CASE STUDY

## Dairy Industry

# Munters Increases Quality and Productivity in Dairy Processing

Appropriate climate is critical in the dairy industry all year round. When comparing dry and cool winter conditions to warm and humid summer environments, evidence shows a dryer climate is preferred for processing. Cooler, dryer conditions allow for faster drying and reduce the risk for mold, condensation and ice build-up on cold surfaces. Hygroscopic products like cheese, salts, and sugars absorb less or no humidity from desiccated ambient air. Dry air also allows for continual transportation of hygroscopic products, which can be interrupted in humid conditions. Humidity has been shown to cause serious problems, including electrical corrosion and damage to electrical equipment. With so many proven benefits, is easy to see why dairy producers prefer desiccated, cooler climates in their processing factories. The following are common applications for desiccant dehumidifying in the dairy industry.

### Spray Towers

Dehumidifying the air in spray towers optimizes spray tower capacity and reduces energy consumption, regardless of the product in process. Capacities of delicate products such as whey powder can also be greatly enhanced. By complementing a spray tower with a desiccant dehumidifier and/or heat exchanger, the operating parameters of the tower can be kept constant throughout the year. Calculating an increase in capacity for a tower is simple, especially if the spray tower is in operation.

It is necessary during spray drying processes to stabilize all parameters of operation to optimize production and improve efficiency. Using desiccant dehumidification can make this possible.

### BENEFITS

- Reduces carbon footprint
- Saves on energy bills and reduces maintenance
- Ensure sanitation and less product waste
- Year-round climate control
- Worker comfort

Munters

# Applications and Products

### Fluid Beds
In addition to spray towers, dried products often need to be chilled after processing. For instance, products containing fat can turn rancid if the product is not properly cooled. To cool and dehumidify the products efficiently and effectively, fluid beds can be used to prevent the product from absorbing humidity from the cooling air. Thus, dehumidified air creates healthier products and helps eliminate product loss.

### Pneumatic Conveying
In a pneumatic conveying system, contact between the air and the conveyed product is very important. If not properly controlled, a dried product can reabsorb humidity if the conveying air is humid. To prevent this, pneumatic conveying systems are equipped with dehumidifiers.

### Filters
Processing creates soiled air full of harmful particles. These particles are usually filtered before they are released into the open air, but humidity can complicate this process. While at a standstill, segregated hygroscopic products in the filter can absorb humidity, causing the filter to become clogged. With a dehumidification system, the filters are kept dry during these periods of standstill.

### Cooled Rooms
### E.g. Cheese Storerooms
Because the air is dehumidified to some extent, condensation can often be found in chilled rooms. The resulting relative humidity depends on a range of factors. At lower temperatures, less dehumidification is required. The relative humidity in a cooled room often exceeds 70% RH, which increases the risk for mold. Desiccant dehumidification that is equally efficient at all temperatures can resolve this issue. Numerous cooled rooms such as cheese storerooms have been equipped with desiccant dehumidifiers for this reason.

### Drying Before Packing
Cheese receiving soft coating must to be completely dry before the coating can be applied. A desiccant dehumidifier can dry the cheese quickly without having to raise its temperature.

### Drying After Cleaning
Cleaning objects with water in an environment plagued with humidity can cause bacterial growth. This growth can be eliminated by using a desiccant dehumidifier. Air that has been dehumidified is much healthier and cleaner when blown into a room or on to equipment that has been cleaned. This is especially efficient in objects that are difficult to heat or that are kept cold. Dehumidification is also being used to maintain a humidity level so that the cleaning intervals can be prolonged to reduce cost.



## 1 | Heat Exchangers Save Energy and the Environment
Munters also offers specialty industrial product systems for high temperature processes within dairy processing. These energy recovery systems contain plate or shell and tube heat exchangers to recover wasted energy from processes, heat other process air streams, and/or for use in packaged systems to provide heated makeup air. Indirect gas heaters can also be used on dairy spray dryers (cheese, powdered milk, baby formula, etc.). These systems have a minimum efficiency of 90% to reduce fuel and emissions. Optional combustion air preheat systems can be added that can further raise the efficiency along with ultra low emissions burners to provide the lowest NOx emissions in the industry. Not only will these systems reduce a facility's carbon footprint, but they can save significant costs on energy.

## 2 | Dehumidification for Better Performance All Year
For the food industry, Munters dehumidification systems contain a patented GTR desiccant wheel to ensure systems are capable of taking the outside air down to a lower dewpoint than any other standard system, without the need for pre-cooling. The GTR wheel is designed to have a higher outlet temperature to treat the application's process air that is typically heated to 300°F and higher. By using desiccant dehumidifiers in this application, a consistent humidity level is maintained for the product to be exposed to even as the outside air conditions change. This is especially beneficial for processing involving moisture sensitive or hygroscopic materials to provide less drying time, better consistent product quality and less product waste.

**Munters Corporation**
Tel: (800) 843-5360
E-mail: dhinfo@munters.com
**www.munters.us**

Munters

**CS0070-00 07/10**