



Dry facts

... from Arctic India sales

January - February - March 1988

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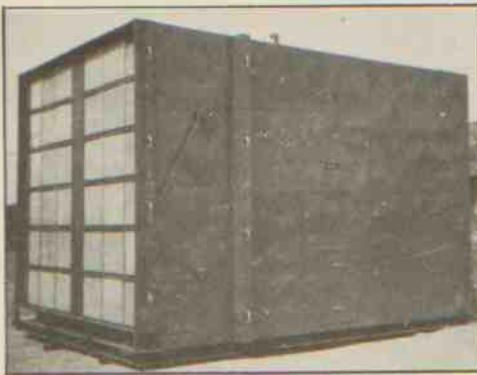
NO JOB TOO BIG FOR BRY-AIR

It was a mammoth job loading a $6.32 \times 6.20 \times 4.20$ (mts.) high dehumidification system on to the trailer of a truck, headed for Andrew Yule & Company Ltd., Kalyani, West Bengal. The MVB 20C complete with water fed heat exchanger handling 75,000 cfm of air and a heat recovery unit will be maintaining the desired humidity conditions in a steel cord conveyor belting project.

The dehumidifier maintains the humidity of the creel let off, rewinding installation-cum-intermediate storage room at $50 \pm 5\%$ keeping in view the outside atmospheric condition prevailing at Kalyani, where the maximum relative humidity may go as high as 95%. The temperature of the dehumidified room is maintained at ambient $+5^\circ\text{F}$.

Dehumidifiers for creel room application have been sold worldwide by Bry-Air. In India, Dunlops India and Vikrant Tyres use Bry-Air equipment for similar application.

Bry-Air has the complete knowhow to design solutions for your problems and can package a total system providing heating, cooling, heat recovery to provide the most economical and efficient solution to your problem. However, it's a constant process of learning as we go along and there is lots of room to grow!!



BRY-AIR INTERNATIONAL MEET



The lake city of Udaipur was the venue for the fourth international meet of Bry-Air.

The calm and the tranquility of the palaces and lakes and call of the wild in the royal hunting lodge provided the backdrop for the three day meet where the policy of the Bry-Air group for the coming year was chalked out.

While the men shaped the Bry-World the ladies scoured the alleys of Udaipur for wonders of the city and all that Rajasthan has to offer.

The royal past was recreated in the evenings when the sun went down and the candles were lit and music and folk dances entertained the guests. The ambience and mood helped the entire group relax and become closer.

The three day period ended too soon with lots having been accomplished and some left to be done, only to be able to meet again after a year.

AIS AT 'ENERGY SAVERS' '88

An exhibition-cum-conference on energy savings in industry was held at Hotel Ashoka, New Delhi on February 25, 26, 1988. Arctic India Sales had on display the Bry-Air Air to Air Heat Recovery System, which is an efficient equipment for recovering waste heat from dryer and oven exhausts.

A tremendous response to the equipment was received from technicians, scientists and research associations.

FORM IV

Statement of Ownership and Other Particulars of 'Dry Facts'

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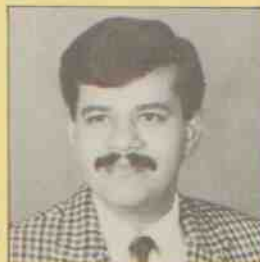
Name, Nationality and Address of Printer, Publisher and Editor

Vinita Pahwa,
Indian,
20-Rajpur Road,
Delhi 110 054

Name and Address of Owner Arctic India Sales

I, Vinita Pahwa, hereby declare that the particulars given above are true to the best of my knowledge and belief.

MEET THE DELAIR EXECUTIVES



Deputy Mgr. Marketing
(OEM Division)

Mr. Umang Sharma

Heading the marketing of Delair products (OEM division), Umang Sharma is thoroughly conversant with institutional and public sector selling. A graduate in mechanical engineering from Punjab University, he has had five years experience in marketing energy conservation industrial products at Thermax. A keen sportsman, represented Punjab University and state in Nationals in Badminton for over eight years. Good luck Umang!



Manager
Plant Operations

Mr. Ashok Sharma

Mr. Ashok Sharma heads the production programme at the Delair plant. We are confident he will see the programme through the teething troubles with his eighteen years of experience in industrial engineering, product development and project engineering, in the field of electronics, machine tools and general engineering industry. A great start, Mr. Sharma!

Change in Telex Number

Please note that Arctic India Sales' telex number has changed effective from March 15, 1988. The new number is 031-78003 AISL IN.

When Moisture is Torture!!!

'DEHUMIDIFICATION FOR ELECTRONICS & ELECTRICAL INDUSTRY'

Today's explosive and ever expanding electronics industry is continuously bridging the gap between fiction and reality by bringing forth several sophisticated technologies and advanced development in the fields of time, motion and space.

However, high technology often entails working under very precisely controlled environmental conditions. The equipment involved is heat sensitive, requiring *unvarying temperature, strictly controlled humidity and air contaminates* for all important uptime. Ordinary air conditioning cannot meet these stringent requirements.

Efficient, dependable and versatile dehumidification systems has often been the key to the success of a new technology.

Dehumidification can be applied in the **manufacture, processing, storage and operation** of electronic and electric components.

Semiconductor Assembly

In the production of semiconductors and integrated circuits excessive moisture adversely affects the bonding process and increases defects.

Photosensitive polymer compounds called photoresists are applied to surfaces to selectively protect them during etching. For best adhesion, clean photo lithography rooms are kept between *20% and 35%* relative humidity at 70°F. Excessive moisture causes adhesion failures, stress fractures and surface defects.

Capacitor Winding and Storage

The conditions maintained in the 'White Room'—an area where temperature, humidity and dust particles size is controlled normally maintained at 35 to 40% rh at around 22°C.

Manufacture of Lithium Batteries

Lithium is the metal used in most modern batteries. It oxidises very easily in the presence of moisture. The rh must therefore be reduced to 1% during the period in the manufacturing process, the metal is exposed to ambient air.

Printed Circuit Board Assembly

In the manufacture of hybrid, a series of integrated circuits are adhered to an alumina substrate. For best adhesion clean rooms are used keeping the relative humidity between 20% to 35% at 70°F.

Moisture control is also absolutely essential when quartz crystals are incorporated with printed circuit boards. The quartz crystal boards after assembly are put through an aging process during which time the humidity level must be carefully controlled to prevent the crystal adsorbing water vapour.

Manufacture of Picture Tubes and Fluorescent Lighting Tubes

In the manufacture of open ended glass television and fluorescent lighting tubes the inner surface is coated by allowing slurry to wash down the inside of the tube. The tubes are then transferred to a drying oven where the coating is allowed to bake and harden. The tubes are then removed from the oven and allowed to cool. During the cooling period moisture causes imperfections to develop in the coating and a quality problem arises.

By forcing dry, cool air through the tubes after they are taken from the oven, the quality problem can be controlled.

Maximum relative humidity of process air needs to be maintained at *10% at 95°F*.

High Voltage Cable Wrapping

In the manufacture of High Voltage Cable wrapping with paper strips it is very essential that the humidity level is controlled as moisture trapped between the insulation and the conductor can cause shorting and explosions and discharge due to breakdown of electrical insulation. Relative humidity maintained is as low 5% rh at 20°C. Often the insulation such as yarn and paper become adsorbent of moisture and hence low relative humidity conditioning need to be maintained.

Humidity Control of Operating Equipment Rooms

The presence of moisture is a deterrent or results in abnormally high maintenance of electrical and mechanical operating devices. For instance, dial telephone system, where thousands of electrical relays are subject to constant pitting because of excessive arcing under high humidity conditions. Also the presence of water vapour may corrode the contact points of infrequently, operated electrical contactors, to the extent that poor closure of electrical circuits may result.

Electronic equipment in such places as radar stations or electronic switching systems is subject to loss of efficiency and high maintenance rates when exposed to humid conditions.

Hence, whether it is Telecommunication Data processing, defence or aerospace growth industries controlled dehumidified air becomes a critical requirement for too manufacture and operation of sophisticated electronic technologies.

Clean Rooms for Manufacture of Chips and Transistors

Precision components and sophisticated electronic components like microchips VLSI's and IC's require clean rooms for manufacturing a quality product. A clean room is a specially constructed enclosed area environmentally controlled with respect to airborne particles, temperature, humidity, air pressure, air flow pattern and lighting.

Dehumidification equipment is an essential part of the total environmental control in the clean room.

Testing and Calibration

Electrical systems and electronic assemblies are tested in environmental chambers where temperature and humidity are precisely controlled to screen out marginal components.

Why Use Compressed Air Dryers?

- ★ Dry compressed air increases profits.
- ★ Eliminates rust, corrosion, malfunctioning.
- ★ Reduces maintenance and costly replacements.

Two Methods of Drying Compressed Air

Refrigeration: removes moisture by cooling the air.

Adsorption: by passing air over desiccants.

Delair Offers Both Refrigeration and Adsorption Dryers for all Needs

Refrigeration dryers

Adsorption dryers

Heatless

Heat Regenerated (reduced purge)

Heat Regenerated (no loss)

Energylless

- delair DI series
- regeneration by 3 methods
- delair DC series
- delair DA series
- delair DB series
- delair XD series

Where and Why do we Use Refrigeration Air Dryers?

Most compressed air applications fall into two categories:

- general plant air
 - for instrumentation, tools etc.
- For general plant air, dewpoints of 2°C to 4°C are considered adequate, well within the range of refrigeration dryers.
 - Refrigeration type dryers use less energy and hence are lower in first and operating costs.
 - Desiccant dryers, heatless type, use 10 to 15% purge air for regeneration of desiccant i.e. 10 to 15% of compressor power (HP) is being used as energy operating costs for drying, thereby increasing the capital costs in installing extra capacity of compressor.
 - The refrigeration type air dryer is a packaged self contained unit, fully automatic and produces a steady level of dewpoint. There is no regeneration cycle with complex valving, no periodic recharging of chemicals, oil in the air stream does not affect performance.
 - However, if applications requiring extra dryness of air and pressure dewpoints below 2°C are required only an adsorption dryer will do. Generally for instrumentation air or in outdoor applications an adsorption dryer is called for.

Principle of Operation of Delair Refrigeration Dryer

Delair refrigeration dryers operate on the method of cooling the air to near freezing point to remove the moisture and reheating it to approximately 10°C below the incoming compressed air temperature at nominal conditions.

The dryer consists of an air drying unit with cyclone type condensate separator and a refrigeration circuit.

The refrigeration circuit consists mainly of a compressor, a condenser, a receiver with liquid refrigerant and an evaporator.

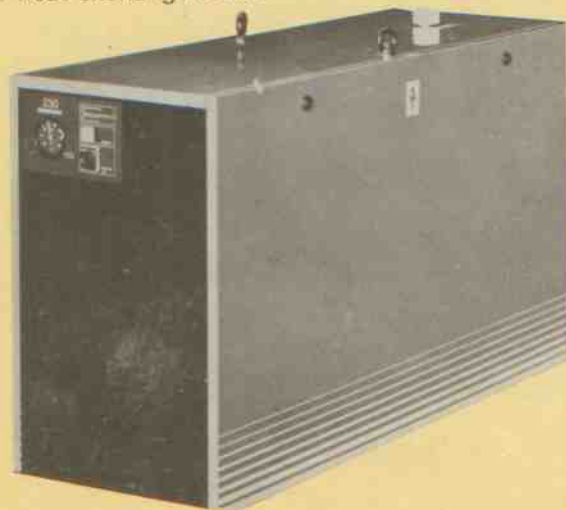
The air drying unit consists of two kinds of heat exchangers, one or more air to air heat exchangers and

one or more refrigerant to air heat exchangers.

The Heart of the system is the special foamed in, patented Heat Exchanger which makes it out perform other Dryers

The function of the air to air heat exchanger is to lower the load on the refrigerant system and secondly by warming the outgoing cold air pipelines to the required temperature.

The refrigerant to air heat exchanger(s) further cools the air to the required temperature thus condensing the water vapour from the air, which is automatically drained.



Delair Refrigeration Dryers

- ★ Certified and reliable performance
- ★ Compact design
- ★ Available in 19 models
- ★ Capacities from 18 NM³/hr to 4320 NM³/hr.
- ★ Operating pressures 4 kg/cm² to 10 kg/cm².
- ★ Provides pressure dewpoints down to 2°C.
- ★ Unique, patented, foamed in heat exchanger.
- ★ Outperforms other dryers.

Applications

- ★ Sensitive pneumatic instruments tools and controls.
- ★ Conveying, filling, mixing and cleaning operations.
- ★ Paint spraying
- ★ Printing and lithography.