



# Dry Facts

...from Arctic India Sales

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## Season's Greetings

*As another year unfolds we all head towards the common goal—Success. As your partner in progress we at Arctic India Sales and Bry-Air wish you a Happy & Prosperous 1985.*

## Moving On Up !!!

Most company newsletters are known to have high mortality rates but with your constant encouragement Dry Facts enters the fifth year of publication. When we started out, dehumidification was in its infancy in India. Reaching out to 6500 well wishers every quarter and the constant response and the consequent rapport built up with you has made it possible to bring the dehumidification industry of age in India.

Through Dry Facts we constantly endeavour to share international application experience and as in the words of U. S. Ambassador Harry Barnes at the inauguration of Bry-Air plant "Not only is this Bry-Air technology in the dehumidifying field of the latest type, but the very provision of the products which you have seen produced here will make possible creation of other products which simply would not have been possible within this time frame and without this quality in India".

### In Retrospect

With the finest R & D lab, the MVB dehumidifier development programme was made possible.

At all Bry-Air plants in the world, this year, industrial rotatory flat beds dehumidifiers have been phased out in favour of the highly energy efficient MVB (Modular Vertical Bed).

With the learning curve completed on MVB product development and extensive application engineering, Bry-Air (India) boasts of a product range comparable to international standards.

Starting from a scratch last year Bry-Air (India)'s export achievement to South East Asia was nearly Rs. 1 million this year.

The Bry-Air family shares and updates its experience constantly and at all levels and 1984 has seen Paul Griesse visit India twice, Deepak Pahwa visit U.S.A. Bry-Air Ohio plant in April and

August, the training of 5 engineers from Indonesia, Thailand, Bangladesh and Philippines at the India plant, a trip of Deepak Pahwa to meet the Bry-Air agents in the ASEAN countries, Mr. Arun Bhatnagar's several visits to South East Asia for development of export programme.

Apart from this we had the advanced manufacturing and engineering training of four of our senior engineers at the U.S. plants, the visit of Rajnish Joshi and Dinesh Haria, to the Ohio and Holland plants for an update on application engineering.

In dehumidification Bry-Air has emerged a leader.....worldwide. This has been possible largely due to a dedicated and enthusiastic team in India and other Bry-Air plants.

### In the Coming year—

We participate in the 36th Indian Pharmaceutical Congress in February at Bangalore.

India will be the venue of the first BRY-AIR INTERNATIONAL MEET and BRY-AIR (INDIA) looks forward to playing host to this important event.

By the middle of the year the Heat Recovery Systems from the India plant would be fully indigenous. Heat Recovery Systems are already forming a significant part of total Bry-Air Sales.

Exports get a new dimension with our participation in the Moscow Trade show in May.

So on this happy note we start the new year with an optimistic outlook. Of course we'll be in touch with you regularly through Dry Facts.

# 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 our heat recovery system may be a solution to your problem. However your industry may be different and your problem unique ; write to us and together we may be able to provide the solution.*

## Waste Heat Recovery in the Plantation Industry

In any plantation industry large amount of hot air is required for drying products like tea, coffee, etc. The specific temperature requirement for drying the products varies with the type of product. However, to maintain the quality, it is essential that the hot air used for the drying of the product be free from contamination, odour and as far as possible, moisture. Hence, the air for the drying process is usually heated indirectly in heaters.

Flue gas from the heater is exhausted through the chimney, as it is contaminated and carries smell of sulphur/oil etc. Alongwith the above contaminants, a tremendous amount of thermal energy, is wasted too.

Bry-Air Waste Heat Recovery Systems recover energy from the

heater flues/dryer exhaust to pre-heat the incoming supply air. Since the exhaust air and supply air are carried in two separate ducts and do not come in contact with each other, the pre-heated air (supply air) is thus free of contamination, odour and is suitable for drying.

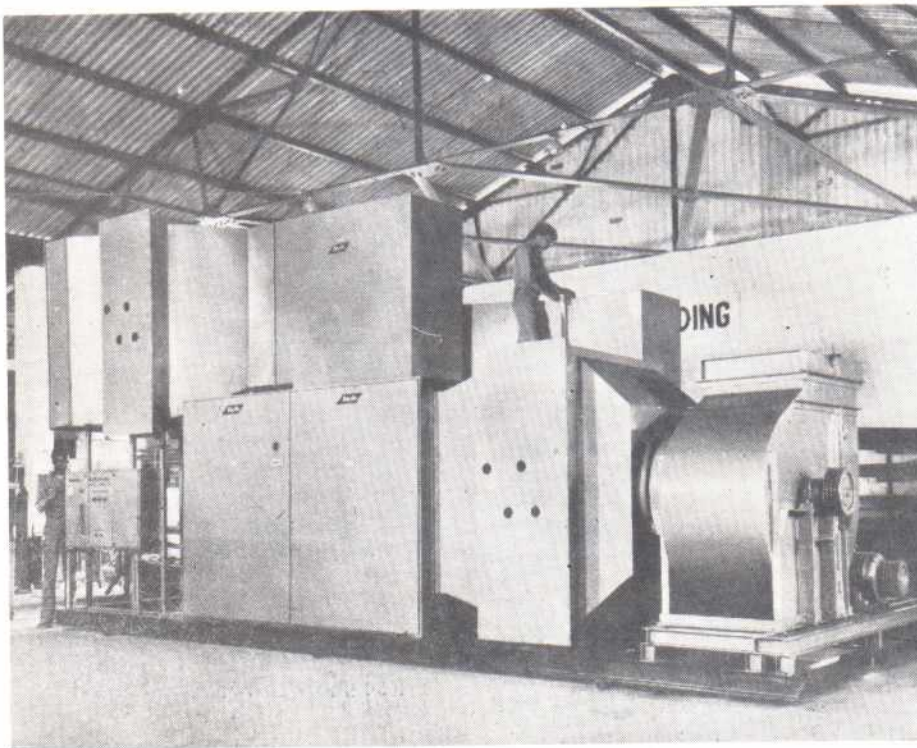
Bry-Air waste heat recovery systems are most efficient and save millions of BTUs year after year. What is more amazing is that they have no moving parts and hence require minimum maintenance, are completely silent and reversible in operation and require no external energy except the thermal energy they transmit. Further, integrated finned construction design provides significant advantages over the plate fin and duplex fin design and maximises the energy transfer.

Bry-Air standard heat pipe heat recovery systems operate in the air temperature range of  $-50^{\circ}\text{F}$ . to  $500^{\circ}\text{F}$ . with economic recovery up to 85% and very high payback between 8 to 18 months. Exchangers in special material of construction extend the operating range to  $800^{\circ}\text{F}$ .

In addition to high payback period the Government now permits 100% depreciation in the first year for waste heat recovery devices.

NIDC at Jorhat, Assam is using a Bry-Air heat exchanger to successfully recover waste heat from exhaust gases from tea dryers.

Ram Bahadur Thakur Pvt. Ltd. have ordered a Bry-Air heat exchanger for recovery of heat from exhaust of flue gases from heaters at temperature of  $350^{\circ}\text{F}$ .



### The Mighty 15,000 CFM

The picture alongside shows one of the two mighty 15,000 cfm dehumidifiers engineered for C. J. Gelatine for gelatine drying for their new manufacturing plant at Bhopal. The twin units each measuring 25 ft long, 14 ft high & 10 ft wide are one of the largest in the MVB series being built anywhere in the world.

From Engineering to manufacturing Bry-Air has the capability to design and deliver a system exactly as per your needs.

# 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.)

## 'Dehumidification of Power Plants'

Need for atmospheric moisture control extends well beyond the desire for human comfort. Moisture control relates to both removing and adding of moisture to air. Removal of moisture is called 'dehumidification'. Dehumidification which was earlier confined to research organisations and labs where dry air environment was necessary was later put to use on ships to protect ship cargoes from moisture damage during storage & transportation. Its use was extended by the navy to 'mothball' their ships, this related to sealing vessels in near operating conditions, thus reducing the time required to put a vessel back in operation. However with the development of efficient, dependable versatile dehumidification systems, it has proven itself essential in nearly every segment of industry and has frequently been the key to the success of a new technology.

### Turbine Storage

One such important and interesting application has emerged in using dehumidification to preserve power plants during the standby period. The standby service requires that the power plants be protected from corrosion, mildew, mold, etc. Proper maintenance by dehumidification will ensure minimum deterioration so the interior condition of all systems and the equipment will be suitable for future use. The plant can be reactivated for service in a short period of time.

This application extends to proper maintenance to all standby units may it be turbines or power generating equipment when not in use or standing idle.

Dehumidification is a practical means of preserving materials by removing moisture from the air. It is an established fact that if an enclosure is kept at a relative humidity of less than 35% under any ambient temperature, the equipment and materials inside will be retained in good condition. Corrosion of ferrous metals is arrested and the low humidity prevents the growth of mold and mildew.

The effectiveness of dehumidification depends on maintaining a low relative humidity condition. Care

must be taken to prevent moisture from getting inside the maintained enclosure possible sources of moisture are: (1) rain water, (2) water vapour in air, and (3) moisture entrained within materials. In the initial dehumidification period, air moisture and material moisture content are in constant exchange with each other. Migration takes place between material moisture and air moisture until equilibrium is reached. After the initial dehumidification period some moisture may enter the enclosure through infiltration from cracks, faulty seals, valve packing, etc.

Infiltration or "Breathing" is caused by temperature changes which increase or decrease the air pressure inside the enclosure and allow moisture to infiltrate, thereby adding an additional load upon the dehumidifier. Breathing will be more prevalent in the summer than in the winter because of greater day to night temperature changes.

### Application

Dehumidified air circulation is important in the removal of moisture from the enclosure. The mixing of dehumidified air in the enclosure due to air circulation equalizes the moisture content. The air from the dehumidifier at a very low moisture content is generally at slightly higher temperature due to the heat of adsorption from the desiccant. These temperature and pressure differences in addition to the dry air system fan causes air circulation within the enclosure.

Aside from air circulation, the vapour pressure differential of air in the enclosure also assists in equalizing the moisture content of air. The water vapour in the air with high relative humidity (high vapour pressure) will rapidly migrate to that section of lower relative humidity. Certain areas of the enclosure which are impractical to supply with dry air will be dried in this manner.

The "diffusion" principle is very important and useful in making the dehumidification process work. It is

relied upon to dry out very complex piping systems where a good air flow through them would be almost impossible to obtain. As long as a system is connected somewhere to the dehumidifier and does not have any blockages, such as closed stop valves or check valves, diffusion will reduce the moisture content.

### Dehumidifier Sizing

Since airflow through the systems is an important factor in drying effectiveness, selection of the proper size dehumidifier is relatively easy.

Total volume of the space to be dehumidified must be determined. This includes the volumes of all equipment and all associated ductwork and piping.

Historical data indicates that one air change every 3 hours is recommended to provide adequate air flow throughout the enclosure. Using a large dehumidifier will dry the enclosures more quickly but result in higher initial cost as well as increased operating and maintenance costs.

Therefore, the rule of thumb formula for determining the size of the dehumidifier required is:

Total volume to be maintained (cubic feet)

$$\frac{180 \text{ (equals 1 air change/3 hours)}}{= \text{Dehumidifier CFM Required}} \\ \text{(Cubic feet/minute)}$$

### Historical Data

Bry-Air has long been a pioneer in the field of dehumidification and has successfully mothballed many power generation plants throughout the United States.

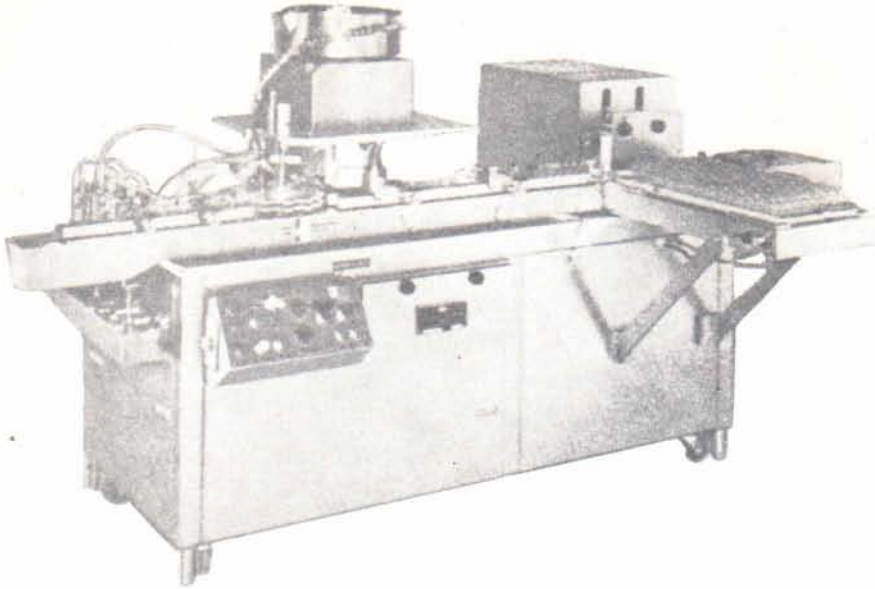
In India Bry-Air has supplied dehumidifiers for above listed application to:—

1. Baroda Rayon Corporation Ltd.,  
1 No. 300 CFM.

The reliability and ease of maintenance make the use of the Bry-Air dehumidifier the first item on the list whenever power plant storage is required.

## New Product Lines From ARCTIC INDIA SALES

 **CHASE-LOGEMAN**  
CORPORATION



### Automatic Liquid Filling, Stopper Inserting & Tray Loading Machine

The first truly integrated medium speed production machine for liquid filling, partially inserting or fully inserting treated rubber stoppers and automatically loading them in to a tray for storage or further processing such as freeze drying, autoclaving or loading.

#### SALIENT FEATURES :—

1. Truly a space saver. The compactness of this integrated line reduces floor space and cost of Laminar Air Hoods.
2. Programmable controller handles basic machine functions.
3. Fills 1 cc to 25 cc with interchangeable filling units.
4. Speed upto 240 Vials/Minute.
5. Quick changeover of vial and stopper sizes.
6. Can be expanded to accommodate aluminium sealing station for applying the seals and roll climping them.

 **VISTA SCIENTIFIC**  
CORPORATION

## CLIMATIC CHAMBERS

#### Environmental Enclosures/Chambers

Environmental precision equipment is the corporate definition of Vista Scientific. Vista provides large "Walk in" or "Drive in" environmental test enclosures for 'Man Rated' & 'Equipment Testing'. Any system can be built & designed to customers requirement. Options available for life science & industrial environmental simulation applications.

#### Temperature-Humidity Test and Storage Rooms

(5% to 98% RH —120°F to + 400°F)

Incubators—Cold Rooms. Plant Growth Chambers. Blood Bank Units. Insect Rearing Rooms. Explosion Safe Rooms. Programmed Test Systems.

#### Appliance Test and Evaluation Facilities

Heat Exchange, Thermal Balance, Energy Usage-Efficiency Study Rooms for: Refrigerator-Dehumidifier-Humidifier-Freezer. Heat Pump, Air Conditioner, Insulation-Heat Exchanger-Fan Coil Unit.

#### Ultra-Dry, Low Humidity, Rooms (1% and 2% RH at 75°F)

Chemical and Metallurgical process Rooms. Transformer Core/Coil and Semi-conductor Assembly Rooms. Battery Production. Static Discharge Test Rooms. Special Energy Conservation-Thermal Recovery Options Available.

#### Automotive and Military Climatic Test Chambers

—1000 up to + 200,000 feet altitude with temperature and humidity control.

#### Altitude and Flight Profile Simulation Chambers

With sub-sonic, blast air capabilities for use with air cooled aircraft component evaluation and testing.

#### Man-Rated Physiological Research and Life Sciences Test Chambers

Hypoxia and pilot training (Rapid Decompression) Units Animal and Man-rated Hypo and Hyper-baric Chambers Preservation and Treatment Chambers.

#### Partial Pressure/Controlled Atmosphere Chambers

Pollution-Corrosion-inhalation-Toxicology and inert Gas Facilities.

