dry facts

...from Arctic India Sales

July - August - September 1984 Vol. 4 No. 3

SEMINAR AT INDORE

Dehumidification In The Pharmaceutical Industry

Technokrats of Indore, who represent Arctic India Sales in Indore held a seminar on 'dehumidification and the pharmaceutical industry' on September 13, at Indore on behalf of Arctic India Sales. The seminar was very well attended by a large number from the pharmaceutical industry and also representatives from research laboratories and other Government bodies.

Mr. J.J. Neuralkar, M.D. M/s. Suneeta Laboratories Indore, consented to be the chief guest. Mr. Rajnish Joshi our Sales Co-ordinator and Mr. Dinesh Haria from Bombay gave an exhaustive talk on principles & merits of Bry-Air dehumidifiers & their varied applications in the pharmaceutical industry.

The seminar & lunch which was well organised was a sucess & commended by all. Our thanks to Mr. K.B. Desai & Mr. Anil Jha of Technokrats for their efforts for organizing the seminar.

Prestigious job undertaken by Bry-Air export division

Bry-Air have recently supplied an engineered system to M/s. Merck Sharp & Dohme (Thailand) Ltd., Bangkok for their Pencilin Packing chambers. The unit would be maintaining 15% RH at 23°C in the pencilin packing chambers. M/s. Merck Sharp & Dohme had various options to control humidity however, they decided for Bry-Air (India) equipment as it was the best system available in the world. The engineered system was 300 Cfm with by pass duct, up-rated fan, cooling coil with steam as well as electric reactivation.

Bry-Air dehumidifiers are being used and recommended by the best multinational pharmaceutical companies for critical humidity control for their production areas all over the world.

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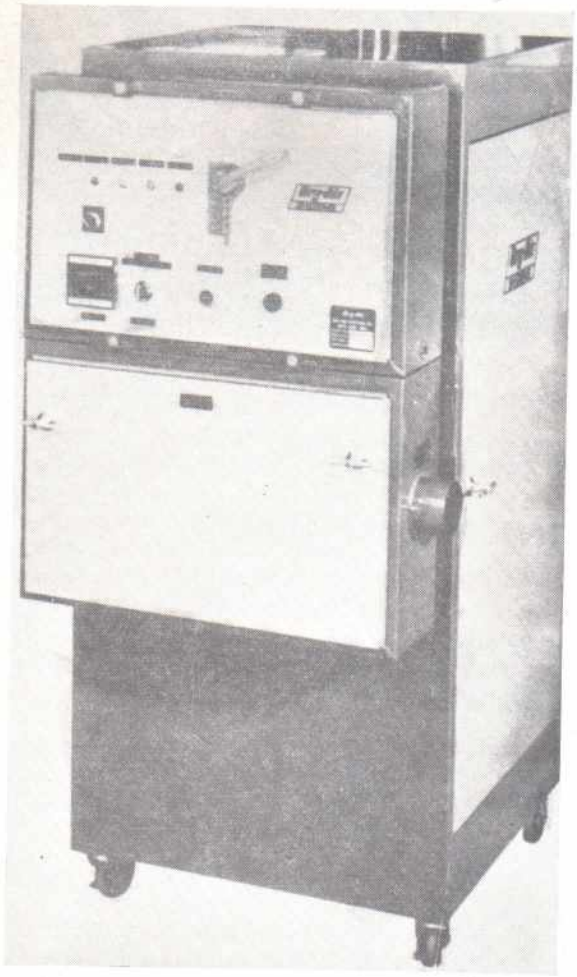
Introducing in India the complete range of Plastic Dryers



The Bry-Air dehumidifying dryer has revolutionized resin drying concepts in the plastic industry assuring you of better quality wares & fewer rejects. Bry-Air's plastic dryers for hygroscopic resins & plastic molders provide a constant—40°F dewpoint or lower (year around), even under extreme ambient conditions. This assures you of efficient drying of most demanding thermoplastic materials such as ABS, ACRYLIC, NYLON, PVC, POLY URETHANE, POLYCARBUNATE, BUTYRATE, ACETATE, SAN cellulose & Acrylic components.

The key to the performance of the dryer is a rotating bed module divided into four separate bed quadrants. Two quadrants dry the process air, while the other two are being reactivated and cooled. The solid state temperature control enables precise control of process air temperature and displays digital readings of process return & reactivation temperature.

The energy efficient dryer models are available in (DH-Series) and (RM-Series). The drying capacities vary from 15 lbs/hr to 1000 lbs/hr.

RM Series Dehumidifying Dryer

Bry-Air Systems RM Series Dehumidifying Dryers offer features which meet your needs for PERFORMANCE, ENERGY EFFICIENCY, RELIABILITY AND SERVICEABILITY. You get year-round-40°F or lower dewpoint air, even under adverse ambient air conditions, so you can dry demanding materials. A solid state temperature controller provides precise control of proceess air temperature and displays digital readings of process, return and reactivation air temperatures. All serviceable items are readily accessible for quick maintenance and minimal downtime. A wide range of standard models are available in capacities from 50 to 500 CFM.

DH-Series Dehumidifying Dryers

The Bry-Air Systems DH-Series Dehumidifying Dryers are low cost units specially designed for applications where dewpoint depression is less critical. The patented rotating bed provides continuous regeneration of the desiccant bed. You enjoy energy economy because the regeneration air temperature is held to 275°F while an adjustable thermostat lets you set the reheat temperature as high as 300°F. The unit's design allows for easy maintenance. DH-Series dryers are available in 20, 50 and 150 CFM sizes.

Hot Air Dryers

Bry-Air System's Hot Air Dryers remove surface moisture from non-hygroscopic plastic resins efficiently and economically. Used with Bry-Air Systems' Drying Hoppers, the Hot Air Dryers insure uniform and controlled heating of plastic resin at temperatures up to 300°F. Dryers are available in five capacities ranging from 20 to 600 CFM.

Bry-Air products for Plastic Processing :

DH series dehumidifying dryers
Hot Air Dryers
Drying Hoppers
Machine & Radio loaders
Vacuum sequencing system

For more details on any of the above write to us.

Watch Out. In Our Next Issue

Additional product lines from Arctic India Sales

(1) Energy management systems of Electronic systems of U.S.A.

(2) Radialfrac of export management Inc. U.S.A.

(3) High speed filling machines of Vista/Chase Logman

(4) Slow scan picture transmission/video transmission of Magnus corporation.

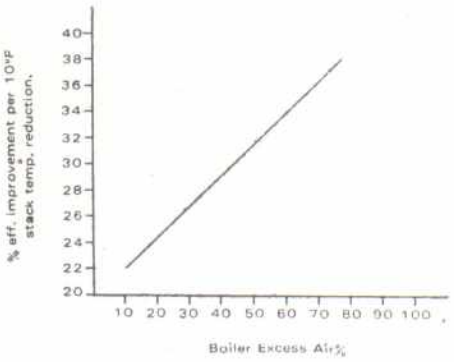
DON'T LET THE HEAT ESCAPE ! ! !

Energy conservation and energy recovery are the buzz words of today. With the constant increase in the fuel cost over few years entrepreneurs have become more conscious and interested in the better utilization of fuel energy and its conservation.

You too may have a problem of millions of escaping BTUs which could be gainfully recycled. We will in this column share with you some of the specific application areas where out heat recovery system may be solution to your problem. However your industry may be different & your problem unique; Write to us & together we may be able to provide the solution.

Heat Recovery From Boilers

Boiler is one equipment required by almost every industry. Usually Boilers are coal/oil fired and a lot of energy is carried away by the fuel gases and usually goes waste. Hence there is a good potential of conserving this escaping heat and to utilize for pre-heating the combustion air and thus improving the efficiency of the boiler. The net efficiency increase potential depends on the exhaust gas temperature and excess air rate. A general relationship to estimate the efficiency increase for each 10°F drop in the exhaust gas temperature is shown in the above figure.



When air to air heat pipe based heat recovery system is installed against the fuel gases of Boiler, the hot gases are cooled by incoming combustion air when the pass through the exchanger and thus the combustion air becomes warm and carries additional energy with it in to the combustion chamber. This is the energy which does not have to be supplied by the fuel; consequently less fuel is burned for a given loading. The saving also means a decrease in the combustion air and therefore, stack losses are decreased not only by lowering the stack gas temperature but also by discharging smaller quantities of exhaust gases.

The hot combustion air is uncontaminated and free of impurities. The hot gases and cold air are carried in two separate ducts and hence there is no cross contamination between them. Further, counter flow of the two air streams and integral fins make heat transfer more efficient recovering up to 85% of waste energy and brings you tremendous saving years after years in terms of fuel.

Some Recent Applications

Food

Real Food Product Hyderabad & Kasturi Food Product use our table top models in their *biscuit storage areas. To dry vegetable products*, Tropical Enzyme Pvt. Ltd., Bangalore use our table top model.

Cigarette Storage

Golden Tobacco Ltd., Bombay uses a table top model in their cigarette storage area.

Negative Film Storage & Manufacture

Drying of various photographic films during manufacture requires dehumidified air to prevent damage to heat sensitive compounds. Dry air is passed over the emulsion to speed up the drying process & maintain a more uniform product. Hindustan Photofilm Manufacturing Company—Ootacamund & Photophones Ltd., Bombay use the desiccant dehumidifier to store the negative films.

Printing

Pond's Export Ltd., uses a 300 Cfm unit in their screen printing area.

Printwell Product, Bombay also maintains low RH in their printing press room.

Ammonium Nitrate Storage

Ammonium Nitrate, hygroscopic in native needs to be stored in controlled environment to avoid moisture regain. Ordinance Factory, Bhandra uses 700 Cfm dehumidifier for maintaining low RH in the storage area.

Infra Red Spectrometer Labs

Temperature & humidity control are standard operating procedures in labs using Infra Red Spectrometers. Among many others Hindustan Scientific Instruments Co., Mukund Iron & Gen. Mills, Steel Cast all make use of table top models in their labs.

Storage of Petrochemicals

Bangargaon Refinery & Petrochemicals are going to be using a 750 Cfm MVB for their warehouse to maintain RH equivalent to 9°C dew point.

Ven Petrochemicals will be using a 750 MVB for drying of certain chemicals.

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WHEN MOISTURE IS TORTURE ! ! ! ! !

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

Corrosion Problem is Moisture Problem

Humidity

Invisible water vapour in the air. Father of rusty bolts and industrial foe of product quality & storage.

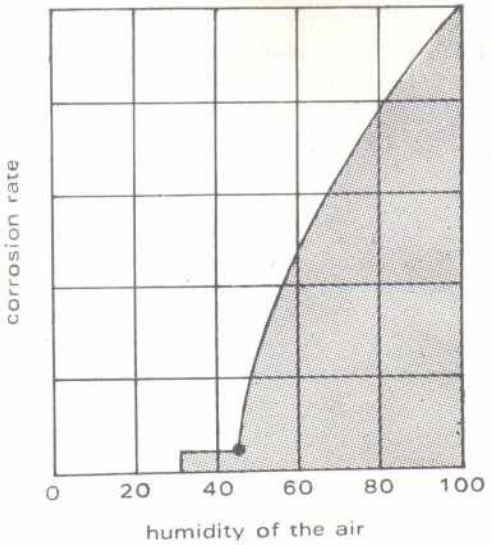
A certain amount of water vapour is always present in the air. We experience a relative humidity of 50% at comfort temp. 77-80°F as pleasant. In India, in most parts of country the RH varies between 60-90%, corresponding dry belt temperature range from 85°F—100°F. The effects of this humidity are felt by man as well as machine. We accept and forget about the ever present humidity as part of our life, but the effects of humidity on the machanized industry are long term and devastating and cost a company thousands of rupees every year for maintenance.

The destructive effects of moisture can be simply explained as when the air reaches its dew point temperature then at temperatures just below dew point, condensation takes place resulting in depositing droplets of water on the cold surface. This condensed moisture reacts with certain inorganic materials or acts as a medium conducive for substances to attack materials.

The Critical Humidity

The rate of corrosion attack or rusting is considerable above a certain relative humidity. But below the critical humidity the rate of corrosion is negligible. The critical humidity in most cases is about 45%. In some cases even lower, however in practice the relative humidity to be maintained for storage of steel components and machinery should not exceed 40%.

The graph shows the rate of corrosion accelerating above 45%. RH.



Hence it is imperative that the RH must be controlled. It is possible to achieve a low RH by either *heating or dehumidifying the air.* When the air is heated, the temperature of the air is raised. The quipment to be protected must also be heated to the same temperature as air, because the dew point temp. is very high & if the metal surface is lower than surrounding air, condensation will begin. Heavier equipment which takes a long time to heat up is not given proper protection during the time it is being heated.

Moreover the moisture content & dew point temp. during *heating* remains unchanged, whereas dehumidification reduce the moisture content and dew point of air at the lower ambient temperature.

Hence the solution to your corrosion problems is to *tackle Moisture* & not temperature.

Hence dehumidification becomes extremely important in eliminating corrosion in-

1. Storing large equipment or small machinery parts over any length of time.
2. During lay up or standby of large machinery or ships in docks.
3. For cleaning or coating application before painting.

For machinery including vehicles & large mechanical systems susceptible to corrosion, storing them in a room where relative humidity is controlled within a range of 35% to 45% will keep them from getting rusted & corroded.

Associated Bearing in their storage room for Ball & Roller bearing maintain a RH of 45% & temperature 37°5C±1°C with a 600 cfm Bry-Air dehumidifier.

In installations, ships or near the seashore facilities where humidities are as high as 80 to 90% throughout the year dehumidification is essential for maintenance. Sustained exposure to humid conditions and atmospheric suspended salt will deteriorate, in time, the costly & sensitive equipment.

Blasting & coating operation on ship's tanks, large plants etc. often are impossible without control of humidity levels. Metal surfaces begin to rust immediately after being sand blasted in presence of high RH or when the surface temperatures are low. The coating procedure has to be repeated & the paint does not adhere properly.

Having pointed out the distinct advantages of dehumidifier over storing by heating air which is far more costlier, dehumidification does give you the proper solution to moisture problem & hence corrosion problem.

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