal parts to corrode. With RH below 50% corrosion is almost impossible, whereas the corrosion rate explodes at levels above 60%RH.

Bacterial growth (40% RH)

Storing food or raw materials lead to high hygienic demands. Most manufacturers require humidity levels below 40%RH to avoid growth of bacteria.

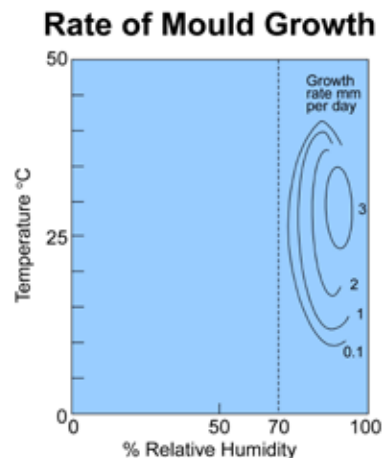
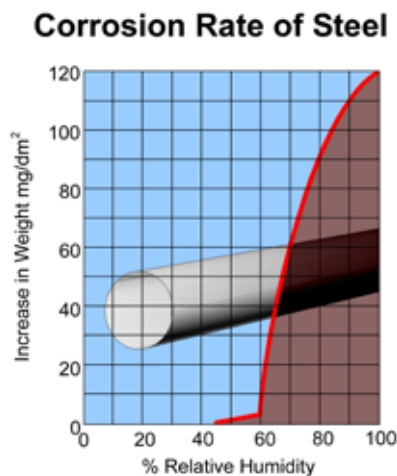
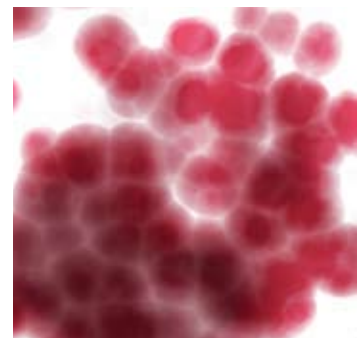
Contact corrosion on electronics (40% RH)

Electronic components are extremely sensitive to microscopic-level corrosion. Small amounts of corrosion create disproportionately large problems and a humidity level below 40%RH prevents electronic failures and extends component life.



Degradation of film (20% RH)

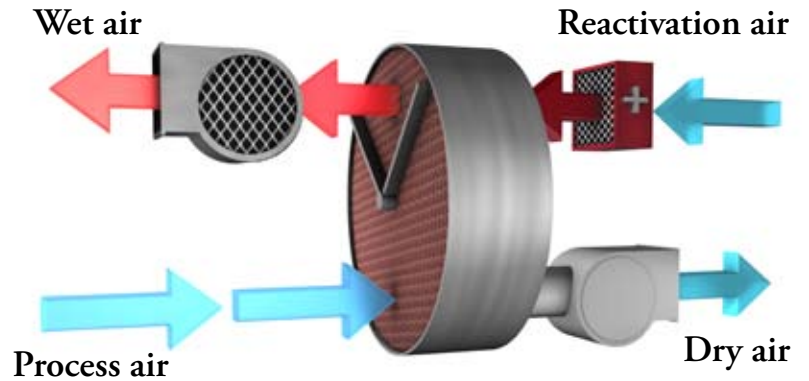
Storing nitrate films requires conditions at 20-30%RH to avoid decomposition.



Energy efficient storage - the Munters-way



The basic idea of the Munters Desiccant Rotor is very simple:



Air is blown through the rotor (drying wheel) structure and the humidity in the air is absorbed by the hygroscopic desiccant silica gel. The air leaves the rotor as dry air.

In a separate sector hot (reactivation) air is blown through the rotor to remove the accumulated moisture. The resulting wet air (which contains the removed moisture) is blown away outside.

The system works without freon, without compressors - just environmentally friendly simple magic.....

Munters unique patented PowerPurge technology further optimizes energy savings as a result of the continuous refinements of our rotor technology.



General storage around the world - protected by Munters

Silos

Storing raw materials like sugar, cocoa, salt, chemicals etc. in silos often causes problems.

Due to fluctuations in the outdoor temperature condensation is created on the internal silo walls, creating a basis for bacterial growth. The hygroscopic materials absorb moisture and cause the material to lump together, creating handling difficulties and need of cleaning.

Keeping the relative humidity in the silo at a low and safe level, these problems are avoided.

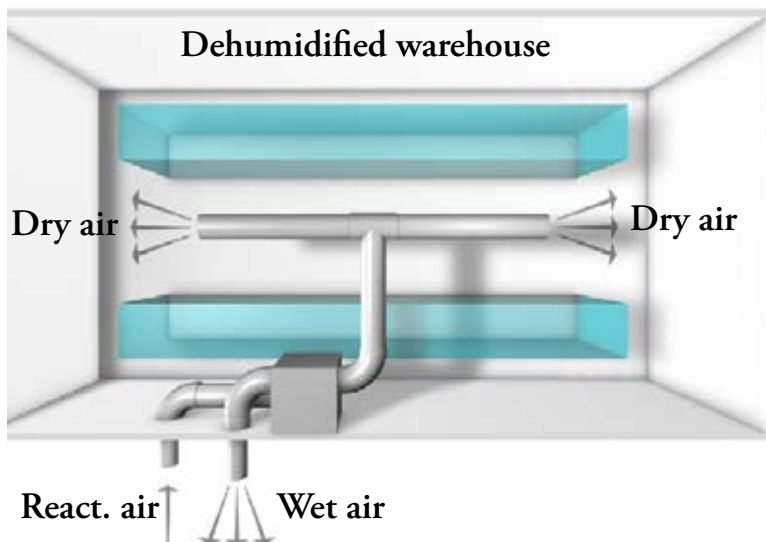
Archives

Archives at museums, libraries, universities etc. contain irreplaceable artifacts and documents of extreme value. Protecting these against humidity related damage is yet very simple, using Munters dehumidification systems - your best guarantee for a reliable, year-round stable and low relative humidity. Heating becomes superfluous, saving money and protecting our environment whilst preserving the artifacts for the coming generations.

Storage tents, Shelters

When in need of a simple, inexpensive, method of storage, the giant tent building made from non-water permeable fabric is a perfect solution. Using dehumidification for protecting the stored articles, the store needs no insulation, just a properly air-tight construction.

Whether storing metal, military equipment, electronic components, timber, furniture, vehicles, food or pharmaceuticals, dehumidification ensures the optimal climate, keeping the high product quality at the lowest energy possible.



General storage around the world - protected by Munters



Garages

Firebrigades, defence as well as private people are owning costly vehicles, frequently equipped with expensive electronic equipment or high quality material sensitive to humidity. After use the vehicles are stored in garages, normally unheated.

Interiors like leather seats will be destroyed from mould in unheated garages and corrosion will occur on metal surfaces. Keeping an indoor climate at 55%RH the vehicles will be protected against these problems, musty odours will no longer be a problem, and the vehicles will always be ready for start.



Breweries and cellars

Storing fluids like beer in tanks and wine in cellars, often leads to condensation on the outside of the tanks and bottles. Constantly wet surfaces form perfect environment for bacterial growth and compromises HACCP regulations. By dehumidifying the tank room or cellar, the dewpoint of the air will be decreased so condensation no longer occurs. Building structures benefit from the drier climate, the need of maintenance work will be reduced and labels remain intact on bottle surfaces. In addition, the climate for employees will become more comfortable and healthy.



Chilled and cold stores

Stores containing food, pharmaceuticals or films require strict control of not only humidity but also temperature. Films need to be stored at a humidity as low as 20% RH and a temperature of max 5°C to be protected against deterioration.

When it comes to stores with food and pharmaceuticals, where doors are frequently opened, the high water content in the ambient air creates severe and dangerous problems as fog, slippery floors, ice build-up etc.

By dehumidifying the air at the entrance to these stores, the source of the problem moisture ingress is eliminated as condensation no longer occurs.



While ice and frost disappears, the efficiency of chillers and evaporators is improved, leading to saving of energy. The need of defrosting will be significantly reduced, just like the need of cleaning. Both activities save costly manpower and avoid close down of storage.

Hygiene issues like the formation of mould on products and structures will be solved as bacterial growth stops at RH below 50%RH, providing greater fulfillment of the HACCP regulations.

Our experience saves you money

Expert advice

For dimensioning of the optimal dehumidification solution for stores, our dataprogrammes and employees experience complement each other.

Dataprogrammes with worldwide climate data calculate energy consumption based on customers information on building structure, moisture load etc and the most energy efficient solution can be found on site. *Compared to heating, the energy savings by dehumidifying will typically amount to 30-70%.*

Kraft Foods and Munters secure product quality

Already back in 1984 Marabou in Upplands Väsby, Sweden, installed a Munters dehumidifier to secure the high quality of their confectionery products in an automated chill store.

After 24 year of impeccable functioning an energy audit proved that by replacing the old dehumidifier with a brand new Munters MCD unit, Marabou could cut the running cost by up to 32%.

Munters proved lowest energy consumption

Comparing different solutions and competitors, independent energy consultants found that Munters showed the most energy efficient solution, using only 1.31kW per kilo water removed compared to competitors 1.8kW.

The desiccant dehumidifier MCD155 with a nominal airflow at 15,300m³/h is now installed and keeps the condition in the 50,000m³ chilled store strictly at +5°C/50%RH all around the year - totally independent of outdoor fluctuations in temperature and humidity.

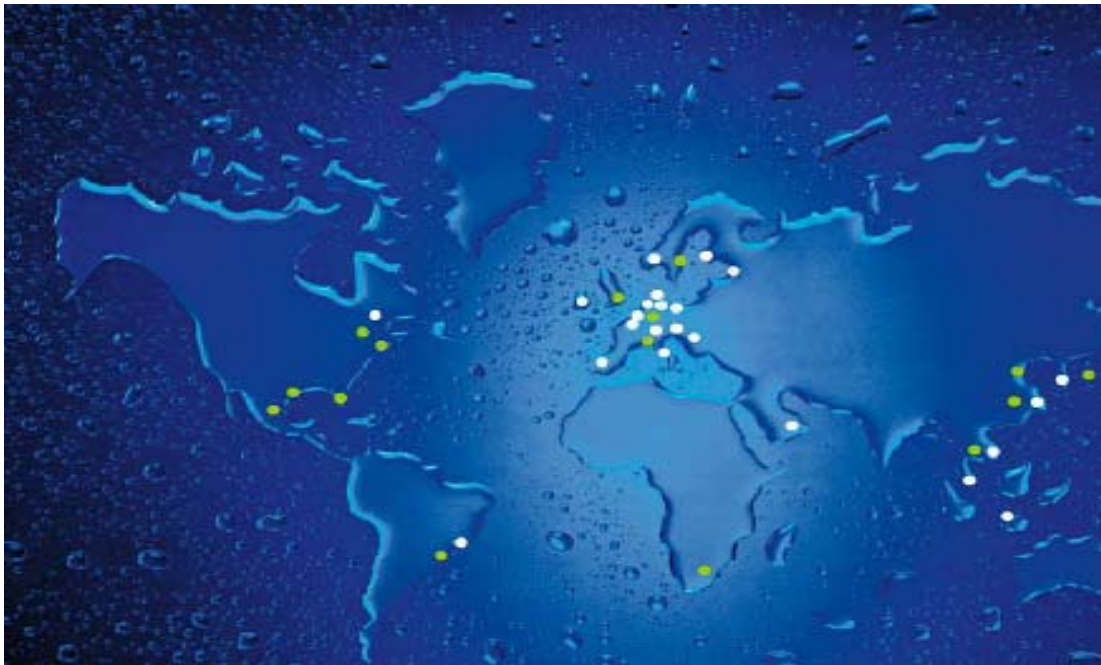
By controlling the humidity Kraft Foods experience:

- Prevention of condensation
- No mould growth
- No chocolate blooming
- Packaging protected against softening

Jonny Hagenbjörk, responsible for constructions and energy at Krafts chocolate factory for Marabou in Sweden:

“To our big satisfaction Munters took care of all details, from the difficult cut-up and removal of the old unit till completing all ductings and power installations. That made life a lot easier for us to communicate only with one supplier. We now look forward to take advantages of the benefits of the MCD unit and feel confident that our products will be perfectly preserved, just as the dehumidifier helps us meet hygienic demands, such as the HACCP regulations”.





An international name, where the customer comes first

Munters has offices in 30 countries and when it comes to desiccant dehumidification technology is the global market leader. Munters has 4,000 employees and more than 300 branches around the world. As the worldwide humidity control specialist, we provide products and services for dehumidification, humidification and air cooling.

Munters Division is concerned with air conditioning using dehumidification – as well as production and sales of dehumidifiers, engineering, customer service and green air treatment systems.

Munters shares ideas within its international network, giving the Group an outstanding reputation as a reliable, fast-acting and customer-orientated expert in air conditioning.

Munters philosophy of customer satisfaction is central to our decision-making. When developing and manufacturing our systems, we see happy customers as our number one target. And this is what our employees strive to ensure every day.

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