

dry facts

from **Bry-Air** www.bryair.com

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Food for thought !!

Moisture can make a meal of your profits !

The food industry is incorporating more and more sophisticated technologies to maintain the growth fuelled by changing consumer tastes and lifestyles. Every processor is endeavoring to ensure that the food product reaches the consumer with the right flavour, perfect shape as well as has a long shelf life.



Moisture or rather uncontrolled humidity during processing, packaging, storage, often, plays a party spoiler.

Moisture control is essential in every segment of the food industry in the spheres of

- ◆ Storage
- ◆ Production
- ◆ Packing
- ◆ Processing
- ◆ Low temperature drying.



www.bryair.com

Bry-Air dehumidifiers provide solutions to all humidity related problems in the food process industry !

Bry-Air touches your life round the clock !

Increase production without increasing capacity

Spray / Fluidized bed dryers require large quantities of hot air for drying. The quality of the final product is affected by the quality of air entering the dryer. It should be dry, free from contamination, foreign particles and odourless.

With the growing emphasis on limiting production losses and downtime, which impacts final product quality and thus profits, the importance of using dehumidifiers, in conjunction with Spray Dryer / Fluidized Bed Dryer for quality drying, has become almost mandatory. Moisture hinders the free flow of powders/ granules making many downstream operations (e.g. packaging, filtering, handling) difficult and expensive.

Speedier drying and processing with **Bry-Air**® dehumidifiers

Spray / Fluidized Bed Drying

Spray Dryer

A spray dryer, is a device for drying, utilizing a spray. It mixes heated air with an atomized (sprayed) liquid stream within a vessel (drying chamber) to accomplish evaporation and produce a free-flowing dry powder with a controlled average particle size.

Fluidized Bed Dryer

In a fluidized bed dryer, air is passed through the product layer under controlled velocity conditions to create a fluidized state. Heat may also be used by heating surfaces immersed in the fluidized layer. These dryers are widely used in the:

Food & Dairy Industry

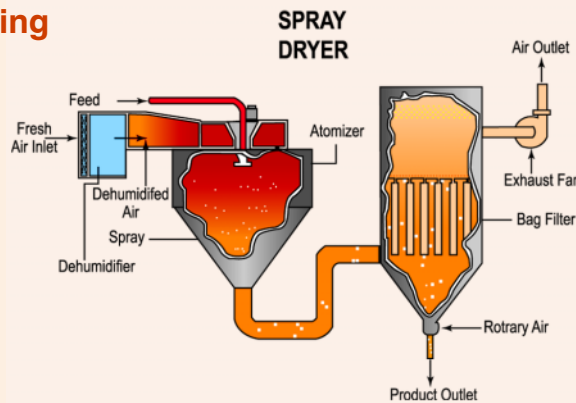
- Beverages - Coffee, Tea and Cocoa.
- Carbohydrates and Sugar.
- Health foods and Herbal products.
- Juice/ soft drink concentrates and Soup mixes.
- Milk, Starch and Vitamins. ● Ingredients and flavours.

Dehumidification (Humidity Control) - A must

Bry-Air® Solution

The ideal solution is to install a Bry-Air Desiccant Dehumidifier at the inlet (source of air) of the spray/ fluidized bed dryer for a constant moisture content supply (dry) air inside the dryer. This helps in reducing the physical monitoring of the drying temperature and time thereby reducing costs and ensuring consistent quality year around.

Bry-Air Dehumidifiers have been installed by leading manufacturers like Unilever, Tata Tea Ltd., Nestle, Mauri Food and Goodricke Group, for processing of coffee, instant tea, milk powder and other powdery products.



Low temperature drying

The Bry-Air Desiccant Dehumidifier is also ideal for many temperature sensitive products, which cannot be spray dried easily at relatively high inlet temperatures. Use of dehumidifiers also reduces the drying time of the product inside the spray / fluidized bed dryer. Bry-Air specializes in product drying at temperature below 24°C (75°F).

Processing of powdery foods

In processing powdery foods such as milk powders, the presence of moisture in the air can cause lumping or caking. This effects the free and easy movement of the food and beverage powders in the processing machine and pneumatic conveyors.

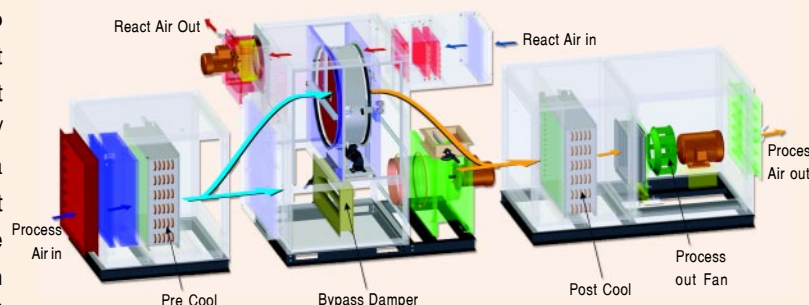
Due to high humidity, powdery material tends to stick to the hopper conveyors and packing machine, leading to frequent breakdowns in the conveyor drive mechanism.

To ensure free flow of powder and avoid sticking of powder on chain conveyor and other machine parts, Relative Humidity (RH) in the

packing hall has to be maintained at 40±5% and temperature at 22-25°C.

The solution to the problem lies in the introduction of a **Bry-Air dehumidifier**. The dehumidifier by controlling

the relative humidity in the environment provides the most simple and economic solution to overcome lumping and caking. It also avoids the sticking of powder on packing machines, hoppers, and other parts. Moreover, it ensures an easy, free flow of powder through the packing machine into containers.



WHEN MOISTURE IS TORTURE !

In this column, we will share with you regularly our experience on major application areas where usage of dehumidification is both extensive and essential.

Meat Processing . . . Condensation can “seep” into your profits !



Food safety is, probably, one of the most important issues that food companies face day-in and day-out.

Concern for public health in the case of potentially devastating consequences of contaminated food have driven industry associations, safety experts and watchdog organizations to establish guidelines not only for food handling, but for plant and process line design. Following these recommendations can reduce the possibility of a catastrophe.

Microorganism growth is one of the main causes of potential Food contamination.

Moisture results in increased microorganism growth. Microbial growth and dispersal can be controlled if the food processing facility is kept dry.

But keeping a plant dry is not easy as water is an essential part of product and process of food processing.

Ensuring the correct moisture and condensation levels for food production is crucial, particularly for the meat industry.

Food safety scares in the Western world, specially the US and Europe has drawn food processors' attention to desiccant dehumidification systems, which ensure the right levels of

humidity within food production facilities. Water vapours released during slaughtering and processing, cooking processes and temperature differentials contribute to moisture buildup inside a plant. Preventing fog and condensation build-up by controlling the room temperature and humidity retards microbial growth.

Controlling condensation by ensuring management of moisture levels is now an accepted engineered solution as

usually is not sufficient to eliminate condensation.

Compared to the typical refrigeration system, desiccants are effective in removing moisture from the air without condensing or at extremely low temperatures.



The Problem

. . . in nearly all meat, poultry and seafood processing plants:

◆ Sweating / Fogging

Bry-Air® Solution

◆ Removal of moisture through desiccant dehumidification thus, ensuring condensation does not occur.



The choice for desiccant dehumidification™

Bry-Air's desiccant dehumidifiers precisely control the humidity and dew points in the plant so that condensation cannot occur.



Smell . . . Odour in Food Processing Plants

The organic and inorganic compounds emitted from various food processing operations can become a nuisance in the surrounding when they carry objectionable odours.

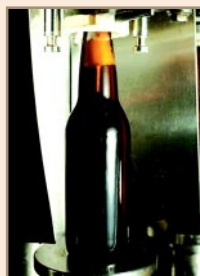
Increased sensitivity and demand of the general public for a clean and pleasant environment and reduced land areas available for isolation of industrial operations from the public areas have forced all types of industries including the food processing industry to control odour emissions as well as toxic air pollutants.

Controlling odours

The two basic principles for controlling odour at food processing plants.

- Reduction of odour at the generation sources
 - Removal of odour from collection air-streams before the odours are discharged into the atmosphere.
- Source control is always the first choice for odour control and can be effected by using low-emission processing and good housekeeping techniques. In most cases, however, removal of odours from the discharge ducts or dispensed ventilation air is necessary to remediate the odour problems. Odours are generated from the food processing plants are usually a mixture of various organic and inorganic compounds in low concentrations. Most of these compounds are reduced carbon, nitrogen compounds, etc. which are not toxic and easily biodegradable. Typical odorous compounds encountered in food processing operations include aldehydes, ketones, alcohols, acids, ammonia, amines and mercaptans. In some cases, the odours may also be caused by volatile organic

compounds (VOCs) which are less biodegradable. The physical and chemical characteristics of specific odours are largely affected by the types of odour sources.



Bry-Air **EcoSCRUB**™ your “Clean Air Partner”

Bry-Air **EcoScrub** is the ideal most cost-effective solution to these problems. It's unique process eliminates odour and cleans the contaminated air of suspended particles and corrosive gases, making the working environment healthy for you and your equipment.



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