



Dehumidification in meat production

SEIBU GIKEN DST

Control over moisture — the road to better product quality

A great deal of water is used during the cleaning process of the production and packaging areas within a slaughter house. If left to lie on the floor or machine surfaces, this water will be held in the air as water vapour. Add to this the ambient air being introduced by the ventilation system, normally much higher during the hotter summer months, then we have a great deal of moisture contained in the air of the production unit. This moisture can only be held in the air above a given temperature. If this air comes into contact with a surface which is below its dewpoint, such as in a cold room, the natural result will be the formation of condensation (dew) on these surfaces.

Free from condensation, mould and bacteria

Reducing the water content of the air lowers its dewpoint, that is the temperature at which it will form condensation. Providing the water content is reduced sufficiently, cold surfaces (machinery, floors, walls and ceilings) will remain dry. Hygiene and safety standards will be improved. The formation of mould and bacteria will be eliminated. The solution – a desiccant dehumidifier.

Shorter production stoppages

The normal way of drying the premises after cleaning is to squeegee the floor, mop up any excess water and use ventilation to assist the process. Using a sorp-

tion dehumidifier for cleaning and drying premises shortens the time required to dry ceilings, walls and machinery, resulting in shorter production stoppages so that work can be resumed more quickly.

Better working environment

Controlled humidity creates a drier climate and a more pleasant working environment despite the low temperature. Reduced humidity also helps eliminate odours and the risks of slipping on wet surfaces.

HACCP and controlled moisture

Work is facilitated by controlled humidity at packing and production facilities, and hygiene levels are assured thanks to HACCP (Hazard Analysis and Critical Control Points).



Better hygiene thanks to low humidity

- Low controlled humidity on the premises prevents multiplication of mould and bacteria
- Hygiene is improved as ceilings, walls and machinery remain dry
- The premises dry more quickly after cleaning
- There is less need for repeated cleaning
- Staff do not need to wipe down production machinery manually, so resulting in greater uptime
- Compliance with authority requirements is easier if low, controlled humidity is maintained



DST dehumidifier and unique design for the food industry

DST dehumidifiers dry the air by passing it through a unique slowly rotating desiccant wheel which extracts and retains the water vapour within its honey-combe structure. The wheel moves into a separate sector where fresh air is drawn into the system, heated and forced through the rotor section holding the moisture. This releases the water vapour within the rotor which is expelled to ambient by the internal fan via a suitable duct. No condensation forms within the rotor greatly reducing the possibility of microbial activity taking place.

DST desiccant dehumidifiers are designed to be economical in operation, some models designed with internal heat recovery which further reduces energy consumption and therefore operational costs. The unique DST Hygiene rotor (SSCR-H), has been developed for food production and processing environments. The rotor not only dehumidifies the air, but also reduces the number of microorganisms that come into contact with the rotor material. The SSCR-H rotor offer an enormous advantage compared with standard dehumidifiers.



CONDENSATION

Condensation occurs on cold surfaces if the dewpoint of the air is higher than the temperature of the surface affected. Moisture after cleaning creates a climate whereby water vapour in the air condenses to form water, which may then drip down from the ceiling onto unpackaged products.



MOULD AND BACTERIA

There is an increase in the risk of mould and bacterial growth in high moisture areas. Most mould spores cannot multiply if relative humidity is lower than 70 %, and most types of bacteria die if humidity is lower than 80 % RH. Salmonella bacteria cannot multiply if humidity is lower than 93-96 % RH.

Relative humidity

Relative humidity is a measure of how much water there is in the air. A relative humidity of 50 % means that the air is half saturated with moisture. Relative humidity is also affected by temperature. With an outdoor air temperature of +20 °C and an ambient humidity of 60 % RH, ambient humidity rises to 100 % RH if the air is cooled to 12 °C.

Dewpoint

The relative humidity in the air increases when the temperature falls. When the relative humidity is 100 %, moisture starts to condense and forms dew. The dewpoint indicates the temperature at which the ambient

humidity has risen to 100 %. If the outdoor temperature is 20 °C and the relative humidity is 40 %, the dewpoint is 6 °C. At a temperature of 20 °C and an ambient humidity of 60 %, the dewpoint is 12 °C.

The dewpoint in outdoor air is lowest in winter, then rises during the summer and through until the autumn.

References:

Germany: Gmyrek, Gifhorn, ZRP

Denmark: Danish Crown AS

Switzerland: Migros AG, BELL AG

Czech Republic: Globus

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