



# Dry facts

...from Arctic India sales

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## IN THE LAND OF WINDMILLS



The windmills in the Netherlands not only provide a picturesque landscape to the country but are the great surviving evidence of a technology invented to overcome

the fight against the greatest enemy of its people—water. The modern self maintaining Netherlands began its development as a nation with the establishment of organisations for water management. This perfect organisation capability, perfected over the years, helped the nation to survive its struggles and has become its strength today.

*The group picture of the International Representatives at Delair, Holland.*



Representatives from sixteen different European countries and member companies of Bry-Air group witnessed this organisational strength at the Company Delair at Breda, hosts of the third International Meet of Bry-Air in May 1987. However, the group met to discuss management of water of a different level, 'Moisture in the air', for Delair manufactures dehumidifiers under license of Bry-Air.

The sharing of cumulative experiences in application engineering, the strengths of the 'MVB' and developments thereof were factors for making the meeting a great success, only to be enhanced by the excellent hospitality of the hosts.

The representatives meeting was followed by a two day meet of the executives of member companies to review and chart growth for the coming year. A trip to the picturesque 'Zeeland' and the famous Delta project were the grand finale.

Minutes of the meeting—"Dutch cuisine is excellent and nothing to surpass Dutch hospitality".

## THE CONTRACT FOR CO-OPERATION

It was certainly a cause for smiles and celebrations when Mr. Anton Ommert, President Delair and Mr. Deepak Pahwa, President Bry-Air India signed the formal agreement for the new joint venture, Delair India. The new Indo-Dutch venture will be specialising in the field of compressed air drying and related fields of air and gas separation. The Dutch company Delair is also a member of the Bry-Air family, specialists in the field of dehumidification.



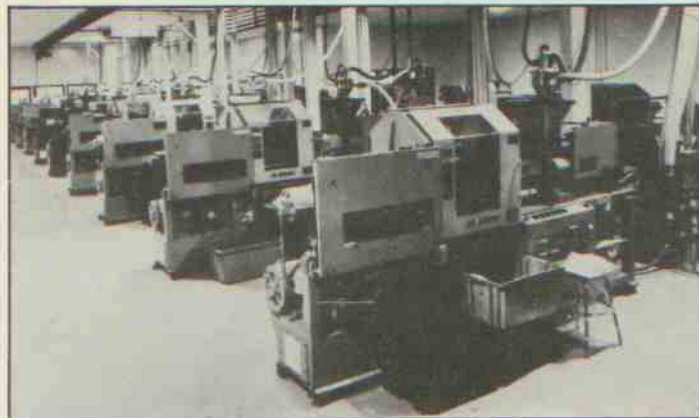
*Delair President Mr. Anton Ommert and Mr. Deepak Pahwa, Bry Air (India) President shake hands on the signing of the contract.*

## BRY-AIR PNEUMATIC CONVEYING SYSTEMS

### A BOON TO THE PLASTIC INDUSTRY

*Bry-Air pneumatic conveying systems are designed to serve the plastic industry irrespective of the size of the operation. From railcar to storage, to machines, Bry-Air systems can efficiently store and handle a variety of dry products in dust-free conditions, moving at the exact rate of flow that the process demands, totally controlled throughout transit to point of use.*

*The installation at Medex.*



### A FINE EXAMPLE IN TURN KEY CAPABILITY THE MEDEX INSTALLATION

**B**ry-Air systems' central vacuum—loading system for multilocation sequencing of resins from bins and silos to several moulding machines provided an efficient solution for plant wide distribution requirement at Medex Inc., Columbus, Ohio. The system involves central drying and conveying in a separate material handling room, remote from the moulding machine rooms.

The central vacuum loading system utilizes a five-horsepower vacuum pump to convey six different materials from gaylords (bins for plastic pellets) to six 300 lb drying hoppers. A Bry-Air systems model RM 300 centrally feeds—40°F or lower dewpoint air to the six separate insulated drying hoppers containing clear lexan with 30%-70% regrind mixes. Once the material is thoroughly dried, it is conveyed (with the same vacuum pump described above) through six material lines to twenty injection moulding machines in the adjacent room. These material lines are arranged in such a way that any one

machine can receive material from any of the six lines, thereby, providing greater flexibility to the user.

**Apart from flexibility and reliability, there were three additional benefits which led Medex Inc., to decide in favour of Bry-Air systems. These were:**

- ★ Both the initial equipment cost and the operating costs per pound of material dried and conveyed are substantially less than that compared to dedicated units for each moulding machine.
- ★ Being a fully automated system, there was substantial reduction in maintenance, supervision and man hours required.
- ★ In handling, contamination due to spills or carelessness is eliminated.

In addition to the automation advantages of a central loading system, an additional feature, 'INSPECTOR CONTROLS', improves process control through the use of a unique microprocessor—based alarm system.

This achievement stems from a recognition that the future of the plastic industry lies in plant automation and process control.

## BRY-AIR ENERGY SAVER AT IPCL

**T**he Indian Petrochemical Corporation Ltd., Baroda has two huge dryers which require large quantities of air steam to heat the incoming ambient air for process. IPCL desired to reduce the steam load by recycling the thermal energy from outgoing waste exhaust to incoming cold air. Conventional type systems available in Indian market were studied. However, they were rejected as they were found non-efficient and un-economical as the exhaust temperature was low.

Bry-Air, using the enhanced technology solved the problem by using latest technology of heat pipes which can recover upto 85% of waste energy even at sub zero temperature. Heat pipe heat exchanger model IFA-28TF-108L-11FPI-7R-C was installed for each dryer to preheat the ambient air upto 90-95°C.

The dryer intakes approximately 9550 cfm and discharges the same air quantity at 130°C. Hence, a lot of energy was thrown to the atmosphere without doing useful work. By incorporating Bry-Air Heat Exchanger the exhaust temperature was brought down to 60-65°C thereby recycling 119480 BTU per hour. This saving is equivalent to 560 kg of steam. Thus, net saving is Rs. 140/hr and hence pays back in 3215 operating hrs i.e. 140 days.

Further, the government allows 100% depreciation on installation of such equipment and hence they result in indirect saving apart from the normal savings as indicated above.

*Heat Exchanger for IPCL.*



## SPEED UP DRYING

Bry-Air

### DEHUMIDIFIERS

double the drying  
at half the cost

Bry-Air Dehumidifiers speed up product drying by continuously removing the moisture from the surrounding air by a process of physical adsorption, thus making it possible to dry temperature sensitive products at low temperatures without the risk of product spoilage.

Dry air  
at any temperature  
custom-designed  
to your needs



Bry-Air Dehumidifiers have been successfully employed in drying of cocoa, gelatine, dehydrated soft drink concentrates, instant coffee powder, yeast, sugar, flour, starch, onions, vegetable seeds, cardamom, katha, leather, wood, chemicals, engineering plastics, polyester, drugs and other pharmaceutical products.



ARCTIC INDIA SALES

20, Rajpur Road,  
Delhi 110054

Ph: 252-2424. Tlx: 031-61203

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Enter Bry-Air...  
exit moisture



## LOW TEMPERATURE PRODUCT DRYING

The problems related to product drying are generally presented as a request for improvement in speed or quality of drying on an existing operation. Enhanced drying potential can be achieved in two ways. First, by raising the product temperatures by exposing it to heated air. Second, by physically removing moisture from the surrounding air. Heating is certainly less expensive than drying, so the question which arises—WHY BRY AIR DRYERS/DEHUMIDIFIERS FOR PRODUCT DRYING—is not unwarranted.

Bry-Air Dryers perform no miracles in the extraction of moisture from the product. Moisture must be released from the product to the surrounding air so that its quality can be retained. The dryer by maintaining the surrounding air at a lower moisture level forces the product to release its moisture. The drying potential and thereby the drying rate too are enhanced. More important, it removes the variable weather factor in the drying operation. These aspects of product drying can be undoubtedly achieved by elevating product temperature but certain products are TEMPERATURE SENSITIVE and using elevated temperatures impairs the quality of the product. The one and only solution which is both simple and economical in such cases is the introduction of *Bry-Air Dryers/Dehumidifiers* in the product drying arena. These, as has been said earlier, *surround the product with dry air so that moisture within the product is released to the surrounding air*. This process is known as physical adsorption.

Moreover, when the released moisture goes into the air, it must be physically removed from the air or some percentage of outside air must be admitted and an equal quantity exhausted to dilute the air surrounding the product. Without a desiccant dryer it follows that the use of all outside air will give the lowest possible moisture level in the chamber. It also follows that the moisture level must always be somewhat higher than that of the outdoor makeup air.

With heat alone then, the drying potential is limited by the specific humidity of the outdoor air and the safe temperature to which the product can be raised. In general, a proper drying potential can be established with heat and outdoor air if the temperature can be raised to 140°F or above. If the temperature cannot be raised above 120°F the job is best done with a Bry-Air Dryer.

Bry-Air specialises in product drying at temperature below 75°F. The application areas extend to the drying of myriad products. Specifically, to name a few, Food Specialities Ltd., Brooke Bond India Ltd., Shaw Wallace, National Seeds Corporation, Century Enka Spinning Mills, Glaxo, Woodland Mark and even the Ministry of Defence are using Bry-Air Dryers to dry instant coffee powder, gelatine, seeds, polyester, drugs, wood, foods respectively.

## SOME RECENT SHIPMENTS FROM BRY-AIR



Dunlops (India) ordered a MVB—30C to maintain  $45 \pm 5\%$  RH at a temperature of  $100^\circ\text{F} \pm 5^\circ$  in the creel room.



Among the many shipments for plastic drying featured above is the RM 300 alongwith the combination of Loader with Hopper model H12 sent to Polyset Plastics.

## WHEN MOISTURE IS TORTURE!!! 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.*

*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.*

## THE MILK CARE STORY

M/s. Dalmia Dairy, Bharatpur, are one of the leading manufacturers of Baby Food, Infant Food/Milk Powder. Packing of milk powder is carried out on semi-automatic machines in the packing hall. This had been airconditioned by providing an Air Handling Unit (AHU) with chilled water coil. However, air conditioning was unable to solve the humidity problems.

Due to high humidity, often, the milk powder would stick to the hopper conveyors and packing machine, leading to frequent breakdowns in the conveyor drive mechanism.

Bry-Air, keeping in view the world standards which recommend maintaining  $40 \pm 5\%$  RH at a temperature of  $22^{\circ}\text{C}$ - $25^{\circ}\text{C}$  db ( $72^{\circ}$  to  $77^{\circ}\text{F}$  dt), fulfilled the objective.

Since the packing of the milk powder in tins containers is carried out on semi-automatic machines, the tins to be filled keep moving continuously on a chain conveyor. The powder is put into the packing machine hopper from where it flows the into tin as it comes into the right slot.

To ensure free flow of powder and avoid sticking of powder on chain conveyor and other machine parts, RH in the packing hall is maintained at  $40 \pm 5\%$  and temperature at  $22$ - $25^{\circ}\text{C}$ .

To achieve the desired RH, dry air from the dehumidifier is continuously circulated in the packing hall through a suitable supply and return air system. An air handling unit functioning separately maintains the desired temperature in the packing hall.

## SOME RECENT APPLICATIONS

- ★ *Pan Masala mixing and packing* is being done by Govan Brothers, makers of Santoor Pan Masala under controlled conditions of  $32^{\circ}\text{C}$ ,  $40 \pm 5\%$  RH, with the help of Bry Air compact model BA 3A.
- ★ *Katha drying* is being experimented using a compact model at the pilot plant for manufacturing and drying of Katha at Shree Ganesh Research Institute, Ghaziabad. The conditions being maintained are  $10^{\circ}\text{C}$  and  $55\%$  RH. Bry Air has sold units for katha drying to other manufacturers earlier.
- ★ *Carburettor Testing area* is being maintained at  $22^{\circ}\text{C}$ ,  $40 \pm 5\%$  RH at Escorts by using the Bry Air compact model 1.5 A.
- ★ *Diagnostic Kits* are being manufactured by Ranbaxy Ltd at  $20^{\circ}\text{C}$  and  $15\%$  RH, using Bry Air compact models.
- ★ *Energy foods like Maltova and Viva packing areas* are conditioned at Jagatjit Industries at  $20^{\circ}\text{C}$  and  $40\%$  RH by using the MVB model delivering 4500 cfm of dehumidified air.
- ★ *Tiles Drying* is being accomplished by M/s Rajarajeshwari Gramudyog Sangh at Mangalore, Karnataka by using a MVB-15.B capable of delivering 1500 cfm of dehumidified air to maintain RH as low as possible at a temperature of  $40$ - $50^{\circ}\text{C}$ .
- ★ *Storage of Spices and packing* is being done in a single room by Pal Foods and Beverages P. Ltd. Room temperature is maintained at  $28^{\circ}\text{C}$  with window airconditioner and RH is controlled at  $25$ - $30\%$  with a compact dehumidifier.
- ★ *Artificial Silk Yarn* is being dried by connecting a BA.5A to a small cabinet with additional heaters by maintaing RH as low as possible at  $40^{\circ}\text{C}$  temperature.
- ★ *Cashew Kernels* are dried by using a BA 3A maintaining  $15$ - $20\%$  RH at  $43^{\circ}\text{C}$  by Gopinath Company, Quilon.
- ★ *Packing of finished Tig Welding Wire and storage* is being done at  $25^{\circ}\text{C}$  and  $5\%$  RH by use of a BA 3A at Zuzu Wires Pvt. Ltd., Hosur.