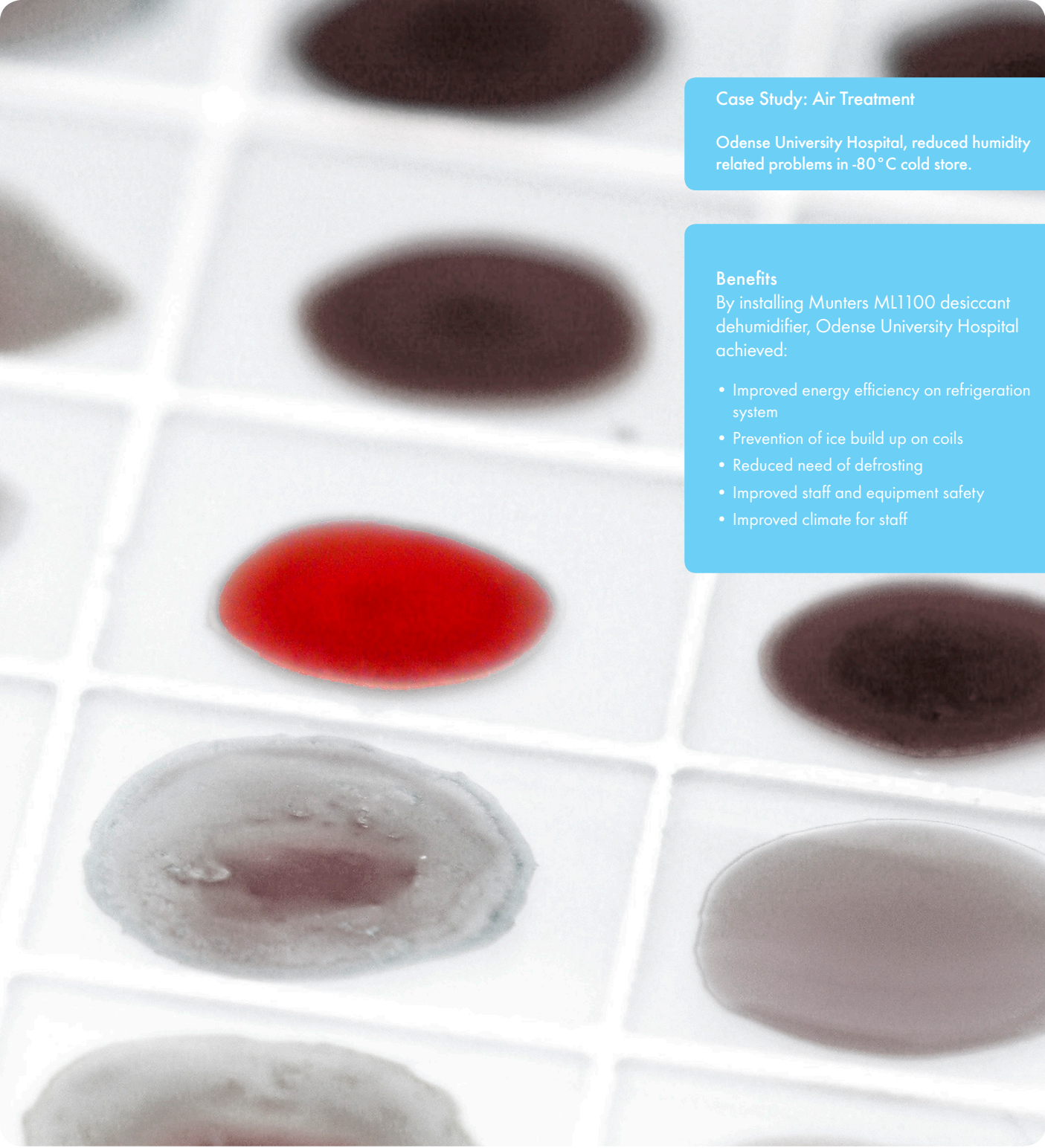




#### Case Study: Air Treatment

Odense University Hospital, reduced humidity related problems in -80 °C cold store.

#### Benefits

By installing Munters ML1100 desiccant dehumidifier, Odense University Hospital achieved:

- Improved energy efficiency on refrigeration system
- Prevention of ice build up on coils
- Reduced need of defrosting
- Improved staff and equipment safety
- Improved climate for staff

## Munters IceDry™ controls humidity at Europe's first -80°C cold store

The new 350m<sup>2</sup> storage at Odense University Hospital, Denmark, is the first - 80 °C cold store to store blood and tissue samples in Europe.

Munters IceDry™ desiccant dehumidification ensures optimal operation of refrigeration system, decreased need of defrosting and safe working conditions for employees.

Odense University Hospital (OUH) has recently inaugurated an "ultra-low temperature cold store" for long term storage of blood and tissue samples. The cold store is designed to keep a constant temperature at - 80 °C and Johnson Controls Refrigeration has been responsible for the overall delivery.

#### Central storage of tissue samples

Tissue samples, cell samples, blood tests, etc.,

mainly stored for scientific research purposes have so far has been stored in more than 100 chest freezers scattered across hospitals throughout South Denmark.

All frozen samples from the region are now brought together in this central cold store at OUH, that attracts a lot of attention from hospitals in both Denmark and abroad.

After the establishment of the cold store, chest freezers will only be available locally for initial freezing of new samples and for storing of the samples currently handled.

By centralizing the long-term storage of samples, the vast majority of chest freezers is eliminated. The local chest freezers have had a relatively high energy consumption and furthermore an energy-intensive ventilation to remove heat from the freezers subsequently was necessary. Using the new cold store instead, the calculated energy savings amounts to approx. Euro 260,000 a year. In addition future investments in new chest freezers can be eliminated.

### Technical challenges

The 110 °C temperature difference between the cold stores - 80 °C and the outdoor summer temperatures up to +30 °C, led to many technical considerations and challenges. Among other things, all panels forming floor, walls and ceilings in the cold store is made from steel panels in a length that will not bend and that reacts identically when the room is cooled. To avoid permafrost, the heat generated by the cooling system is supplying the buildings floor heating system.

As the content of the room is irreplaceable, there is considerable focus on ensuring a constant temperature of - 80 °C. For that reason both an emergency refrigeration systems as well as emergency generator and battery backup has been installed should there be a failure in the power supply.

### Cold air meets warmer air and condensation problems arise

Besides the problems in temperature difference, the difference in water content in the cooler and warmer air would also cause problems.

When the door to the cold store is opened, the - 80 °C cold air comes pouring out from the room and meets with the - 5 °C cold air from the 50m<sup>2</sup> anteroom.

As the warmer air in the anteroom contains more water, this water will condensate when the airstreams mixes, and condensation at these temperatures is equal to snow, ice, frost and foggy air. Furthermore floors will become slippery and cause a danger for people entering the room.

In order to minimize these problems Johnson



The cold store has attracted a lot of attention being the first in Europe of its kind. Recently the danish Crown Prince Frederik paid the cold store a visit.

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Controls decided to install a Munters energy efficient desiccant dehumidifier type ML1 100 in the ante room. The dehumidifier ensures that the air in the anteroom is kept as dry as possible (desired dew point - 30 °C) and thus reduces formations of ice and frost considerably.

As the Munters dehumidifier removes a significant amount of moisture, the evaporators need defrosting less frequently and thus achieves a better energy efficiency. Moreover, the dehumidifier prevents icy and dangerous floors, improves visibility, and employees will appreciate that the cold air feels less cold compared to air being both cold and humid.

OUH has put themselves on the world map with this advanced energy-efficient and reliable solution that is likely to lead the way for other hospitals around the world.

### The Munters technology

Munters invented and uses the desiccant drying technology, absorbing moisture from the air on a molecular level, using high-performance Silica Gel in our patented Rotor Technology( [www.munters.com/rotor](http://www.munters.com/rotor)).

Because Munters' dehumidification principle is working with a desiccant rotor (wheel) instead of a cooling coil like in refrigerant dehumidifiers, efficient dehumidification is possible even at extremely low temperature IceDry™ applications, like in cold store environments.

At the same time Munters' dehumidifiers are free from problematic refrigerants and compressors, granting you an energy efficient and more environmentally friendly solution.

### World wide success over decades

Since the early beginning more than 60 years ago, Munters has developed into a global leader of energy efficient air treatment solutions, offering both dehumidification, humidification and a variety of cooling systems. More than 300,000 desiccant rotor installations speaks for itself and Munters' air treatment solutions are securing optimal climate conditions among the world's leading manufacturers of e.g. food and pharmaceutical products.

### We are never far away

With a global organization we serve customers around the world from more than 30 branch offices and an extensive number of distributors. Learn more about Munters on [www.munters.com/icedry](http://www.munters.com/icedry) or contact your closest Munters office.

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